Understanding Loneliness and its Impact on Quality of Life in Older Sinhalese People Living in Governmental Aged Care Facilities in Sri Lanka

A. V. Pramuditha Madhavi

2023

School of Clinical Science, Department of Nursing

A thesis submitted to
Auckland University of Technology
in fulfilment of the requirements for the degree of
Doctor of Philosophy (PhD)

Abstract

Background: Loneliness is a common problem that significantly impacts the physical and psychological health of older people. Physical separation from the family could make older people living in aged care facilities more susceptible to loneliness when compared to community-dwelling older people. To date, little is known about loneliness in older people living in aged care facilities in Sri Lanka.

Aim: This study sought to understand loneliness in Sinhalese older people living in aged care facilities in Sri Lanka. The four objectives were to 1) examine the psychometric properties of the De Jong Gierveld Loneliness Scale (DJGLS) and the World Health Organization Quality of Life-BREF for the study sample; 2) assess and understand participants' levels of loneliness; 3) investigate the relationship between loneliness, quality of life and health status; and 4) explore participants' perception of loneliness.

Method: A mixed methods approach was used. Using stratified random sampling, a total of 517 Sinhalese participants aged 60 years and above were recruited from 86 aged care facilities located in seven provinces in Sri Lanka. Quantitative data on loneliness and quality of life were gathered from the total sample using interviewer administered tools including the DLGLS and WHOQOL-BREF. Descriptive statistics with correlational analysis, factor analysis, and regression analysis, were utilized to answer quantitative study questions. Semi-structured interviews in Sinhalese were conducted to gather qualitative data exploring perceptions of loneliness from a subset of 26 consenting participants of the total sample using purposive sampling. An interpretive descriptive method was used to analyse qualitative interview data exploring participants' perception of loneliness.

Findings: The quantitative results revealed that loneliness is prevalent among aged care residents in Sri Lanka and 75% of them have at least moderate level of loneliness while 20% of them have very severe loneliness. Regression analysis further showed that the degree of total loneliness negatively impacts their quality of life (regression coefficient β=-2.42, t =-18.83,p<0.001). While all aspects of quality of life were negatively influenced by social and emotional loneliness, participants' psychosocial

quality of life was the most impacted aspect by both types of loneliness (regression coefficient $\beta=-0.32$, $p<0.001$; $\beta=-0.26$, $p<0.001$ respectively). In addition, the two individual indicators not being visited by family members and having no opportunity to attend social activities outside the facility were the strongest predictors of social and emotional loneliness. These quantitative results were well supported by the qualitative findings derived under three themes. Three themes emerged from the qualitative data analysis: 1) how I came to be lonely; 2) loneliness makes me feel…, and 3) how I manage/cope with loneliness. Participants perceived that being overgenerous and trusting others, along with no longer being wanted by others were reasons for their loneliness. Further, they perceived that loneliness made them feel hopeless and worthless, created further disconnection from others, and resulted in unwellness and suffering. Participants at times blamed others for their loneliness and some engaged in religious activities to manage their loneliness.

Conclusion: The development of flexible aged care facility rules aimed towards facilitating social integration of residents should be considered to create age friendly care environments. Planning and implementing adequate indoor activities for residents is recommended to increase peer interactions and enable residents to remain engaged during leisure times is equally important. This knowledge is intended to inform increasing residents' psychosocial satisfaction and reducing their loneliness.

Table of Contents

Abstract i

Table of Contents iii

List of Figures viii

List of Tables ix

List of Appendices xi

Attestation of Authorship xii

Acknowledgements xiii

Chapter 1 Introduction 1

- 1.1 Introduction 1
- 1.2 Personal Background to the Thesis 2
- 1.3 Demographic Overview of the Older Population in Sri Lanka 3
- 1.4 Living Arrangements of Older People in Sri Lanka 5
- 1.5 Provision of Services in Aged Care Facilities in Sri Lanka 7
- 1.6 Initiatives by the Sri Lankan Government for the Social Support of Older Adults in Sri Lanka 9
- 1.7 Building, Maintaining, and Monitoring Aged Care Homes 10
- 1.8 Providing Financial Assistance to Older People Above 60 Years of Age 11
- 1.9 Awareness Programmes and Support Services for Older People 12
- 1.10 Implementing Welfare Services in Collaboration with the National Council for Elders 13
- 1.11 Rationale and Significance of the Study 14
- 1.12 Research Aim 16
- 1.13 Research Objectives 16
- 1.14 Structure of the Thesis 16
  - 1.14.1 Chapter 1 16
  - 1.14.2 Chapter 2 17
  - 1.14.3 Chapter 3 17
  - 1.14.4 Chapter 4 17
  - 1.14.5 Chapter 5 17
  - 1.14.6 Chapter 6 18
  - 1.14.7 Chapter 7 18
  - 1.14.8 Chapter 8 18
  - 1.14.9 Chapter 9 18
  - 1.14.10 Chapter 10 19
- 1.15 Chapter Summary 19

Chapter 2 Literature Review on Loneliness 20

- 2.1 Introduction 20

2.2 Search Strategy ... 20
2.3 Definitions of Loneliness ... 21
2.4 Theoretical Perspectives of Loneliness ... 23
2.4.1 Weiss's Theory of Relational Loneliness ... 23
2.5 Multidimensionality of Loneliness ... 25
2.5.1 Cultural Understandings of Loneliness ... 27
2.6 Loneliness in Old Age ... 30
2.6.1 Demographic Predictors of Loneliness in Old Age ... 30
2.6.2 Socio-Environmental Predictors of Loneliness in Old Age ... 33
2.6.3 Impact of Loneliness on the Health of Older People ... 35
2.7 Gap in Knowledge ... 49
2.8 Chapter Summary ... 50
Chapter 3 Psychometric Properties of Outcome Measures ... 52
3.1 Introduction ... 52
3.2 Importance of assessing reliability and validity of a patient reported outcome measure (PROM) ... 52
3.2.1 Reliability ... 53
3.2.2 Validity ... 53
3.3 Importance of Measuring Loneliness ... 55
3.3.1 Overview of loneliness measuring scales ... 56
3.3.2 Importance of measuring Quality of Life of lonely older people ... 59
3.3.3 Selection of measures for the present study ... 60
3.4 Chapter summary ... 61
Chapter 4 Research Methodology ... 62
4.1 Introduction ... 62
4.2 Pragmatism ... 62
4.2.1 Pragmatist Ontology ... 64
4.2.2 Pragmatist Epistemology ... 65
4.2.3 Pragmatist Axiology ... 66
4.3 Pragmatism as the philosophical underpinning of the current study ... 67
4.4 Mixed methodology as a methodological approach ... 69
4.5 Choice of the mixed methodological approach for the current study ... 72
4.6 Chapter Summary ... 74
Chapter 5 Research Methods ... 76
5.1 Introduction ... 76
5.2 Overview of the Research Design ... 76
5.3 Ethical Considerations ... 77
5.4 Study Population, Translation of Study Instruments and Study Setting ... 79
5.4.1 Study Population ... 79
5.4.2 Translation of Study Instruments ... 79
5.4.3 Study Setting ... 80

5.5 Step 1 of Mixed-Method Convergent Design – Data Collection 80
5.5.1 Study Aim 80
5.5.2 Participant Recruitment 80
5.5.3 Sampling Techniques Used in the Quantitative Procedure 81
5.5.4 Selection of Aged Care Facilities 82
5.5.5 Quantitative Data Collection (Standardised Measurement Data) 83
5.5.6 Qualitative Data Collection (Conducting Qualitative Interviews) 87
5.6 Step 2 of Mixed-Method Convergent Design – Data Analysis 90
5.6.1 Quantitative Data Analysis Procedures 90
5.6.2 Qualitative Data Analysis Procedure 90
5.7 Step 3 of Mixed-Method Convergent Design – Integration of Quantitative Results and Qualitative Findings 94
5.8 Step 4 of Mixed-Method Convergent Design – Interpretation of Findings 95
5.9 Maintaining the Rigour of the Study 95
5.10 Chapter Summary 97

Chapter 6 Quantitative Results Part I 98
6.1 Introduction 98
6.2 Quantitative Data Preparation and Editing Procedure 98
6.2.1 Editing Questionnaires and checking for missing responses 98
6.2.2 Coding Items 99
6.3 Geographical Distribution of the Study Sample Across Seven Provinces in Sri Lanka 99
6.4 Participants' Profile of the Quantitative Sample 101
6.4.1 Participant Characteristics 101
6.5 Evaluation of Psychometric Properties of Study Tools 103
6.6 Exploratory Factor Analysis – DJGLS 107
6.7 Exploratory Factor Analysis (EFA) – WHOQOL-BREF 109
6.7.1 Factor One (indicated in green in the table) 113
6.7.2 Factor Two (indicated in yellow in the table) 113
6.7.3 Factor Three (indicated in orange in the table) 113
6.7.4 Factor Four (indicated in blue in the table) 114
6.7.5 Factor Five (indicated in purple in the table) 114
6.7.6 Re-naming New Sub Scales Extracted 115
6.7.7 Reliability Estimates for the New Sub Scales of WHOQOL-BREF-SL 118
6.8 Chapter Summary 119

Chapter 7 Quantitative Results Part II 121
7.1 Introduction 121
7.2 Descriptive Statistics of Loneliness and Quality of Life in the Study Sample 121
7.2.1 Descriptions of DJGLS Score in Participants 121
7.2.2 Descriptions of WHOQOL-BREF Score in Participants 125

7.3 Association Between Loneliness and Factors of Health in WHOQOL-BREF-Sri Lankan version (WHOQO-BREF-SL)....129

7.3.1 Association between Overall Loneliness and Individual Factors of Health in WHOQOL-BREF-SL....129

7.3.2 Association Between Social and Emotional Loneliness and Individual Factors of Health in WHOQOL-BREF-SL....129

7.4 Regression Analysis Between Loneliness and Quality of Life of Participants..132

7.4.1 Regression Analyses of Total WHOQOL-BREF-SL Score Predicted by Overall Loneliness....133

7.4.2 Regression Analysis of Individual Factors of Health in WHOQOL-BREF-SL Predicted by Social and Emotional Loneliness with Participants' Demographic Characteristics....135

7.4.3 Analysis of Covariance Between Demographic Variables and Loneliness 145

7.5 Chapter Summary....147

Chapter 8 Qualitative Study Findings....148

8.1 Introduction....148

8.2 Participants' Profiles....148

8.3 Presentation of Findings....149

8.3.1 Theme 1 - How I Came to be Lonely.....150

8.3.2 Theme 2 – Loneliness Makes Me Feel…....159

8.3.3 Theme 3 – How I Cope/Manage My Loneliness....166

8.4 Chapter Summary....172

Chapter 9 Integrating the Quantitative Results and Qualitative Findings....174

9.1 Introduction....174

9.2 Integration of Results Using a Triangular Conceptual Diagram....175

9.3 Integration of Results in Narrative Form....178

9.3.1 Impact of Loneliness on Health and Quality of Life....179

9.3.2 Effect of Demographic Variables on Loneliness (Predictors of Loneliness) 183

9.4 Chapter Summary....186

Chapter 10 Discussion....187

10.1 Introduction....187

10.2 Discussion of Major Findings....187

10.2.1 Psychometric Properties of DJGLS for Sinhalese Older Population....188

10.2.2 Psychometric Properties of WHOQOL-BREF for Sinhalese Older People 189

10.2.3 Levels of Loneliness in Study Participants....194

10.2.4 Predictors of Loneliness....195

10.2.5 Relationship of Levels of Loneliness to Health Status and Quality of Life in Participants....197

10.2.6 Perceptions of Loneliness in Older Sinhalese People Living in Aged Care Facilities 200
10.3 Strengths and Limitations of the Study 207
10.4 Recommendations 209
10.4.1 Education and Practice in Aged Care 209
10.4.2 Aged Care Management Protocols and Policies 210
10.4.3 Future Research 211
10.5 Conclusion 212
References 214
Glossary 241
Appendices 242

List of Figures

Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Flowchart .... **Error! Bookmark not defined.**

Figure 2 Cyclical Effects of Loneliness 48

Figure 3 Four Basic Elements of the Research Process (Crotty, 1998, p.4) .... **Error! Bookmark not defined.**

Figure 4 Overview of the Mixed-Method Convergent Research Design (Creswell & Clark, 2018b) 77

Figure 5 Design Flowchart for Aged Care Facility Selection (STROBE guideline)(Cuschieri, 2019) 82

Figure 6 The Four Steps of the Cognitive Process (Morse, 1994) 92

Figure 7 Geographical Dispersion of the Study Sample Across Seven Provinces in Sri Lanka 100

Figure 8 Scree Plot Chart for Component Number – DJGLS 108

Figure 9 Extracted Component Structure of DJGLS Identical to the Original Scale 109

Figure 10 Scree Plot Chart for Component Number of WHOQOL-BREF 110

Figure 11 *Presentation of New Factor Three Extracted and Comparison with WHOQOL-BREF Original Scale* 115

Figure 12 Presentation of New Factor Five and Comparison with WHOQOL-BREF Original Scale 115

Figure 13 The Path-Diagram from SAS Illustrates the Extracted Factor Structure – WHOQOL-BREF-SL 119

Figure 14 Normal Distribution of the Total Score of QOL in The Study Sample 126

Figure 15 WHOQOL-BREF Total Score Across across Four Categories of Loneliness in Participants 128

Figure 16 The Three Themes Derived from Qualitative Data Analysis 150

Figure 17 Triangular Conceptual Diagram of the Relationships between Theoretical Assumptions, Qualitative Empirical Findings and Quantitative Empirical Findings (Kelle & Erzberger, 2003a) 176

List of Tables

Table 1 *Semi-Structured Interview Guide* 89

Table 2 *GRAMMs Guidelines (O'cathain et al., 2008) for Evaluating Rigor in Mixed Methodology Studies – Comparison with the Current Study* 96

Table 3 Province-wise Distribution of the Study Sample in the Country 100

Table 4 Demographic Information of Study Participants 101

Table 5 Descriptive Statistics of the Age Distribution of the Sample 103

Table 6 Internal Consistency (Cronbach’s alpha) – DJGLS Overall Scale 104

Table 7 Internal Consistency (Cronbach's alpha) – Emotional and Social Loneliness Sub Scales of DJGLS 104

Table 8 Internal Consistency (Cronbach's alpha) – WHOQOL-BREF Overall Scale with 23 Items (Excluding Three Items in Social Domain) 105

Table 9 Internal Consistency Reliability (Cronbach's alpha) – WHOQOL-BREF Domain-wise Calculation 105

Table 10 Item Statistics – WHOQOL-BREF 106

Table 11 Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy 107

Table 12 Total Variance Explained 108

Table 13 Kaiser-Mayer Olkin Sampling Adequacy and Bartlett’s Test Results-WHOQOL-BREF 110

Table 14 Total Variance Explained 111

Table 15 Component Score Coefficient Matrix 112

Table 16 EFA Yielded New Factors of WHOQOL-BREF for this Study 117

Table 17 *Reliability of New Sub Scales of WHOQOL-BREF-SL in Comparison to the Scale Statistics of WHOQOL-BREF Original Scale.* 118

Table 18 *Normality Test - Total Score of Loneliness* 121

Table 19 *Descriptive Statistics of Loneliness Score - Total Sample* 122

Table 20 *Loneliness Score Across Demographic Variables of Participants* 123

Table 21 *Normality Test for Total Score of Quality of Life of Participants* 126

Table 22 *Descriptive Statistics of WHOQOL-BREF Total Score in the Sample* 127

Table 23 WHOQOL-BREF Total Score Across Four Categories of Loneliness in Participants 127

Table 24 Relationship between Overall Score of Loneliness and Individual Factors of Health in WHOQOL-BREF-SL Scale 131

Table 25 *Relationship between Emotional and Social Loneliness and Individual Factors of Health in WHOQOL-BREF-SL* 132

Table 26 *Regression Coefficient of Overall Loneliness on Total Quality of Life of Participants* 134

Table *27* *Regression Coefficient of Emotional Loneliness and Other Predictors on Physical Health of Participants*......135

Table 28 Regression Coefficient of Social Loneliness and Other Predictors on Physical Health of Participants......136

Table 29 *Regression Coefficient of Emotional Loneliness and Other Predictors on New Psychosocial Factor of Health* 138

Table 30 *Regression Coefficient of Social Loneliness and Other Predictors on New Psychosocial Factor of Health.* 139

Table 31 *Regression Coefficient of Emotional Loneliness on Environmental Factor of Health of Participant* 140

Table 32 *Regression Coefficient of Social Loneliness on Environmental Factor of Health of Participants* 140

Table 33 *Regression Coefficient of Emotional Loneliness on Spiritual Health of Participants* 142

Table 34 *Regression Coefficient of Emotional Loneliness and Other Predictors on Quality of Participants' Perception of Social Self* 143

Table 35 Regression Coefficient of Social Loneliness and Other Predictors on Quality of Participants' Perception of Social Self......144

Table 36 Parameter Estimates of Predictors on Participants' Levels of Loneliness 145

Table 37 Participant Demographics for Qualitative Study 148

Table 38 *Themes and Subthemes* 150

List of Appendices

Appendix A Letter of Ethics Approval (AUTEC) 242

Appendix B Letter of Ethics Approval (Faculty of Medicine, University of Colombo, Sri Lanka) 243

Appendix C Letter of Granting Study Permission (NSE, Sri Lanka) 245

Appendix D Participant Information Sheets for Conducting Interviews and Questionnaires 246

Appendix E Informed Consent Forms for Conducting Interviews and Questionnaires 251

Appendix F Advertisement Displayed in Aged Care facilities for Participants' Information 253

Appendix G WHOQOL-BREF Mean Scores Across Four Categories of Loneliness 254

Appendix H WHOQOL-BREF Total Score Across Demographic Variables of Participants 256

Appendix I Province and District Wise Distribution Of WHOQOL-BREF Total Score ... 258

Appendix J Correlation Between Total Score of Loneliness and Individual Domains of Health in WHOQOL-BREF Original Scale 260

Appendix K Correlation Between Emotional and Social Loneliness and Individual Health Domains in WHOQOL-BREF Original Scale 261

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

09.05.2023

______________________________	______________________________
Signature	Date

Acknowledgements

Undertaking a PhD is not an easy task without the support of others. On the journey to attain my PhD, many people have facilitated, supported, and encouraged me in numerous ways. This work would not have been possible without their tireless effort and generous help. I greatly appreciate and acknowledge all those people who helped me reach the final destination.

First and foremost, I am extremely grateful to my supervisors—Dr. Margaret Sandham, Dr. Irene Zeng, Professor Eleanor Holroyd and Professor Stephen Neville for their invaluable advice, continuous support, and patience. I am especially indebted to Professor Stephen Neville, who has persistently supported and provided me with quality academic guidance and took the time to help improve my writing skills in pursuit of my goal. I would like to express my deepest gratitude to Dr. Sandham and Dr. Zeng for lending their expertise in statistics which strengthened my study, and for helping me develop a new skill in quantitative analysis.

I would like to thank the Auckland University of Technology (AUT) for providing financial assistance with editing my thesis. I also extend my appreciation to Julie Balloch, Postgraduate and Research Coordinator; Alberta Chang, International Student Advisor; and Emiliana Fappo, Student Relations Advisor, for their support and for ensuring I had a good time as a student at AUT. I am grateful to my landlady, Natalia Ferdinand, and my flatmate, Liston Meintjes, for their generous support throughout my student life here in New Zealand.

Arriving at the final destination of this PhD journey would not have been possible without the continuous emotional support from my ever-loving mother. Her words strengthened me to face the challenges encountered in New Zealand. My dearest father, you are no more among us, but your motivation and encouragement to study English since my kindergarten days enabled me to achieve this dream. I owe you–my mother, father, and my two brothers–for the sacrifices you have made to ensure I succeed in life.

Lastly, but most importantly, I express my sincere gratitude to my study participants who shared their experiences of being lonely while in aged care facilities. Without your

genuine contribution, I would not have been able to unearth this hidden aspect of your lives and share this important message with all those responsible at all levels for aged care and the health care system in Sri Lanka.

Ethics approval for this study was provided by:

Auckland University of Technology Ethics Committee (AUTEC) on 04th March 2020. Approval number 20/20

The Ethics Review Committee, Faculty of Medicine, University of Colombo (ERC-Colombo) on 20th August 2020. Approval number EC-20-031

Chapter 1 Introduction

1.1 Introduction

Loneliness is more commonly seen among older people than in other age groups (Dahlberg & McKee, 2014). It is a negative emotion (Routasalo & Pitkala, 2003) and can lead to depressive symptoms, suicidal ideation, and heart disease (Almeida et al., 2012; J. T. Cacioppo et al., 2002; H. Choi, Irwin, & Cho, 2015; A. Singh & Misra, 2009). Despite such negative effects of loneliness in older age, little attention has been paid to understanding loneliness in older people in Sri Lanka. Further, no culturally appropriate loneliness measure has been identified to assess this group's level of loneliness. Therefore, this study seeks to understand loneliness in older Sinhalese men and women living in governmental aged care facilities in Sri Lanka and to evaluate the psychometric properties of a loneliness assessment measure to determine its appropriateness for the Sinhalese older people in the Sri Lankan context.

This chapter begins by providing background information to this study, wherein I describe what inspired me to undertake this study about loneliness in older people. I also provide three short stories of my personal experiences when engaging with older couples living near my village in Sri Lanka. Next, I include a demographic overview of the older-aged population in Sri Lanka, followed by a summary of their living arrangements. I provide detailed information about the traditional Sri Lankan family structure and how changes to this structure have resulted in declining family support for older people. And consequently, how older people are increasingly moving to aged care facilities. The next section presents information regarding the services provided by aged care facilities in Sri Lanka. Following this section, details are offered on the action plans initiated by the Sri Lankan government to support older people living in the community and older people living in aged care facilities in Sri Lanka. The services described here include social support services, financial assistance, awareness programmes, and welfare services. In the next section, I include the rationale, and significance of the study, followed by the research questions and study aim and objectives. Finally, the chapter concludes with an overview of the thesis structure.

1.2 Personal Background to the Thesis

My interest in the phenomenon of loneliness was triggered by my encounters with three older couples who lived near my village in Sri Lanka. The lady in one couple was the charge nurse at a local teaching hospital, and her husband was a teacher. Another couple were both retired teachers and the husband was a Justice of the Peace in his post-retirement period. The third couple were both administrative officers who had recently retired. Within a period of two weeks, I met each of these three couples and was left thinking about their experiences of loneliness. I had known these couples for years, yet, prior to these encounters, I had never assumed that they would be lonely.

One evening I went to meet the Justice of the Peace who lived in a nearby village with his wife. Before I even stated the reason for my visit, they started to talk about their current situation and the resulting loneliness. They talked about their health problems and their feelings of helplessness caused by their loneliness. The wife stated that while they have enough money for a good quality of life, the main reason for their loneliness was not having any children. The husband added that even though they have many people working for them in their home, shops, and cultivated lands, the couple do not have a close relationship with these people; hence, they felt lonely.

A week later, I went to meet a lady who had retired from a government service job where she had worked as an insurance agent. When I reached her house, only her husband was in, so we talked until his wife returned. He mentioned that their lives were dull and monotonous since their daughters moved away. He and his wife were very lonely because their daughters do not come to see them often as they are very busy. Over the next two hours, his wife also joined with us and we conversed further, and they shared photos and memories of their daughters. On my way home I reflected on their experience of loneliness.

At the end of the same week, I met a third couple when I took my father to the doctor. The hospital was very crowded, and there were many others ahead of us waiting to meet the doctor. Among this crowd I noticed a former charge nurse from the hospital where I had once worked as a student nurse. Back then I had admired her professional manner and the way she interacted with patients and the health team. Upon this unexpected meeting, she was very happy to talk to me. When I asked her about her

life, she stated how she and her husband both feel very lonely as they do not have any friends and their only visits are from their doctors who always come to see them. Her daughter and son were married, so only she and her husband lived at home. She further stated that as they are old, people do not like them; therefore, they feel isolated and lonely. On my way back, I thought about this couple's experience of loneliness.

Within a period of two weeks, I had met three couples for whom the same phenomenon of loneliness occurred. All three older couples shared the common experience of a lack of connection and relationships with their children or other people. It was in hearing the stories described above that I became interested in learning more about the phenomenon of loneliness in older people.

1.3 Demographic Overview of the Older Population in Sri Lanka

Globally, the pace at which the older population is growing is increasing dramatically and much more rapidly than in the past. Many people can now expect to live into their eighties and beyond. A significant trend in this growing older population is that female life expectancy continues to surpass that of men by approximately three to seven years (United Nation, 2009, as cited in Crampton, 2009). Hence, the proportion of older adults in relation to total population is increasing internationally. By 2050, the world's population aged 60 years and older is expected to total two billion, up from 900 million in 2015 (WHO, 2021). While the growth in the number of older people started in developed, high-income countries, growing of older population has now become an increasing challenge in low- and middle-income countries as well. By the year 2050, it is estimated that 80% of older people in the world will be living in low- and middle-income countries (WHO, 2021).

Sri Lanka is one of the countries with the fastest-growing numbers of older people in the world and this growth is accelerating at the fastest rate in any South Asian country (Perera, 2017). For instance, the proportion of the older population, aged 60 and over, was projected to increase from 12.5% in 2016 to 16.7% by the year 2021. This rapid demographic transition was expected to result in one quarter of Sri Lanka's population being aged 60 years and over by the year 2021 (Samaraweera & Maduwage, 2016). In 2012, the older population in Sri Lanka comprised 13.9% of the total population (21.44

million) and is expected to rise to 18.4% by the year 2025 (Siddhisena & DeGraff, 2009). According to current statistics, one in every seven Sri Lankans is aged 60 years and over and, further, this number is expected to increase to one in five by the year 2030, and one in three by the year 2050 (Silva & De Thabrew, 2018).

The ethnic composition of the Sri Lankan population primarily constitutes the Sinhalese who represent 74.9% of the total population of 21.44 million people, while Sri Lankan Tamils, Moors, and Indian Tamils comprise 11.2%, 9.3%, and 4.1% respectively. When the ethnic composition of the Sri Lankan older population aged 60 years and above is considered, 79.7% are Sinhalese; 9.9% Sri Lankan Tamil, 4.0% Indian Tamil, and 5.8% Sri Lankan Moor (Perera, 2017).

The definition of what constitutes being an older person varies between countries. In Sri Lanka, as in many other developing countries, the older population is considered to be those who are 60 years or older. The age 60 is used to identify older people in Sri Lanka as it is the mandatory age for retirement in most public and private sector employment in the country. Further, the age 60 is used in recent legislation regarding older people in Sri Lanka (S. H. P. de Silva, Jayasuriya, Rajapaksa, de Silva, & Barraclough, 2016; Siddhisena, 2005).

The report, “Aging population of Sri Lanka: Emerging issues, needs and policy implications” shows that with the increase in the relative proportion of older people in the population, old age dependency has been increasing and will continue to increase (Perera, 2017). According to the Department of Census and Statistics (2012), there were 11 old-aged people per 100 working-age people in Sri Lanka in 1981. By 2012, this ratio had increased to 20 old-aged dependents per 100 working-age people. As projected, this is expected to further increase to one older person per three working-age people by the year 2031 (Siddhisena & DeGraff, 2009). According to this estimate, it is expected that the old-age dependency ratio will increase faster than the child dependency ratio in the country and will likely result in a significant decline in family support available for older people in Sri Lanka.

The older population in Sri Lanka is unevenly distributed among the 25 districts in the nine provinces of the country. The highest proportion, 31% of older people, reside in the Western province, while the second and third highest older populations reside in

the Central province (13.8%) and Southern province (13.1%). The lowest proportions of the older population have been reported in the North Central, Northern, and Eastern provinces (5% in each province). The distribution of the older population over urban and rural sectors in Sri Lanka shows that the majority of people in the older population live in the rural sector (77%), while only 19% reside in urban sectors in Sri Lanka (Perera, 2017).

According to the latest statistics reported on Sri Lanka Labour Force Survey Annual Report, significant differences have been shown in marital status, educational attainment, and literacy levels between males and females in the Sri Lankan older population (Department of Census and Statistics, 2022). In the year 2012, less than two thirds of women in the older population were married, while the proportion of older men who were married was more than three quarters. The never-married proportion of males and females in the older population were 5% and 6% respectively. In Sri Lanka, one in every three older women was widowed, and there are more widows than widowers in the Sri Lankan older population.

Though the Sri Lankan government, free education has been providing for all Sri Lankans since the early 1940s, the available data from the Department of Census and Statistics (2012) indicates that there is a significant difference in educational attainment and literacy levels of males and females in the older population in Sri Lanka. Older women possess a lower literacy level than their male counterparts. In general, about two thirds of the older population in Sri Lanka had a lower secondary or below level of education, while 10% had not attended school (Perera, 2017).

1.4 Living Arrangements of Older People in Sri Lanka

Many older people in Sri Lanka generally wish to co-reside with their spouse, children, and grandchildren, maintaining a strong intergenerational bond (Siddhisena, 2005; Uhlenberg, 2012) which they believe provides emotional and physical support (Perera, 1999). Further, older people in the Sri Lankan context mostly prefer to live in their own home rather than moving into their children's home to preserve their privacy, dignity, respect, and inheritance to the property. Care for older people in Sri Lanka has traditionally been provided by family. The majority of older people depend on family as the basic support unit for their care (Vodopivec, 2008). About 59% of Sri Lankan

older people live in extended households which are families of more than two generations, with the remaining 41% living in “nuclear” family homes consisting of a single married couple and their dependent children (Perera, 2017). Overall, 99% of the total older population in Sri Lanka live in household units; while only 1% of them are institutionalised, mostly in care homes.

In the traditional Sri Lankan context, the youngest male child in the family inherits the ancestral house and is expected to co-reside with the parents and take care of them in their old age with the assistance of other siblings. Older people who do not have their own children are looked after by close relatives. In Sri Lanka, taking care of parents is believed to be a moral obligation of children (Amarabandu, 2004). In the multireligious environment of Sri Lanka, Buddhists, Hindus, Christians, and Islamic people respect older people and they are accorded the highest esteem in society. Respecting and supporting parents, known as filial piety, is an important feature of Buddhism and is considered one of the most important meritorious deeds in Buddhist philosophy in the Sri Lankan context (Xing, 2016). In particular Buddhists believe that paying high respect to older people brings them high merit (Perera, 1999). According to Buddhist philosophy, high merit–being the benefit of a quality life, both in the present and next life–is received in return for meritorious deeds (Osto, 2015).

The sharp increase in the old-age to working-age dependency ratio of 20 to 100 calculated in 2012 (Sri Lankan Department of Census and Statistics, 2012) has meant that family support available for older people has declined in current times (Perera, 2017). Furthermore, changes in the socioeconomic climate whereby family systems are moving from extended family to nuclear family systems, has meant that taking care of older people in the family home is becoming a difficult task. Moreover, the increasing number of females in the labour force has led to a reduced number of females available to provide care for older people living at home in Sri Lanka (De Silva & Welgama, 2014). Consequently, existing intergenerational links within the Sri Lankan family system and emotional support from families for older people has declined (Vodopivec, 2008), and there is a declining trend of co-residing with families and an increasing tendency to move older people to aged care facilities.

Changes in the family structure has led to a growing demand for older people to live in aged care facilities in Sri Lanka (Siddhisena & DeGraff, 2009) as evidenced by an increase in the number of aged care facilities from 275 in 2012 to 326 in 2016 (NSE, 2021). The move from their own home to an aged care facility can contribute to loneliness among older people (Banks & Banks, 2005; Moorer & Suurmeijer, 2001). This loneliness may stem from the disruption of relationships with family members as older people are taken out of traditional living arrangements in which strong family bonds exist. In addition to altered family structures, older people with poor financial resources are particularly vulnerable to experiencing loneliness (Savikko, Routasalo, Tilvis, Strandberg, & Pitkälä, 2005). Loneliness may be more prevalent in under-resourced environments such as governmental aged care facilities in Sri Lanka. Given these factors, this study seeks to understand loneliness in older Sinhalese men and women living in governmental aged care facilities in Sri Lanka.

1.5 Provision of Services in Aged Care Facilities in Sri Lanka

The first aged care facility in Sri Lanka was established in 1837 by Sri Lankan government initiative (Siddhisena, 2005). The second home for older people was established by the Salvation Army in 1885; while in 1920, a leading Buddhist devotee initiated the establishment of the third aged care home, specifically for older women. The next care home for senior citizens was opened by the Buddhist Congress in 1970 in Colombo, the capital city of Sri Lanka. This was opened as a privately owned facility for single women either employed or retired (Risseeuw, 2012b). Since then, the number of aged care facilities in Sri Lanka rose gradually until the 1980s. In the next decade, the number of aged care facilities in the country increased rapidly due to high demand for residential care. Many older people move into aged care facilities having lost their traditional cohabitation familial support due to socio-economic changes that result in a more nuclear family system and weakening of intergenerational links (Siddhisena, 2005). With such high demand, the number of aged care facilities in Sri Lanka has continued to increase, and in 2008 there were approximately 300 aged care facilities in operation (Willmore & Kidd, 2008). Currently, there are a total of 325 care facilities registered under the National Secretariat for Elders (NSE) as governmental aged care facilities (NSE, 2021). Parallel to government initiatives, there are also many residential care homes that are run by private companies that cater to older people who can self-

fund. Thus, there are two types of aged care facilities in Sri Lanka: governmental and non-governmental, privately-owned care facilities.

Privately-owned aged care facilities are mostly located in urban areas such as Colombo, with some located in rural areas. Private aged care facilities are either owner-operated or operated by private organisations, and residents are charged for the services. These non-governmental aged care facilities provide different levels of facilities and services based on residents' income levels. Older people with a high-income level are provided with comfortable single rooms, while middle-income people are lodged in shared rooms and dormitories. In some privately-owned aged care facilities, non-paying older women are provided accommodation, food, medical care, the opportunity to participate in religious activities, and sleep in dormitories; in exchange the older woman must help with cooking, cleaning, gardening, and shopping. Many of these non-paying older women are from rural areas and were servants to high-income families in urban areas during their working life (Risseeuw, 2012b). These facilities are staffed by full-time workers who are trained as caregivers. The nurses who work in these facilities have obtained their qualifications from private educational institutions in Sri Lanka.

Government-run care facilities are registered under the Ministry of Primary Industries and Social Empowerment and managed by the National Secretariat for Elders in Sri Lanka. Residents are provided free care subsidised by the government. Funding is provided to each aged care facility through the Social Services Department and the quality of the services are monitored by the divisional secretariats in the regional secretariat offices. Medical referrals and health clinic attendance are the main services provided for residents.

In most government run facilities, residents may have few social contacts, and hence may experience loneliness. The Sri Lankan government's capital grant allocation for all 325 governmental aged care facilities is approximately US$58,000 per year—an amount insufficient to adequately meet even the basic needs of residents (Risseeuw, 2012a). Therefore, some government run facilities are severely under-resourced and rely on additional financial assistance from private donors and charitable organisations.

Most of the governmental aged care facilities are situated in remote rural areas of the country and are staffed by full-time workers known as facility managers who do not possess any professional qualifications or experience of caring for older people. Many are retired teachers, administrative officers, or army officers, and some are unemployed young people who volunteer their services. They undertake all the coordinating activities of the facilities in liaison with divisional secretariats and the National Secretariat for Elders. There are no nurses or caregivers in these governmental aged care facilities. The residents who are independent and can engage in self-care help other residents who need assistance in their activities of daily living. The building structure of many governmental facilities does not support residents' privacy. In many places, separate dormitories have been provided for men and women who are each allocated a bed and a locker as their living unit. A common dining room serves all residents. Most governmental aged care facilities do not have special rooms for the sick. Residents remain in their allocated space in the common dormitories reserved for them, even when they are ill.

Transportation is a major problem experienced by residents in government-run aged care facilities, especially when they need to attend hospital appointments or other health related services. Many residents often use public transport to access the health care they need. Almost all aged care facilities, however, offer residents the opportunity to engage in their religious observances. There is a separate space reserved for religious activities in every facility.

1.6 Initiatives by the Sri Lankan Government for the Social Support of Older Adults in Sri Lanka

The Sri Lankan government has recognised that a growing proportion of older people creates challenges to the health and social sectors in the country. In particular, the government has identified the need to plan older people-oriented services in the social and health care sectors. As a result, the Sri Lankan government has put in place initiatives to protect and promote the welfare of older people in the country; for example, establishing the National Council for Elders in Sri Lanka in 2000 under the Protection of the Rights of Elders Act No. 09 of 2000. The Council was established under the Ministry of Social Empowerment and Welfare to deliver social support and

welfare services to older people. To assist the Council in discharging these services, the office of the National Secretariat for Elders in Sri Lanka was established under the National Council for Elders as set out in Act No. 09, 2000. The stated vision of both the Council and the Secretariat is “to take people of Sri Lanka towards an active, productive, and dynamic aging through caring” (National Council for Elders, 2017). To achieve the aforementioned vision, the National Council for Elders and National Secretariat for Elders implement their programmes based on the mission to encourage participation of older people in social development; ensure their independence, care, participation, self-fulfilment, and dignity; and protect the rights of older people through awareness programmes.

According to their vision and mission, the office of the National Secretariat for Elders in Sri Lanka provides many services to older people with the goal of enhancing well-being (NSE, Sri Lanka, 2023). These programmes aim to create self-dignity, independence, safety, and protection for older people in the country. Amongst the social welfare programmes implemented by the Secretariat, the following are some of the interventions designed to strengthen older people’s economic status, improve their physical health conditions, and enhance their psychological well-being: a) building, maintaining, and monitoring elders’ homes; b) providing financial assistance for older people above 60 years of age; c) organising awareness programmes to minimise social problems in a timely manner; and d) implementing welfare services in collaboration with the National Council for Elders.

1.7 Building, Maintaining, and Monitoring Aged Care Homes

The Sri Lankan government provides annual financial assistance to the aged care facilities through the National Secretariat for Elders to purchase basic equipment for maintaining care homes and for refurbishment activities. All governmental care facilities are monitored and managed by the administrative council which functions under the Secretariat in collaboration with divisional and regional secretariat offices in the country.

1.8 Providing Financial Assistance to Older People Above 60 Years of Age

The government pension scheme, initiated by the Sri Lankan government, provides financial security for people after their retirement from government service. During their working life, all government servants are required to contribute to this pension scheme. Only government servants, who comprise a small proportion of the population, are supported by this scheme and, thus, enjoy a retirement without any financial worries (Menike, 2015). Therefore, in 2007, the government started a special Senior Citizen Pension Scheme called "*pin padiya*" (free allowance) in line with the International Day for Elders under the Ministry of Social Empowerment and Welfare. The National Secretariat for Elders jointly works with the Sri Lanka Social Security Board to implement this programme, and older people above 70 years of age who do not receive any financial assistance from the government are considered as beneficiaries of this scheme. Older people with disabilities and non-communicable diseases are given priority and receive a monthly allowance of Sri Lankan Rs.500, which is equivalent to US$ 1.50.

Further, in 2012, the Sri Lankan government initiated another financial support system for poor older people in the country named the Senior Citizens' Allowance (*Wadihiti Saviya Jeshta Puraweasi Deemanawa*). Under this scheme, the government has allocated funds from the national budget for a monthly allowance of Rs.2000(US$6) per person. Older people over 70 years of age, having less than Rs.3000 (US$3) monthly income, living alone, or with a spouse and children, are the beneficiaries of this scheme (Asian Development Bank, 2019). In addition, the government-initiated Farmers' Pension Scheme and Fishermen's Pension Scheme established in 1987 and 1990, respectively, aim to financially support farmers and fishermen during their old age. Farmers and fishermen who make contributions to the scheme are entitled to claim the financial benefits from the age of 60 years. In case of an emergency or any permanent disability, contributors can claim a gratuity payment of between Rs.6000 and Rs.50000 (US$ 18 – 155). The payment depends on the age and level of disability of the contributor (Asian Development Bank, 2019).

Furthermore, the Social Security Board, as set out in Act No. 17 of 1996, has launched a pension scheme for self-employed older people in Sri Lanka. Self-employed persons

between the ages of 15 and 59 years are entitled to join the scheme. The scheme mainly focuses on low-income self-employed people and provides financial support during their old age (Asian Development Bank, 2019).

In addition to the direct financial aid provided for older people at the individual level, the National Council for Elders in Sri Lanka has worked to establish elders' societies at rural, regional, and district levels. The aim of these societies is to promote social participation among older people. These societies are provided financial support by the government through the National Secretariat for Elders to organise recreational activities for their members to enhance older people's social and psychological well-being. Beneficiaries of these services are primarily older people living in the community. Older people living in governmental aged care facilities, however, have often been overlooked in the provision of these services and, therefore, have been marginalised and socially isolated, leading to a much higher risk of loneliness among them.

1.9 Awareness Programmes and Support Services for Older People

Awareness programs are being conducted at divisional and provincial levels for older people's family members, and caregivers to improve their knowledge on older people's physical and psychological issues. These programmes aim to improve the quality of care for older people and are provided free of charge by the offices of Medical Officers of Health Divisions in the country.

In 2000, the National Council for Elders in collaboration with the National Secretariat for Elders, launched an awareness programme for older people to strengthen their capacity to face potential social challenges. The Elders' Desk of the Legal Aid Commission (LAC) was established in 2010 with the aim of providing older people with free legal advice regarding loss of property, accident claims, pension schemes, documentation issues related to birth certificates, and fundamental rights of destitute older people, as well as counselling services for aged care facilities (LAC of Sri Lanka, 2015). The LAC further conducts educational programmes to educate social service officers and *grama niladharis* (village officers) on the psychosocial needs of older people aiming to help residents when they need assistance.

Further, the National Secretariat for Elders has launched a programme to train voluntary workers to provide underserviced older people with protection and care services at a concessional rate of Rs.600 (US$1.8) per day. Moreover, educational programmes are conducted by LAC for school children on elders' rights and laws aiming to minimise intergenerational conflicts, abuse, and violence against older people, and to strengthen intergenerational links within families (Tilakaratna, Sooriyamudali, & Perera, 2019). In addition to these programmes, the Medical Officer of Health divisions in each province conducts seminars on active aging for pre-retirees helping them to prepare for a healthy post retirement life (WHO, 2021).

1.10 Implementing Welfare Services in Collaboration with the National Council for Elders

The National Secretariat for Elders acts jointly with the National Council for Elders to deliver specific social and health services for older people to support their well-being. Eye lenses and hearing aids for older people are provided free of charge (Menike, 2015). Issuance of an elders' identity card for older people above 60 years of age enables older adults to receive priority services from government institutions and certain recognised non-governmental institutions such as hospitals, banks, courts, post offices, and transport services (Menike, 2015). Further, a discount of 5% is granted to elders' identity card holders by government pharmacies (i.e., "*Osu Sala*" outlets).

The National Secretariat for Elders in Sri Lanka implements free psychological counselling programmes to improve the mental and spiritual health of older people in the community. However, older people residing in care homes in Sri Lanka have been overlooked in the provision of these services, leaving many with unresolved mental health problems, including loneliness; and the available mental health services for older people in the Sri Lankan health care system have not expanded to address the mental health issues of older people who reside in aged care facilities (U. Krishantha, personal communication, June 28, 2020). Further, to the instructions of the National Council for Elders, the National Secretariat for Elders has launched a welfare program for older people in the form of a sponsorship scheme for elders called *Wedihiti Awarana Kepakaru*. This programme is supported by philanthropic contributions to help older people above 70 years with low socio-economic backgrounds. A recipient

receives a sum of Rs.250 (US$ 0.79) per month from the scheme to support their day-to-day living (NCE, 2017).

Furthermore, the government has established separate drug and treatment counters in outpatient departments in all hospitals to prevent older people from having to wait in long queues. Identifying the increasing need of long-term care for older people as a priority need, the National Elderly Health Policy in Sri Lanka has proposed the establishment of a minimum of two long-term tertiary care hospitals for older people in each province. Accordingly, the Sri Lankan government has invested in building the first tertiary care hospital for older people which is currently under construction.

However, many of the services outlined above mainly focus on the physical health needs of older people and do not focus on their mental health needs. The WHO (2017) has encouraged the governments of all its member countries to adopt the Mental Health Action Plan for 2013-2020 to address older people's mental health concerns in national health planning and at policy levels. In particular, the WHO has identified loneliness in older people as a priority public health problem and interventions have been planned to address loneliness as one of the main themes in this decade. Despite these efforts taken at the global level, inadequate attention has been paid to understanding loneliness and its effects on the health of older people in Sri Lanka, particularly those residing in aged care facilities.

1.11 Rationale and Significance of the Study

This study takes place in Sri Lanka in the context of the afore mentioned increasing transition of older people into aged care facilities, separating them from their family structures and potentially increasing their risk of loneliness. This is of increasing significance as the number of older people in Sri Lanka is rising and changes to the family structure have resulted in a trend towards older people moving to aged care facilities in order to seek support and care.

Though the experience of loneliness negatively impacts individuals over the span of their lives, for older people, in particular, it affects their social, mental, and physical health, and lowers their quality of life (De Koning, Stathi, & Richards, 2017; Holt-Lunstad, Robles, & Sbarra, 2017; C. Perissinotto, Holt-Lunstad, Periyakoil, & Covinsky,

2019; van den Broek, 2017; Victor, Scambler, Bowling, & Bond, 2005). Hence, loneliness is a known risk factor leading to adverse health outcomes, particularly in old age. Therefore, exploring participants' perceptions of their loneliness and the relationship of loneliness to health status and quality of life will be significantly beneficial in planning supportive interventions to mitigate loneliness in the older population living in aged care facilities in Sri Lanka. Despite substantial evidence to illustrate the detrimental effects of loneliness on older people's physical and mental health outcomes, insufficient attention has been paid to assess older people's loneliness in Sri Lanka. Although research in other countries have found an association between living in an aged care facility and loneliness, there is a paucity of research in Sri Lanka to understand loneliness in older people living in aged care facilities. This study specifically focuses on the older population of Sinhalese ethnicity as they constitute the majority of the Sri Lankan population. Furthermore, as a member of the Sinhalese ethnic group, I have a specific interest in understanding loneliness in the older Sinhalese population.

Having a reliable and valid measure is a priority in loneliness studies. Uysal-Bozkir, Fokkema, MacNeil-Vroomen, van Tilburg, and de Rooij (2017) noted that conducting cross-cultural studies about loneliness is hindered by a lack of valid and reliable instruments to measure loneliness in people of different cultures. Though there are several loneliness measures widely used in other countries, none of them have been identified as culturally appropriate for the Sinhalese population. Therefore, examining the cultural appropriateness of existing loneliness measures for the Sinhalese population is imperative to accurately measure their loneliness. In particular exploring the perceptions of loneliness in the Sinhalese older population will help determine the specific content required to modify existing measures to increase their construct validity for this group.

The findings of this study will be critical to identifying the prevalence and levels of loneliness among the Sinhalese older population, informing the Ministry of Social Empowerment and Welfare in Sri Lanka regarding the severity of the problem of loneliness in Sinhalese older people within governmental aged care facility settings. This information will assist authorities in making policy level decisions to promote the well-being of older people. This study will also help make recommendations to change

institutional protocols in aged care facilities to create an environment where loneliness can be mitigated. Further, validation of the assessment tools will increase the accuracy of the assessment of loneliness in older Sinhalese people. Validated measures may be used by nurses and other staff members to assess loneliness in residents of aged care facilities and enable early interventions before loneliness adversely affects physical and mental health.

1.12 Research Aim

To understand loneliness and its impacts on quality of life in older Sinhalese men and women living in aged care facilities in Sri Lanka.

1.13 Research Objectives

1. Examine the psychometric properties of the translated versions of De Jong Giervald Loneliness Scale and the short version of the WHO Quality of Life questionnaire (WHOQOL-BREF) for the Sinhalese older population in the Sri Lankan context.
2. Determine the levels of loneliness and quality of life in older Sinhalese men and women living in aged care facilities in Sri Lanka.
3. Examine the relationship of levels of loneliness to health status and quality of life in older Sinhalese men and women living in aged care facilities in Sri Lanka.
4. Explore the perceptions of loneliness in older Sinhalese men and women living in aged care facilities in Sri Lanka.

1.14 Structure of the Thesis

This thesis is presented in ten chapters as outlined below:

1.14.1 Chapter 1

Chapter one provides an introduction and overview of the phenomenon of loneliness which is the topic of interest in this study. The background to the thesis is presented, including the demographic outline of the older population of Sri Lanka, living arrangements of older people in the country, provision of aged care services, and Sri Lankan government initiatives to socially support older people to enhance their well-

being. The significance, rationale of the study, and the impact of the phenomenon are then described. Finally, the research aim and objectives are outlined, followed by the structure of the thesis and a brief summary of the chapter.

1.14.2 Chapter 2

The second chapter contains the literature review which critically examines existent research studies on loneliness and older people. The review discusses the definitions of loneliness, and the theoretical perspective of loneliness. In this section, as a seminal theory on loneliness, Weiss' (1973) theory of relational loneliness is critiqued. Then, empirical evidence is presented, illustrating the multidimensionality of loneliness. This is followed by an outline of the cultural foundation of loneliness, and the physical and psychological impact of loneliness with respect to the well-being of older people. Finally, the theoretical and methodological viewpoints of the available literature are critiqued and existing gaps in the literature identified.

1.14.3 Chapter 3

Chapter three discusses the psychometric properties of measuring tools in research. In particular, the concepts of reliability and validity of measuring instruments are critiqued including the importance of assessing these properties. Next, the reliability and validity of loneliness measuring scales are critiqued with emphasis on two widely used loneliness measuring scales, the DJGLS and UCLA scale.

1.14.4 Chapter 4

Chapter 4 describes the philosophical underpinning of the study, i.e., pragmatic philosophy, and discusses the evolution of the mixed methodological approach, and its relevance to the conducted study. The three co-designs of the mixed methodological approach are then identified. Particular attention is given to the convergent design and justification of why it is the most appropriate method to achieve the research aim.

1.14.5 Chapter 5

Chapter five presents the research methods and all the procedures implemented in collecting data for this study. Firstly, the chapter presents the ethical considerations in this study. Measures undertaken to ensure participants' safety and in addressing potential ethical issues are described. Then, study methods including selection of the

study setting, quantitative and qualitative data collection procedures, study instruments, and sampling techniques used in both quantitative and qualitative methods are discussed. Further, the chapter presents the statistical approach used to address the quantitative study questions. Next, the data analysis procedure used in analysing qualitative data is outlined. The procedures undertaken throughout the research process to maintain the rigour of the study are also described.

1.14.6 Chapter 6

This chapter presents the quantitative data analysis process and the first part of the quantitative results of the study. First, the chapter describes the data preparation procedure and demographic profiles of the study sample. Then, according to the first study objective, psychometric properties and factor analysis of the study instruments are presented.

1.14.7 Chapter 7

Chapter seven presents the second part of the quantitative results of this study. Based on the second and the third quantitative study objectives, this chapter includes the descriptive statistics on loneliness and quality of life of participants, the correlation between loneliness and participants' quality of life, the impacts of loneliness on quality of life in a multifactorial setting, and the predictors of participants' loneliness.

1.14.8 Chapter 8

This chapter presents the qualitative findings of the study. The themes derived from the qualitative analysis relating to participants' perception of loneliness based on the qualitative research objective of the study are presented.

1.14.9 Chapter 9

This chapter presents the integrated results of the overall study merging the findings from both the qualitative and quantitative strands. The themes derived from qualitative findings related to perceptions of loneliness in participants are presented with supportive comparable quantitative results of correlational and regression analysis. Finally, using both qualitative and quantitative findings, the chapter presents evidence gathered form the current study on loneliness in older men and women living in aged care facilities in Sri Lanka.

1.14.10 Chapter 10

This chapter presents the discussion and recommendations for future practice. In the discussion section, integrated results are interpreted and compared with existing literature addressing loneliness in older people. Further, the chapter presents a critical evaluation of findings in relation to existing theoretical viewpoints. Next, the implications of the findings and the contribution of the study to the current body of knowledge are presented. Further, the recommendations and implications are presented to improve the existing practices in terms of older people's social care and the management protocols currently used in the aged care facilities in Sri Lanka with the aim of mitigating participants' loneliness. Finally, the strengths and limitations of the study are discussed, followed by the conclusion.

1.15 Chapter Summary

Firstly, this chapter provides the background of the study, including three stories of older couples, explaining how I was inspired to study this topic. A demographic overview of the older population and living arrangements of older people in Sri Lanka was presented to provide a general view of the sociocultural aspect of aging people in the country. Next, the aged care services provided by aged care facilities in the context of the under-resourced environment of Sri Lanka and the social circumstances leading to increased demand for aged care facilities in the country were explained. Government initiatives for social support and welfare facilities for the older population of Sri Lanka were discussed, and the available educational and health services explained. The rationale and the significance of the study were presented, followed by the aim of the study and the objectives. Finally, the chapter ends with an outline of the structure of the thesis.

Chapter 2 Literature Review on Loneliness

2.1 Introduction

Literature is scarce on loneliness among older people in the Sri Lankan context, consequently, this chapter provides a detailed review of literature primarily from Western and other Asian countries, examining different key aspects of loneliness. The chapter begins with an overview of the search strategies used in finding and reviewing the literature to situate the current study. First, this chapter provides definitions of loneliness. From reviewed literature, a theoretical view of loneliness is considered, next, empirical research evidence addressing loneliness is presented. The chapter then provides a cultural understanding of loneliness, and antecedents of loneliness in old age. Also detailed is the impact of loneliness on the well-being of older people, and older people's experiences and perceptions of loneliness. Where available, Sri Lankan-specific literature is reported.

2.2 Search Strategy

A literature review to understand the scope of current knowledge and existing scholarly evidence relevant to loneliness among older people was carried out between March 2019 and August 2022. While searching the literature, attention was paid to retrieving articles that focused on the key aspects of loneliness as mentioned above. Electronic databases such as Google Scholar, CINAHL, EBSCO Health Database, Scopus, and MEDLINE (via Ovid) were used for the search. Further to the database search, some articles and books were identified from the reference lists of relevant articles. A combination of key terms was used to retrieve scholarly evidence. These were: loneliness, older people, residential care facilities, health impact of loneliness, physical health effects and loneliness, loneliness and psychological impact, mental well-being in old age, depression in old age, anxiety, and aging. The results of this narrative review provided insight into the current study topic. The key aspects of loneliness as mentioned in the introduction above, were critically examined and presented in the next section.

2.3 Definitions of Loneliness

Emphasising its unique nature, Masi, Chen, Hawkley, and Cacioppo (2011) defined loneliness as a fleeting, unpleasant mood for some individuals or a persistent, aversive experience for others. As they further explained, some people are capable of coping with loneliness, but others are unable to manage their lonely feelings. Therefore, loneliness is difficult to define as a unitary concept. Thurston and Kubzansky (2009) defined loneliness as a subjective, unwelcome feeling of lack or loss of companionship. In this view, the authors have focused on social connections. In his theory of relational loneliness, Weiss (1973) had previously described this aspect of loneliness as social loneliness. This seminal theory of loneliness by Weiss (1973) will be discussed in the next section. However, compared to Weiss, Thurston and Kubzansky have overlooked the emotional aspect of loneliness in their definition. In addition to the social aspect of loneliness, Beal (2006) found that loneliness is related to losing intimate relationships with close ones, defining loneliness as a painful subjective feeling resulting from the deprivation of desired social contacts or loss of relationships with close ones. In Beal's statement, the relationships of loved ones represents the emotional aspect of loneliness in Weiss' view. Perlman and Peplau (1982) used a cognitive approach to define loneliness as an unpleasant experience that people undergo when they feel a discrepancy between the social relationships they currently have and the relationships they desire to have. These authors explained that the quality and quantity of social relationships directly influence people's loneliness. While providing a detailed description of the social aspect, the emotional aspect is missing in their cognitive approach to defining loneliness. However, the emotional aspect is important to consider in the context of aging, as people are more likely to focus on emotionally important relationships in their old age (Carstensen, Fung, & Charles, 2003; Tiilikainen & Seppänen, 2017).

Taking a different perspective, Hawkley, Browne, and Cacioppo (2005) considered loneliness a multifaceted construct made up of three dimensions: intimate loneliness, relational loneliness, and collective loneliness. They defined intimate loneliness as the perceived absence of a significant person in an individual's life, especially at times when they experience a personal crisis and need mutual support. This view mirrors that of emotional loneliness as explained by Weiss (1973). According to Hawkley et al.

(2005), the second dimension, relational loneliness, is a feeling of perceived presence or absence of quality friendships or family connections. This argument is consistent with Weiss's social loneliness. Hawkley et al. (2005) further argued that collective loneliness, which is the third dimension, is a feeling that people experience when they lose their valued social identity or broader social network. It is not convincing that the authors have added a new aspect to the definition of loneliness based on this argument. It seems to be an extension of relational loneliness as they have referred to broader social relations. And therefore, the added aspect can still be identified within the social dimension of loneliness. According to Hawkley et al. (2005), people with collective loneliness lose their wider social contacts, but still have close relationships. Thus, this third dimension, collective loneliness, is comparable to the 'socially searching group' that Lim, Allen, Furlong, Craig, and Smith (2021) defined in their dual continuum model of belonging and loneliness. As they observed, people in a "socially searching" (p. 84) group experience a sense of belonging in some context, such as with family members, but experience a lack of other social contacts.

Asher and Paquette (2003) provided another way of understanding loneliness. They defined loneliness as a cognitive awareness of a deficiency in an individual's social and personal relationships, resulting in feelings of emptiness, and longing or sadness. This composite view of loneliness complies with the main typologies of social and emotional loneliness as identified by Weiss (1973).

In summary, different authors have defined loneliness with slightly different conceptualisations. However, in all the definitions, either directly or indirectly, authors discussed loneliness in relation to missed or lost social and personal connections of people. Therefore, the commonality between most of these definitions is that loneliness results from a specific relational deficit. In conclusion, this coherent observation emphasizes that all the above authors built their views similar to the seminal theory of relational loneliness developed by Weiss in 1973, indicating its relevance in studying loneliness in current research. However, some culture-based studies define loneliness focusing on different contexts and population groups. For example, Smith, Leonis, and Anandavalli (2021) identified adolescents' loneliness as feeling positively or negatively influenced by engaging in social networking and social media, and that increase or decrease of loneliness depends on adolescents' personal

characteristics. They further explained that new technology in social media simulate face-to-face interactions and lead to satisfying meetings with others, thereby reducing loneliness, particularly in people with extraverted personalities.

In a cross-cultural study conducted across 101 countries including collectivist and individualistic cultures with males, females, older and young populations, Barreto et al. (2021) defined loneliness as a feeling that decreased with age, was dominant in individualistic cultures and more prevalent in males than females.

In contrast to these culture-based, context specific definitions of loneliness with specific focus on different population groups, Weiss (1973) defined loneliness in relation to the developmental stages and life events common for every human being. Therefore, Weiss's (1973) theory of loneliness has been used in many studies on loneliness as their theoretical underpinning (Tiilikainen & Seppänen, 2017). Hence, this theory was used as the basis for this study and is discussed in detail in the next section under theoretical perspective of loneliness.

2.4 Theoretical Perspectives of Loneliness

The concept of loneliness has been widely debated in the literature from a variety of theoretical perspectives. As mentioned in the above section, the theory of relational loneliness, suggested by Weiss (1973), has been the foundation for many other, later developed, theories of loneliness (Tiilikainen & Seppänen, 2017) and has been used as the theoretical underpinning for many empirical studies on loneliness, as in the case of this study. Therefore, Weiss's theory of relational loneliness is critiqued in the next section.

2.4.1 Weiss's Theory of Relational Loneliness

The theory of relational loneliness identified by Weiss (1973) states that feelings of loneliness may be caused by a deficit in one or more relational functions. These relational functions are attachment, social integration, nurturance, reassurance of worth, a sense of reliable alliance, and guidance in stressful situations. According to Weiss (1973), loneliness is dualistic and includes both social and emotional loneliness. Social loneliness occurs due to social isolation and the absence of an accessible social network. Therefore, the loss of meaningful friendships or the sense of being apart

from the community results in social loneliness. This state may lead to feelings of marginality, aimlessness, meaninglessness, and boredom. This type of loneliness may be experienced following relocation to a new country as an immigrant. In line with this argument, social loneliness may be experienced by older people when they move to a different cultural setting, such as relocating from the community to living in an aged care facility. In Weiss's view, social loneliness can be remedied by providing satisfying social integration.

As Weiss (1973) explained, emotional loneliness results from lacking intimate relationships with attachment figures. Attachments are a relational function helping people to feel a sense of safety and security from their intimate relationships. Weiss proposed that people are likely to find an intimate attachment in marriage. Older people are, therefore, at higher risk of being emotionally lonely due to the likelihood of losing this intimate attachment after a partner's death in later life. Weiss further postulated that emotionally lonely individuals may feel restless or anxious, with feelings of aloneness, oversensitivity, and hyper alertness. As suggested by Weiss, emotional loneliness can only be remedied by introducing satisfactory intimate relationships to replace lost attachments. In this theory, the partner's relationship has been given more emphasis, overlooking the parent-child relationship. Losing a parent-child relationship is assumed to also contribute to emotional loneliness; in particular, amongst older aged parents (Tiilikainen & Seppänen, 2017). Therefore, it is important to consider such relationships in addressing emotional loneliness in old age.

Based on the theoretical conceptualization of loneliness by Weiss (1973), the current study was planned to examine the levels of loneliness in participants living apart from their children, close relatives and wider social connections, while living in aged care facilities. The study is furthered to explore how older people perceive loneliness while experiencing loss of parent-child relationships and connections with other social networks within a limited environment, in the aged care facility context. The use of aged care facilities is a European model of aged care delivery and is in contrast to the traditional Singhalese way of life.

2.5 Multidimensionality of Loneliness

The two previous sections in this chapter presented the definitions of loneliness on theoretical grounds and the seminal theory of relational loneliness developed by Weiss (1973). In this section, the multifaceted nature of loneliness is discussed based on empirical findings of studies on loneliness. Many studies have provided empirical evidence suggesting the experience of loneliness displays different dimensions in relation to the individual experiences of people. Based on such study findings, some authors have illustrated these multiple aspects of loneliness. These illustrations are presented below, revealing the multidimensional nature of loneliness and, thereby, a broader understanding of the concept.

Loneliness is regarded as a universal phenomenon (Doman & Le Roux, 2010). And yet, it may be experienced differently by different persons, at different times, and under different circumstances (Kvaal, Halding, & Kvigne, 2014). McInnis and White (2001) similarly added that the experience of loneliness could vary between individuals and, for each individual, vary over time. They present two views of loneliness in older adults: situation-related loneliness or situational loneliness and personality characteristics-related loneliness. Situational loneliness occurs in response to significant life events such as the loss of a close relationship or bereavement. People experience personality-related loneliness when they experience an inability to initiate social contacts due to weakness of their personality. According to McInnis and White, the concept of loneliness is highly diversified, based on individual differences, situations, and context, which makes it more complex to understand. Therefore, further empirical evidence from different contexts with different population groups may be needed to better understand the concept of loneliness.

The idea of intimate loneliness, as presented by Hawkley et al. (2005), was expanded by Cacioppo and Patrick (2008) and Cacioppo, Grippo, London, Goossens, and Cacioppo (2015). These authors argued that loneliness is a feeling in people's minds that demands the physical presence of others and requires the presence of significant others in their life with whom they can share and interact, trust, and offer courage and goals in life. However, Cacioppo et al. (2015) further added that merely having a physical presence of even significant others in the surrounding environment is

insufficient for people to not feel lonely; they also needed to feel connected to alleviate their loneliness. All the authors, by this point, have identified the importance of having close relationships to mitigate people’s lonely feelings.

The multidimensional view of loneliness presented by Hawkley et al. (2005), was further explained by Heinrich and Gullone (2006). These authors asserted that loneliness is a multidimensional phenomenon with varying degrees of intensity and that different contexts triggered lonely feelings. In their description of loneliness, they have focused on different reasons for becoming lonely and believe that the intensity of lonely feelings may differ according to the reasons and circumstances particular to each individual. Salimi (2011) and Ponzetti Jr (1990) agreed, explaining that loneliness is a basic aspect of life and everyone experiences loneliness in varying degrees at some point of their life.

The current literature shows that many authors portray loneliness as a negative experience (Asher & Paquette, 2003; Beal, 2006; Thurston & Kubzansky, 2009). In contrast, Cacioppo et al. (2006) identified loneliness as an experience that positively affects people’s lives. According to them, loneliness may motivate people to change their behaviours and improve their social connections. The authors further identified that loneliness helps people re-organise their social connections, which is important for their survival.

Loneliness is also explained by some authors through a positive lens. Moustakas (2016) noted that a positive effect of loneliness is that it makes people strive for awareness and creativity. The author further explained that unless people experience their loneliness, a significant capacity of their lives and an important aspect of being human remains undeveloped. Based upon this view, Moustakas further postulated that attempting to escape from experiencing loneliness will lead people to feel isolated from their own resourceful life and not develop themselves. Madhavi (2014) agreed, adding that loneliness is a pathfinder and a motivator for people to identify their own strengths. This narrative inquiry explored the experience of loneliness among two older Sinhalese women post-migration, living in Canada. Madhavi identified the positive impact of loneliness in one participant and observed a negative impact in the other, wherein the participant had lost her self-worth because of feelings of loneliness.

These findings support the argument that loneliness is a highly individual experience, depending on individual characteristics, places, and situations (Heinrich & Gullone, 2006), and is hence, culturally constructed. However, it prompts thinking under what circumstances people feel loneliness as a positive drive in their lives. This is an area that requires further research. Moreover, using quantitative approaches with larger samples would help to understand the many aspects associated with this phenomenon.

2.5.1 Cultural Understandings of Loneliness

Although loneliness is a universal phenomenon shared by everyone, at some point in their lives, it is a highly subjective feeling influenced by personal, situational, social, and cultural contexts (Heinrich & Gullone, 2006; Rokach, 2018). As such, cultural elements undoubtedly affect the timing, intensity, and manner of experiencing loneliness. Studies examining cross-cultural variations of loneliness among older people are limited; however, within these studies, many have focused on identifying the cultural variations in intensity and predictors of loneliness.

Emphasising the importance of culture in the experience of loneliness, McHugh Power, Hannigan, Carney, and Lawlor (2017) identified that individual explanations of loneliness are incomplete without consideration of the cultural context a person inhabits. This argument is further substantiated by a study conducted with older people across three countries—Netherlands, Italy and Canada. In this study, Van Tilburg, Havens, and de Jong Gierveld (2004) found significant differences in levels of loneliness in three cultural contexts. They explained that partner relationships had varying degrees of effect on participants' emotional loneliness across the three cultures. For example, according to the ANCOVA results of the study, the estimates of the correlation coefficient of emotional loneliness explained by losing a partner relationship were highest (0.64) in Manitoban older adults, followed by Dutch older people (0.54), with the lowest level of emotional loneliness reported by Tuscans (0.47).

Lykes and Kemmelmeier (2014) observed the cross-cultural differences in predictors of loneliness in several individualistic and collectivistic cultural settings. They found that in many collectivistic cultures, less contact with family members and a lack of caring interpersonal bonds were significant predictors of loneliness in older people. In

individualistic cultures, requiring assistance for daily living, having less contact with friends outside the family, and no confidants to talk to were significant predictors of loneliness among older people. Barreto et al. (2021) added that people who lived in collectivistic cultures are more vulnerable to loneliness when these ties breakdown than those who lived in individualistic cultures. In collectivistic cultures where strong kinship and friendship ties exist, people are highly sensitive to social exclusion. Therefore, these people have the greatest likelihood of being lonely. This contrasts with more individualistically oriented cultures (Hofstede, 2016; D. P. Johnson & Mullins, 1987). These sociocultural differences may contribute to predicting varying degrees of loneliness in different cultural contexts. The cognitive discrepancy approach to loneliness identified by Perlman and Peplau (2008) provides a better platform to understand how a particular culture influences people's experience of loneliness. As per the authors, feelings of loneliness are a result of unmet social expectations. Individual social expectations are formed based upon a person's social and cultural context (de Jong Gierveld & Tesch-Römer, 2012). Hence, differences in expectations may be influenced by cultural values and norms in a particular society; thus, there are varying levels and predictors of loneliness among people from different cultural contexts.

Further, some studies discuss how cultural changes experienced by people influenced their loneliness. Jenny De Jong Gierveld, Van der Pas, and Keating (2015) explained that the intensity of the experience of loneliness may increase when people migrate and resettle in new cultures. Further substantiating this notion, Treas and Mazumdar (2002) noted that older people feel lonely in a new culture due to elements such as environmental factors, adjusting to communicating in an unfamiliar language, unfamiliar norms and customs, and being apart from their ethnic enclave. Sawir, Marginson, Deumert, Nyland, and Ramia (2008) referred to this as cultural loneliness which is induced when people lose their preferred cultural and linguistic environment.

Erlich (1998) emphasised language as a cultural element and explained that gaining a better understanding of loneliness in people is hampered by semantic differences in languages. Van Tilburg et al. (2004) concurred that direct comparison of loneliness indicators across cultures is limited due to language differences. For example, in Biblical Hebrew, the word *badad* meant "to be alone"; while in Modern Hebrew, it has

been changed to the word *b'didut*, meaning "loneliness". Different German words—*einsamkeit* and *vereinsamung*—are used to express lonely feelings (D. P. Johnson & Mullins, 1987), as cited in Ehrlich, 1998, p. 2). In Chinese, the term *gu du* is used to express the feeling of loneliness (Z. Yan, personal communication, June 20, 2019). Further, there are different, country-specific cultural interpretations of loneliness, making the terms difficult to translate directly into English.

Some studies have focused on identifying different coping strategies older people used to cope with loneliness across cultures. For example, Rokach, Orzeck, and Neto (2004) examined cross-cultural variations in strategies used by North American and Portuguese older people and observed a significant difference between the strategies used by participants. North American participants relied more on strategies such as reflection and acceptance, distance and denial, and religion and faith to cope with loneliness than the Portuguese participants.

The above discussion has demonstrated the culturally distinct nature of loneliness; this signifies that it is imperative to conduct in depth-cultural studies on loneliness to gain better understanding. While numerous studies have been conducted on loneliness in older people, this topic has seldom been addressed in Sri Lanka, specifically among the Sinhalese ethnic group. Given the lack of empirical evidence relating to loneliness in the Sinhalese population in Sri Lanka, the next section will briefly discuss the phenomenon of loneliness in this context.

Loneliness in the Sinhalese Community in Sri Lanka

In Sinhalese, *hudakalaawa* is the equivalent word for the English term, 'loneliness' and is mostly used in written language. Sinhalese people do not use this word in their everyday spoken language, they instead use the words *paaluwa* or *thanikama* to express feelings of loneliness. As Erlich (1998) explained, these culturally specific colloquial words in the Sinhalese language do not help others to understand loneliness in Sinhalese culture. Further, a few studies currently available on loneliness in older people in Sri Lanka do not provide adequate understanding of the issue. One study conducted by Wijesiri et al. (2019) in Sri Lanka found that older people living in aged care facilities experienced loneliness as emotional suffering and inner pain. They further found that participants cope with loneliness by accepting it and engaging in

religious activities. However, these authors did not explicitly focus on the Sinhalese population. Further, a small sample from only three aged care facilities cannot represent the experience of loneliness in most older people in the country. Therefore, this current study seeks to address the existing dearth of knowledge about older people's loneliness in the Sinhalese context in Sri Lanka. Apropos of this, the following section discusses loneliness in old age.

2.6 Loneliness in Old Age

Experiencing loneliness in old age results from an interplay between individual and social factors and certain life transitions. While everyone experiences transitions in life, they significantly impact people as they age. Therefore, transitions in later life can mean older people become more vulnerable to being lonely. According to Ogrin et al. (2021), later life transitions associated with getting older, changes in living arrangements, separation or loss of intimate relatives or bereavement, personality characteristics, poor health, and loss of mobility play a significant role in older people's experience of loneliness. Dahlberg, N. Agahi, and C. Lennartsson (2018) concurred, identifying that older people experience loneliness more frequently than people in younger age groups, particularly due to health-related factors in old age and changes to their social environment. A meta-analysis conducted by Cohen-Mansfield, Hazan, Lerman, and Shalom (2016) revealed that loneliness in older people was significantly associated with demographic variables, including being female, unmarried, of lower income, older age, and lower educational levels. The antecedents of loneliness identified above will be discussed in the next section.

2.6.1 Demographic Predictors of Loneliness in Old Age

As discussed above, older age is a significant demographic predictor of loneliness, and some studies suggest that the experience of loneliness is increased with age (Dahlberg et al., 2018; Hajek & König, 2020; Nyqvist, Cattan, Conradsson, Näsman, & Gustafsson, 2017; K. Yang & Victor, 2011). Luanaigh and Lawlor (2008) agreed, explaining that the oldest-old (above 80 years of age) (Chou & Chi, 2005) are more vulnerable to being lonely than people in younger older-age groups. Hawkley and Cacioppo (2010) supported this claim, stating that levels of loneliness increase in old age, particularly among people 70 years and above. The high prevalence of loneliness, especially in the

oldest old-age, has been attributed to certain age-related changes. For instance, disability, poor health, death of a spouse and significant others, and lack of economic resources limit their social engagement (Cohen-Mansfield & Parpura-Gill, 2007; Neville et al., 2018; Penning, Liu, & Chou, 2014).

More specifically, as an age-related factor, poor health is a significant predictor of loneliness in old age. Aartsen and Jylhä (2011) claimed that older people experience many age-related physical changes and mental health issues, which are potential contributors to loneliness. Limited mobility hinders older people's social participation, restricting their ability to maintain interpersonal relationships and social networks. Furthermore, hearing and visual impairments may impede communication with others leading to social isolation. This social isolation triggers lonely feelings, known as social loneliness (de Jong Gierveld, Van Tilburg, & Dykstra, 2006). According to Arslantaş, Adana, Ergin, Kayar, and Acar (2015), the existence of chronic disease, physical handicaps, and regular medication use are some of the health-related factors that contribute to loneliness in old age. These authors explained that participants with physical handicaps and chronic diseases felt more loneliness than those with no chronic diseases and handicaps.

Of importance is that mental health issues, such as depression, can be a barrier to social participation and maintaining social relationships, leading to loneliness (Cohen-Mansfield & Parpura-Gill, 2007). Kwegyir Tsiboe (2021) provided evidence from his qualitative study to support the claim that poor health predicts loneliness. The author explored the nature of loneliness among older people in a rural community. He found that participants perceived that the participants' deteriorating health led them to feel lonely.

Gender also influences the prevalence of loneliness in people. While some studies indicate that older women are lonelier than older men, others state that older men are at higher risk of being lonely than older women. However, according to Aartsen and Jylhä (2011), older women are more prone to being lonely than their male counterparts. Dong and Chen (2017) identified that older women living alone who have a lower health status and poorer quality of life are more likely than men to experience loneliness. They also found that women with a lower education status were

more likely to experience loneliness when compared to men with the same educational level. Greater longevity in women has also contributed to them being lonelier than men. Most women outlive their partners and become widows in later life, and, thus, feel loneliness more intensely than men (Dahlberg et al., 2018). Challenging this argument, the International Longevity Center-UK ([ILC-UK], 2014) found that older men were lonelier than older women. This finding is further substantiated by Neville et al. (2018) in New Zealand, who explained that older men with a lower and negative purpose in life are at a higher risk of being lonely. The ILC-UK report further notes that older men are lonely due to having less contact with their children compared to older women who have closer contact with their children. Bates and Taylor (2012) supported these findings, explaining that grandfathers who have less contact with their grandchildren are more likely to be lonely than grandmothers. Comparing the difference in marital status between males and females, Dykstra and de Jong Gierveld (2004) added that non-married older men are emotionally and socially lonelier than their female counterparts.

The preceding considerations indicate that the association between loneliness and gender is inconclusive. Some studies showed a significant difference in loneliness in men and women, while others stressed that no significant gender differences exist. However, a possible explanation for the established argument that women are lonelier than men is that women now (compared to the past) are more willing to admit and report feelings like loneliness. Conversely, men are reluctant to disclose their loneliness, which is socially stigmatised in some communities (Tsai & Reis, 2009; G. Wang et al., 2011). Thus, gender bias associated with self-disclosure may result in the underreporting of loneliness in men. However, this issue has not been adequately studied in the Sri Lankan context, so sufficient evidence is not available to prove or disapprove the argument.

As has been established in the existing literature, poor economic status and level of education are also significant demographic contributors to loneliness in old age. After retirement, some older people experience financial constraints that restricted them from participating in social events, resulting in reduced social networking opportunities. Additionally, Savikko et al. (2005) explained that a lack of education prevents people from getting well-paid jobs and, thus, they experience financial

constraints. Poor education, combined with poor financial resources, meant fewer opportunities for social networking, resulting in loneliness. In addition to these demographic predictors of loneliness, there are some social environment-related factors that significantly impact older people's loneliness (Dahlberg et al., 2018). These factors are discussed in the following section.

2.6.2 Socio-Environmental Predictors of Loneliness in Old Age

As people age, they experience less productive roles and undergo changes in social status, reducing satisfying social connections. The absence of such connections creates an adverse social environment, leading older people to feel lonely due to the absence of quality relationships and perceived social support from friends and family members (K.-L. Chou, Cacioppo, Kumari, & Song, 2014).

Feelings of loneliness are significantly influenced by individuals' interactions with their social environment. Fagerström, Gustafson, Jakobsson, Johansson, and Vartiainen (2011) suggested that a lack of confidence in the neighbourhood, friends, and family members induced feelings of insecurity in people's minds, leading them to feel lonely, particularly in old age. Nicolaisen and Thorsen (2014) claimed that individuals' childhood experiences gained from their social environments, influenced their feelings of loneliness in later life. In addition, Aartsen and Jylhä (2011) noted that losing a partner and reducing of social activities by retirement age are other social environment-related risk factors for loneliness in old age**.** Further, Ayalon, Shiovitz-Ezra, and Palgi (2013) identified that the frequency, content, and meaning of social contacts are determinants of one's feeling of loneliness.

Some authors found changes in living arrangements as a social environment-related factor predicted loneliness in older people (Batson & Powell, 2003). They explained that grandparents are at risk of feeling lonely when they experience changes to the family structure, especially when their adult children move away from extended families forming their own nuclear families. This change was common in many Southeast Asian countries where the extended family was the most common household structure (Dommaraju & Tan, 2014), as is the case in Sri Lanka. Due to these changes, grandparents lose their reciprocal family relationships and the respect

received from their children and grandchildren, and this can result in feelings of loneliness.

The nature of living arrangements could also contribute to loneliness in older people. Savikko et al. (2005) identified that older people living in residential aged care homes were more lonely when compared to their counterparts living in their own homes (Brownie & Horstmanshof, 2011; Pinquart & Sorensen, 2001). Findings from a 2020 systematic review revealed about 61% of older people living in care homes feel moderate loneliness and 35% feel severe loneliness (Gardiner, Laud, Heaton, & Gott, 2020), suggesting that it is a significant issue in residential care facilities and nursing care homes. Wijesiri, Samarasinghe, and Edberg (2019) studied loneliness in aged care facilities in Sri Lanka and found that older people living in aged care facilities experienced loneliness as an inner pain and emotional suffering caused by feeling abandoned by their families. This study was conducted in three residential aged care facilities in one district—Colombo.

Moreover, some authors investigated reasons for the argument that older people living in aged care facilities are at a higher risk of being lonely. These studies demonstrated that people living in aged care facilities have less freedom to make their own decisions and control their lives; they, therefore, feel that they have become dependent and lost their autonomy (N. G. Choi, Ransom, & Wyllie, 2008; Otsuka, Hamahata, Komatsu, Suishu, & Osuka, 2010; Tuckett, 2007). Feeling dependent, being idle, and just waiting, which are mainly attributed to the aged care environment, make residents feel bored and lonely (Ice, 2002). Andrew and Meeks (2018) identified that residents with little control over their life reported higher levels of loneliness than those with more control. In addition, residents with low satisfaction reported higher levels of loneliness than those with high satisfaction. Accordingly, the experience of loneliness in older people living in aged care facilities is multifactorial and explained by physical, psychological, and social aspects of life (Arslantaş, Adana, Ergin, Kayar, & Gülçin, 2015; Dahlberg, L. Andersson, K. J. McKee, & C. Lennartsson, 2015b; Eloranta, Arve, Isoaho, Lehtonen, & Viitanen, 2015).

The discussion so far has established that living in an aged care facility can cause feelings of loneliness in older people. However, there are counterarguments that

suggest that living in residential care facilities increases a sense of belonging in older people, thereby reducing their feelings of loneliness (Prieto-Flores, Fernandez-Mayoralas, Forjaz, Rojo-Perez, & Martinez-Martin, 2011). Interestingly, Neves, Sanders, and Kokanović (2019) observed this association, and they argued that residential care can both alleviate and enhance loneliness in older people. They observed that having connections with dedicated staff in the facility and maintaining relationships with peers led to a decrease in participants' loneliness. However, study findings regarding this association have often been inconsistent. An alternative explanation for inconclusive findings may be cultural differences among the different population groups studied. Therefore, more cross-cultural studies on the subject are needed to establish a robust argument. Given that few studies have been conducted in Sri Lanka, there is not sufficient evidence from this context to support or negate the argument. Therefore, the need to study loneliness in older people in Sri Lankan aged care facilities is evident.

2.6.3 Impact of Loneliness on the Health of Older People

Older people face many challenges later in life, owing to their greater longevity (N. C. Hall, Chipperfield, Heckhausen, & Perry, 2010), including loneliness. Loneliness is a significant challenge for society and healthcare systems worldwide (Chalise, 2010) due to its negative impact on older peoples' health. According to J. T. Cacioppo, Cacioppo, Capitanio, and Cole (2015), loneliness can cause many health issues, particularly in older people, and it negatively impacts their physical and psychosocial functioning (Crewdson, 2016; Miller, 2011; Steptoe, Shankar, Demakakos, & Wardle, 2013). Based on existing empirical and theoretical literature, several theoretical pathways have been proposed to explain the impact of loneliness on health. One such pathway is the "Loneliness Model" (Hawkley & Cacioppo, 2010). According to this model, loneliness triggers an unsafe feeling that leads lonely people to expect more negative social interactions and keep in mind more negative social information. Therefore, people who feel lonely perceive their social environment as a threatening place and expect more negative responses from society. These negative expectations create a distancing from society which, in turn, increases feelings of loneliness. This self-reinforcing effect of loneliness creates psychological and physiological reactions in the body and mind. Psychological reactions include feelings of stress, anxiety, and low self-esteem leading

to adverse mental health outcomes. Physiological reactions activate neurobiological and behavioral mechanisms that cause adverse physical health outcomes (Hawkley & Cacioppo, 2010). Older people who experience loneliness are particularly challenged by these effects owing to age-related changes that occur in later life. Therefore, the association between loneliness and adverse health effects is considered to be especially relevant for older people (J. T. Cacioppo & Cacioppo, 2014). The impact of loneliness on older peoples' psychological health is discussed in the next section.

Impact of Loneliness on the Psychological Health of Older People

For a number of years now, loneliness has been identified as an issue that impacts people's mental health and can be explained by the Loneliness Model, described above. Mounting evidence demonstrates the perpetuated effects of loneliness on mental health of older people as discussed below.

Emphasising the influence of loneliness on people's mental health, Shankar, McMunn, Banks, and Steptoe (2011) identified that increasing loneliness is strongly associated with depressive symptoms among older adults. The association between loneliness and depression has been widely discussed. For example, a 10-year longitudinal study found that loneliness was a significant risk factor for long-term trajectories of depressive symptoms among older people (Heikkinen & Kauppinen, 2004). In addition, studies by Gonyea, Curley, Melekis, Levine, and Lee (2018), Martín-María et al. (2021), and Beljouw et al. (2014) reveal a greater level of both chronic and transient loneliness is significantly and positively associated with a higher level of depressive effects in older people.

Providing an alternative explanation for the association between loneliness and depression in old age, Bryant (2010) suggested that older people may be less likely to express their emotions and feelings, especially their sense of loneliness, because of the social stigma linked with loneliness (Jenny De Jong Gierveld & Tilburg, 2006). Therefore, loneliness remains under-identified in older people, leading, over time, to increased levels of stress ultimately resulting in depression. In line with the above discussion, many authors contend that loneliness is found to be a significant risk factor for depression in older people. Conversely, some authors argue that being depressed related to a greater probability of experiencing loneliness in old age (Domènech-Abella

et al., 2017). Dahlberg, Andersson, McKee, and Lennartsson (2015a) and several other authors added that increased depression is a significant predictor of loneliness in older people (Aylaz, Aktürk, Erci, Öztürk, & Aslan, 2012).

However, some studies negated this argument and found that depressive symptoms did not predict loneliness (J. T. Cacioppo, Hawkley, & Thisted, 2010; Park et al., 2013). In view of the above discussion, discordant findings have been presented on the relationship between loneliness and depression. Although the association between loneliness and depression is well documented, distinguishing causal elements, such as whether depression causes loneliness or loneliness causes depression, are not well understood. The arguments, however, convince that both loneliness and depression act synergistically, negatively impacting the health of older people.

Some studies show that loneliness is associated with anxiety among older people. For example, Kearns, Whitley, Tannahill, and Ellaway (2015) found that loneliness influences social anxiety among older people. Similarly, Cacioppo, Capitanio, and Cacioppo (2014) review of neuroscience experimental studies showed that loneliness also impacts sleep fragmentation in people. Crewdson (2016), Khademi, Rashedi, Sajadi, and Gheshlaghi (2015), and Ribeiro, Teixeira, Araújo, Afonso, and Pachana (2015) also claimed a strong positive correlation between levels of loneliness in older people and anxiety levels. Possible explanations for this association are that older people become lonely due to the loss of interpersonal relationships, and then feel fear of separation and loss, leading to anxiety. In their study, Boehlen et al. (2020) observed a gender difference in the levels of anxiety and claimed that older women with loneliness reported a higher level of anxiety than older men. The alternative explanation for the observed difference may be the fact that anxiety disorder is more frequently diagnosed in females than in males (Canuto et al., 2018). However, regardless of the gender difference, anxiety as a consequence of loneliness is associated with disability and poor quality of life (Porensky et al., 2009), particularly in old age. Therefore, interventions that reduce loneliness may improve quality of life in older people.

Loneliness impacts older people’s mental functions and well-being in numerous ways. Several studies found that loneliness is associated with impaired cognitive function and

cognitive decline over time (Gow, Pattie, Whiteman, Whalley, & Deary, 2007; Maharani, Pendleton, & Leroi, 2019; Zhong, Chen, Tu, & Conwell, 2017). A reciprocal association between loneliness and cognitive decline has also been noted (Burholt, Windle, Morgan, & Team, 2017). However, authors recommend further studies to determine the causal relationship between the two variables. Examining gender differences in the association between loneliness and cognition, Zhou et al. (2019) found that the impact of loneliness on cognitive impairment is more significant among older men than older women. Also studying the association between loneliness and cognition in old age, Zhong, Chen, and Conwell (2016) examined the effects of transient and chronic loneliness on cognitive function in older people. They concluded that while both transient and chronic loneliness are significant risk factors for cognitive decline in old age, chronic loneliness shows a more significant impact. Examining the mediating effect of education on the association between cognition and loneliness in old age, Shankar, Hamer, McMunn, and Steptoe (2013) found that loneliness is associated with poorer cognitive function, particularly in older people with low levels of education. H. Wang et al. (2020) challenged this finding, arguing that loneliness in old age is not significantly associated with cognitive function decline in old age. The findings both for and against the supposition that loneliness is significantly associated with cognitive decline in old age show that the argument is inconclusive. Therefore, further studies on the issue are required.

Some authors found that loneliness triggers suicide ideation among older people (Chou, Jun, & Chi, 2005; Gomboc et al., 2022; Li, Xu, & Chi, 2016; Stravynski & Boyer, 2001; Wiktorsson, Runeson, Skoog, Östling, & Waern, 2010; D. Zhang et al., 2021). Cukrowicz, Cheavens, Van Orden, Ragain, and Cook (2011) concurred, noting that levels of loneliness are positively correlated with suicide ideation. Their regression coefficient results revealed that if the level of loneliness increases by 1 unit, suicide ideation is increased by 1.07 units. Along the same line, Lutzman, Sommerfeld, and Ben-David (2021) explained that older men who are lonely, and experience physical pain, are at particular risk of suicidal ideation.

Studies have found that loneliness exacerbates harmful behaviours such as alcoholism among older people (Åkerlind & Hörnquist, 1992), and is particularly evident in women who experience loneliness (Blow & Barry, 2002). Older women are more likely than

men to outlive their spouse and thus experience loneliness and are at risk of alcohol problems. A study investigating alcohol addiction among older people found that loneliness contributed to alcoholism in 43% of study participants (Farragher et al., 1994). Gutkind, Gorfinkel, and Hasin (2022) added that people who feel lonely report significant use of alcohol compared with those who do not feel lonely (Purser, 2022). Challenging that argument, some studies revealed that loneliness can also be associated with a reduced frequency of alcohol consumption (Canham, Mauro, Kaufmann, & Sixsmith, 2016); hence, the causal relationship between the two remains complex and poorly understood.

Additionally, loneliness has been associated with other harmful health practices such as smoking, poor nutrition, and altered sleep patterns among older adults (Hawkley & Cacioppo, 2010). Suggesting a synergetic causative relationship between loneliness and poor sleep, Jacobs, Cohen, Hammerman-Rozenberg, and Stessman (2006) and Hawkley, Preacher, and Cacioppo (2010) stated that loneliness can cause sleep disturbance in old age, which further aggravates subsequent loneliness.

Furthermore, diminished capacity for regulation of thinking was found to be another consequence of loneliness (Hawkley & Cacioppo, 2010), wherein hyper-alertness of perceived social threats, triggered by feeling of loneliness, impairs the ability to regulate individuals' thoughts, behaviours, and feelings crucial to achieving personal goals and complying with social customs. The impaired ability of lonely people to regulate their thinking has an impact on maintaining formal lifestyle behaviours, which in turn threatens their health.

The above discussion shows the negative impact of loneliness on mental health in old age. Further, the literature on loneliness suggests that the impact of loneliness on mental health, in turn, increases the risk of negative physical health outcomes. For example, Hawkley and Cacioppo (2010) claimed that loneliness in older people causes emotional changes that affect their physical health, stimulating certain adverse neurobiological and behavioural mechanisms in the body. The impact of loneliness on physical health in old age is discussed in the next section.

Impact of Loneliness on the Physical Health of Older People

The growing body of literature on loneliness demonstrates a significant impact of loneliness on physical well-being, including increases in morbidity and mortality, especially in older people (Hawkley & Cacioppo, 2007; Sevil, Ertem, Kavlak, & Coban, 2006). This is supported by Gale, Westbury, and Cooper (2018) who identified that older people who experience a higher level of loneliness are at greater risk of becoming physically frail. Taube, Kristensson, Sandberg, Midlöv, and Jakobsson (2015) agreed that loneliness is a potential problem among frail older people. A longitudinal study on loneliness confirmed that loneliness that accumulates over time is likely to accelerate the physiological effects of aging, increasing morbidity and mortality in older people (Shiovitz-Ezra & Ayalon, 2010). Similarly, loneliness has been found to be a biopsychosocial stressor that stimulates adverse changes in vital physiological functions in the body (Holt-Lunstad & Smith, 2016; Leigh-Hunt et al., 2017). These physiological changes cause various physical health problems including heart disease, diabetes, high blood pressure, obesity, and stroke, particularly in old age (Petitte et al., 2015; Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016). Hence, chronic loneliness in old age is significantly and positively associated with increased physician visits and higher health care utilization (Gerst-Emerson & Jayawardhana, 2015).

Understanding the impact of loneliness on cardiovascular health, Sorkin, Rook, and Lu (2002) stated that loneliness is a significant risk factor for heart disease among older people. Using regression analysis, the authors claimed that for every unit increase in loneliness, there is a threefold higher incidence of diagnosed heart disease among older people. In addition, a 19-year follow-up study by Thurston and Kubzansky (2009) claimed that older people who suffer from loneliness have a greater chance of developing cardiovascular diseases (Valtorta, Kanaan, Gilbody, & Hanratty, 2018). Further substantiating the impact of loneliness on cardiovascular health, other studies found that loneliness is a risk factor for increased blood pressure, particularly in old age (Hawkley, Masi, Berry, & Cacioppo, 2006; Momtaz et al., 2012). Further, elevated sympathetic-adrenergic reactions and stress responses triggered by loneliness are believed to increase the susceptibility to cardiovascular diseases among lonely people (J. T. Cacioppo et al., 2000; Mahon, Yarcheski, & Yarcheski, 1998; Uchino, Cacioppo, & Kiecolt-Glaser, 1996).

The impact of loneliness on physical health was further investigated by Buchman et al. (2010a) who explained that loneliness correlates significantly with declining motor activities among older people and is particularly related to a rapid decline in motor function. A community-based longitudinal cohort study found that motor decline was 40% more rapid for each 1-point increment of loneliness, and that this rate of decline per year is associated with a 50% increased risk of death among older adults (Buchman et al., 2010b). McCaffery et al. (2020) conducted a correlational study examining the association between loneliness and functional mobility in older adults. After adjusting for potential confounders, they found loneliness in older adults was strongly associated with higher disability scores, slower gait speed, and weaker hand grip. Moreover, understanding the effect of loneliness on functional ability in older people, Hawkley, Thisted, and Cacioppo (2009) and several other authors suggested that loneliness is associated with lower physical activity levels (Philip, Polkey, Hopkinson, Steptoe, & Fancourt, 2020; Shankar et al., 2011). Cohen-Mansfield et al. (2016) meta-analysis also found that loneliness was significantly associated with poor functional status and poor self-reported health in older adults (Jessen, Pallesen, Kriegbaum, & Kristiansen, 2018). Another study found that loneliness was associated with a decrease in all functional abilities in old age (C. M. Perissinotto, Cenzer, & Covinsky, 2012). These authors noted that compared to older people who are not lonely, activities of daily living decreased by 24.8% in lonely older people. Compared to those who were not lonely, the ability to climb stairs in participants with loneliness decreased by 40.8% (C. M. Perissinotto et al., 2012).

In addition to the health issues discussed above, loneliness and its perpetuating effects may cause other adverse health outcomes, such as diabetes. Hackett, Hudson, and Chilcot (2020) found that loneliness is a significant predictor of incident type II diabetes in older people. Further analysis indicated that when a range of covariates was controlled, a 1-point increase in loneliness is associated with a 41% increase in the onset of type II diabetes in participants. Foti et al. (2020) claimed that when adjusting for other related covariates, each unit increase in loneliness shows a corresponding 8% increase in the incidence of diabetes. The counterargument, whereas, is that patients diagnosed with diabetes reported higher levels of loneliness (Aftab, Abid, Muhammad, & Haris, 2015; Kusaslan Avci, 2018). However, negating the suggested associations

both ways, Christiansen, Larsen, and Lasgaard (2016) argued that there is no association between loneliness and diabetes. In view of this, further studies are required to establish a robust causal relationship between loneliness and diabetes.

The substantial body of literature elucidates that loneliness is a significant risk factor for physical health, leading to multimorbidity, particularly in old age (Jessen et al., 2018), resulting in increased mortality. Findings from a 7-year follow-up study identified that the increased likelihood of mortality was 26% among participants who experienced loneliness (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Shiovitz-Ezra and Ayalon (2010) found that chronic and situational loneliness is associated with all-cause mortality among older people, with chronic loneliness having a higher risk of all-cause mortality when compared to situational loneliness. Tilvis, Laitala, Routasalo, and Pitkälä (2011) claimed that after controlling for other related variables, mortality risk is 1.33 times higher in those who are lonely than in non-lonely older people. Henriksen, Larsen, Mattisson, and Andersson (2019) found that lonely older women have a significantly increased risk of mortality compared with lonely older men.

As previously identified, the Loneliness Model explains the relational path of how loneliness triggers health issues in the body (Hawkley & Cacioppo, 2010). According to the model, loneliness stimulates the neuroendocrine system, which leads the body to induce stress. Stress causes multiple physiological effects that affect many body organ systems, triggering disease conditions, as described above.

Following the above discussion of the antecedents and consequences of loneliness in old age, the study findings on how older people perceive their loneliness and what loneliness means to them are presented below.

A qualitative study by Dong et al. (2012) on perception of loneliness in Chinese older people found two main themes: emotional loneliness and social loneliness. Participants identified emotional loneliness in terms of the absence of intimate partnerships, missing satisfying parent-child relationships, and close friendships. Participants perceived social loneliness as related to lack of social contacts, participation in social activities, and the absence of social integration (Dong, Chang, Wong, & Simon, 2012). The authors further claimed that social, cultural, psychological,

and physical health issues contributed to participants feeling of loneliness, and they feel stress, grief, anxiety, and psychological pain associated with their loneliness.

Similarly, Lou and Ng (2012) explored how older Chinese people cope with loneliness. Compared to the above study, these authors expanded their focus to examine strategies used by older Chinese people to cope with loneliness. Their findings suggest that participants adjusted the expectations they had towards their extended family and decided to accept loneliness by separating from family to give them freedom. A further coping strategy was comparing themselves with people who are more unhappy than them (downward comparisons).

The Chinese population was also studied by Wong, Chau, Fang, and Woo (2017) who explored Chinese older adults' experience of loneliness from a societal perspective. Their findings revealed participants experience loneliness as a result of social alienation. The authors identified three reasons for social alienation: insufficient care available for older people, a growing distance between older people and society, and older people's disintegrating identity in society due to their weakened presence and voice. Further, analysis revealed that in response to social alienation, lonely older people acquired passive lifestyles and developed negative feelings such as helplessness and marginalisation.

Exploring the experience of loneliness among frail older people living at home in Sweden, Taube, Jakobsson, Midlöv, and Kristensson (2016) identified four themes related to participants' experience of loneliness: being in a bubble, barriers, hopelessness, and freedom. Participants interpreted being in a bubble as living in an ongoing world from which they were excluded due to their losses, such as their capacity and close attachments. An aging body, feelings of insecurity, and loss of important persons were identified by participants as physical, psychological, and social barriers to overcoming loneliness. Hopelessness, the third theme, explains how participants felt when they were unable to overcome the barriers. The fourth theme, freedom, explains participants' sense of freedom to make their own decisions within the bubble. Participants perceived life in the bubble as both hopeless with barriers, yet also positively as a place where it was possible to make their own decisions. Thus, they wished to be in the bubble when they felt they could not escape from it. This strategy

is comparable to the coping mechanism outlined by Lou and Ng (2012) where expectations towards family were modified. The metaphor participants used to identify their loneliness, “bubble”, represented their feeling of being restricted to a limited context.

A Canadian study by J. Hwang, Wang, Siever, Medico, and Jones (2019) explored older adults’ experience of loneliness, social isolation, and perceived benefits of community-based interventions in alleviating loneliness. These authors found several themes related to participants’ reasons for loneliness and how they perceived loneliness. They claimed that significant life changes such as retirement, no peer groups at home, personal habits, and difficulty in making social connections contributed to participants’ loneliness. These participants experienced loneliness as a feeling of distress and craziness that triggers an urge to commit suicide and feeling mentally unwell. The experiences and reasons for loneliness described by participants of this study are similar to those of other studies.

To explore how older adults manage their loneliness, Kharicha et al. (2021) conducted a study with older community-dwelling people in England. Two main themes derived from the range of coping strategies were identified as outside and inside worlds. Physical engagement with the world beyond their home, using technologies, planning, and anticipation in relation to community activities, and engagement with purpose were identified as coping strategies when in the outside world. Participants described coping strategies they inwardly planned including acceptance, endurance, revealing and hiding, positive attitudes and motivation, and distraction. In addition to the inside and outside world coping strategies, reflective analysis found some strategies overlapped both categories, such as interests and hobbies, comparative thinking (comparing self with others), religion and spirituality, and using alcohol. Similarly, Lou and Ng (2012) found comparative thinking a coping strategy used by participants to cope with loneliness, as presented by the term, “downward comparison.” However, the interpretations of both studies carry the same meaning, comparing oneself with others in a worse condition.

Another study by Hauge & Kirkevold ((Hauge & Kirkevold, 2010)) explored older Norwegian men’s and women’s understanding of loneliness and how they dealt with it.

This interpretive study found that older people experience loneliness as an awful, nagging, and painful feeling and as being disconnected from society. According to these authors, participants believed that a lack of social engagement, their lack of personal abilities, not being important to others, and being forgotten by others were causes of loneliness. These findings further identified strategies used by participants to cope with loneliness. Common strategies included doing something by themselves such as making a meal, doing the dishes, cleaning the house, going for a walk, listening to music, watching TV, or making phone calls. Unlike Kharicha et al. (2021), Hauge and Kirkevold (2010) did not categorise the coping strategies under the outside and inside world dichotomy. However, participants' coping strategies appeared similar in both studies.

Drawing on the established claim that older people living in aged care facilities are lonelier than their community-dwelling counterparts, Neves et al. (2019) qualitative study explored how older Australians live through and cope with loneliness while staying in aged care facilities. Participants perceived their loneliness as a persistent feeling of sickness developed due to losing social ties, the aging process, and their personal troubles. Participants used individual strategies to cope with loneliness, such as getting distracted by activities and occupying the mind with things like going for a walk, listening to music, watching TV, praying, cleaning, having a little cry, and looking out the window. The social strategies they used to cope with loneliness were talking to family, staff, or other residents. A similar study by Paque, Bastiaens, Van Bogaert, and Dilles (2018) explored the feeling of loneliness in older adults living in a long-term care facility. The unmet need for a meaningful relationship and loss of self-determination due to institutionalisation emerged as recurrent themes representing participants' reasons for their loneliness.

In the United States, Morlett Paredes et al. (2021) conducted a study with older adults living independently within a senior housing community specifically designed to reduce social isolation. Participants were interviewed regarding the characteristics of their loneliness and coping strategies. The study presented three main themes: risk and protective factors for loneliness, the experience of loneliness, and coping strategies for preventing or overcoming loneliness. Participants viewed age-related losses and lack of social skills as risk factors for loneliness. They believed protective personality traits,

such as faith and enjoyment of solitude and social skills, helped them to connect with others and contributed to preventing loneliness. Further, participants experienced loneliness as feelings of sadness, lack of meaning, and feelings of emptiness. The authors identified acceptance of functional decline in aging, helping others with compassion, and seeking companionship as strategies to cope with being lonely.

Oldest old adults (>80 years) who lived alone in northern Sweden were interviewed by Graneheim and Lundman (2010) regarding their experiences of loneliness. The findings identified that some participants experience loneliness as suffering from declining bodily functions, being dependent, mourning significant others, lacking meaning in life, and feeling abandoned. Meanwhile, other participants described loneliness positively, as feeling confident and free. However, the authors did not discuss the varying positive and negative experiences based on age categories or gender, rendering the outcome inconclusive; thus, further understanding of age and gender difference in positive and negative experiences of loneliness in these participants is not possible.

A multisite Australian study recruited older people from various geographical areas and varying types of accommodations, including retirement villages, long-term care centers, independent living units, and the community. Undertaking semi-structured interviews, Stanley et al. (2010) found that participants described their loneliness as relating to four dimensions: private, relational, temporal, and connectedness. Participants perceived loneliness as private, personal to them, and a negative experience that cannot be put into words and difficult to speak about. Further, they identified loneliness as a failure of some kind, associated with shame. In the relational dimension, participants viewed loneliness as resulting from losing good quality relationships and believed that strong relationships with others prevented loneliness. According to participants, the temporal dimension explained their feeling of loneliness as related to the time of day or, more broadly, to the time of their life. For example, some participants experienced a more intense feeling of loneliness at night than in the daytime. From the dimension of connectedness, participants described loneliness as a feeling of wanting to connect with the community. This dimension explains the importance of older people having and maintaining connections with society at a broader level. In this study, greater understanding could be achieved if the identified dimensions of loneliness had been discussed based on participants’ accommodation

type, and how participants' perceptions of loneliness differed across geographical areas.

From South African perspective, older adults experienced loneliness as an unpleasant feeling, an ongoing loss of something valued in the past, an indescribable feeling of pain, and a feeling of not being understood by others (Roos & Klopper, 2010). Analysis further revealed that loss of abilities, relationships, and engagement with familiar places triggered their loneliness. According to Roos and Klopper (2010), some strategies participants used to cope with loneliness were religious faith, active engagement with life, humour, meaningful interpersonal contacts, and preparation for dealing with losses.

Hauge and Kirkevold (2012) interviewed older Norwegian adults to gain a deeper understanding of how older people experience loneliness. Participants demonstrated the burden of loneliness in two different ways: manageable and agonising loneliness. Some participants described loneliness as a painful but manageable experience because they felt their loneliness fluctuated; sometimes it was a part of their life and sometimes they did not feel it, especially when the presence of important family members gave them a feeling of being valued. Further, participants believed that they had their own ability to cope with loneliness rather than passively waiting for others to become involved. Participants who felt loneliness as agonising described feeling extensive loneliness, powerlessness, lacked initiatives to cope with it, and did not feel valued.

Focusing specifically on widowhood, Davies, Crowe, and Whitehead (2016) used narrative inquiry to explore older widows' experience of loneliness in rural and urban settings in New Zealand. Widowed participants described their loneliness as a sense of absence resulting in the loss of usual routines caused by the loss of a spouse. As many participants explained, loss of routines involved loss of purpose, absence of a shared life, loss of meaning in life, and loss of connection with others related to the spouse. The narrative analysis further revealed that participants had transitioned to a new routine by establishing new connections with a new sense of identity as an individual rather than as a couple. According to participants, keeping connected with others and keeping active were effective strategies to cope with loneliness in widowhood. The

authors considered urban and rural variations in recruiting participants in this study; however, these findings have not been presented across urban and rural settings. Therefore, any location variations in participants' experience of loneliness cannot be clearly understood from the findings.

In summary, drawing on the abundant evidence from existing literature, the predictors of loneliness in old age and its impact on physical and psychological health outcomes in older adults have been critically examined. Based on substantial evidence, some authors argue that poor health outcomes in old age are significant predictors of loneliness (Aartsen & Jylhä, 2011; Burholt & Scharf, 2014; L. Dahlberg, N. Agahi, & C. Lennartsson, 2018; Ogrin et al., 2021). Conversely, others argue that loneliness in old age predicts poor health outcomes among older people. These arguments indicate a circular impact of loneliness on people's health. That is, people with poor health conditions experience reduced physical ability, which restricts their participation in social activities, and leads them to feel lonely; and when people become lonely, this adversely affects health behaviours and physiological and psychological mechanisms in the body (Yu et al., 2021), resulting in multiple health issues. Figure 2 shows the cyclic effect of loneliness on people's health.

Figure 1

Cyclical Effects of Loneliness

Impact of Loneliness on Quality of Life of Older People

In the above section, it was discussed the impact of loneliness on physical and psychological health of older people. However, according to the existing literature, loneliness impact not only on these two aspects but also on people's overall quality of life particularly at the old age. Quality of life is defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live

and in relation to their goals, expectations, standards, and concerns (World Health Organization, 1998). According to this broad definition, not only the physical and psychological aspects, but also the subjective evaluation of people's lives entrenched in environmental, social, and cultural contexts as well reflect the overall quality of life. The impact of loneliness on the overall quality of life among older people has been a subject of extensive research within the field of gerontology.

Numerous studies have demonstrated that loneliness is a pervasive and detrimental factor affecting lives of community dwelling older people leading to a poor quality of life (Ahadi & Hassani, 2021; Esmaeilzadeh & Oz, 2020; Musich, Wang, Hawkins, & Yeh, 2015; Theeke & Mallow, 2013). Loneliness is also a significant predictor of lower quality of life among aged care facility residents in many countries and has more complex factors contributing to loneliness when compared to community dwelling older adults (Tan, Tam, Goh, Ow, & Wu, 2021; Trybusińska & Saracen, 2019; Verhagen, Ros, Steunenberg, & de Wit, 2014; Zhu, Liu, Qu, & Yi, 2018). These factors in aged care facilities include limited social interactions, loss of independence and the absence of familiar surroundings in facility environment. In sum, the body of literature underscores the multifaceted and pervasive impact of loneliness on older people's overall quality of life, but that for older adults in aged residential care there are additional risk factors. As aged care facilities are a relatively new and growing service in Sri Lanka there is urgency to identify the scale of loneliness and address it through social and family support, community engagement, health care and policy interventions. This is more crucial in not only alleviating loneliness but also improving wellbeing and overall quality of life of older people.

2.7 Gap in Knowledge

Drawing on the growing literature on loneliness in old age, this chapter has demonstrated that loneliness is a significant health and well-being issue in older populations. Notably, loneliness was found to be a significant risk for the health of older people living in residential aged care facilities due to the challenges they face when relocating from home to care facility, and while living in the care facilities. Given the relationship of loneliness to poor health, loneliness has drawn the broader attention of many researchers and healthcare professionals worldwide. As a result, a

significant amount of empirical evidence on loneliness has been reported globally. However, the primary existing research and knowledge gap noted throughout this review is the scarcity of loneliness research in Sinhalese older people within the Sri Lankan context.

Furthermore, this literature review identified aged care residents' heightened vulnerability to loneliness and, hence, the importance of assessing their loneliness to ensure appropriate management strategies are implemented.

2.8 Chapter Summary

This chapter has critically reviewed the literature on loneliness in older people in the global context. The chapter opened with an introduction, followed by the search strategy. A PRISMA flow diagram illustrated how the reviewed articles and materials were selected. Next, several definitions of loneliness were critiqued. Then, the Weiss (1973) theory of relational loneliness, which is the basis for many subsequent theories of loneliness, was discussed. Next, empirical research evidence of loneliness was presented. Several dimensions of loneliness were critiqued, and how their interpretations influenced the understanding of loneliness in the existing literature was explored. The chapter also discussed the understanding of loneliness across cultures.

The importance of understanding the culturally specific nature of loneliness was identified. Further, the need for more in-depth cultural studies to better understand the feeling of loneliness in different contexts was recognised. Next, loneliness in the Sinhalese community in Sri Lanka was examined while identifying the current lack of knowledge of loneliness in the Sri Lankan context. Moreover, the intersection between loneliness and old age was considered to understand how it impacts upon older people's lives. The impact of loneliness was broadly discussed under antecedents and consequences of loneliness in old age and revealed how people in old age become vulnerable to loneliness owing to age-related changes and other social factors. It also identified how loneliness negatively impacts older people's mental and physical health and also their quality of life. Finally, the review illustrated the importance of addressing loneliness, a global epidemic, particularly in older people. These complexities highlight the importance of careful attention and assessing older adults

for loneliness to determine the magnitude of the effects and identify risk factors . For this purpose, having reliable and valid loneliness measuring instruments with well-established psychometric properties is of paramount importance. Psychometric properties of measuring scales and the importance of measuring loneliness to establish baseline data is discussed in the next chapter.

Chapter 3 Psychometric Properties of Outcome Measures

3.1 Introduction

Outcome measures are essential in research, clinical practice, and health assessments. Psychometric properties are the standards used for evaluating the accuracy of outcome measures in assessing individuals' abilities, attributes, and psychological experiences such as loneliness, depression, and anxiety (Rosenkoetter & Tate, 2018). Outcome measures can be obtained in the form of observation, self-report, or questionnaires administered by researchers or clinicians. Reliability and validity are the most commonly used and widely discussed psychometric properties (Souza, Alexandre, & Guirardello, 2017; Taherdoost, 2016), however later stages of psychometric evaluation include exploration and confirmation of factor structure, which explores the relationship between questions on the scale (items) and the subscales (latent factors) as a form of factorial validity (Ginty, 2020). Evaluation of validity should also include an assessment of the appropriateness, usefulness, and meaningfulness of measuring instruments for their intended purposes. The purpose of this chapter is to discuss the known psychometric properties of the loneliness and quality of life outcome instruments used in the present study.

3.2 Importance of assessing reliability and validity of a patient reported outcome measure (PROM)

Patient reported outcome measures (PROM) are widely used to assess psychological characteristics and health conditions and are used to establish an evidence base for health practices, medicines, and interventions. Consequently, the accuracy of a study's findings is determined in part, by the accuracy of the outcome measures used within the study (Heale & Twycross, 2015). Therefore, it is essential to choose accurate measuring instruments in order to achieve reliable results (Yusoff, 2019). In view of this, researchers necessarily need to assess measuring instruments for their measurement properties, particularly for reliability and validity, before using them (Souza et al., 2017).

3.2.1 Reliability

Reliability of a measuring instrument is the degree to which the measure is free from measurement error (Mokkink et al., 2010). The assessment of reliability helps determine the measure's ability to provide the same results constantly across time (test-retest reliability), across evaluators (inter-rater reliability) and across closely related items of the instrument (internal consistency)(Rosenkoetter & Tate, 2018). Each outcome measure should contain items that represent the same construct, and thus, should correlate highly. Low correlations between items would suggest the items were relating to different constructs or that there was a high level of measurement error (Monticone, Galeoto, Berardi, & Tofani, 2021). Different statistical tests are undertaken to assess the different forms of reliabilities depending on variables being studied. For example, an instrument designed to study continuous variables is assessed for its inter or intra-rater reliability by using intra-class correlation coefficient. When the instrument assesses categorical variables, Cohen's kappa test is used to determine the reliability of the instrument. Internal consistency of an instrument is assessed by undertaking Cronbach's alpha, inter-item correlation, and item-total correlations (Monticone et al., 2021). The strength and direction of correlations between items represents the level of internal consistency, with >.70 considered acceptable for a clinical scale (Taber, 2018a).

3.2.2 Validity

Validity refers to the degree to which an outcome measure accurately represents the construct it is intended to measure (Monticone et al., 2021). The four commonly assessed aspects of validity are (1) content validity, the degree to which the items on the measure represent the construct of interest and includes face validity, which is how well the items look like they relate to the construct (Mokkink et al., 2010); (2) construct validity includes structural validity established through factor analysis and cross-cultural validation; (3) criterion validity, which is how closely the outcome measure relates to a 'gold standard' outcome measure of the same or a related construct; and (4) cross-cultural validity, the degree to which the outcome measure represents the construct intended in each new cultural context used after development (Monticone et al., 2021; Rosenkoetter & Tate, 2018; Souza et al., 2017). Although these types of validity are listed separately, some authors argue that all types

of validity are construct validity, as without them, there would be no construct validity (Messick, 1986, 1995). Evaluation of validity is an ongoing process as the measure is used in different contexts over time, and assessment should be repeated at regular intervals. Content validity can be qualitatively assessed by an independent panel of experts, and, ideally, these experts should be involved in the conceptualisation of the key content of the measure at the time of development (Chiarotto, Ostelo, Boers, & Terwee, 2018). Content validity may be appraised by using the Content Validity Index (CVI) (Yusoff, 2019). Construct validity includes assessing the dimensionality of the study instrument through methods such as exploratory factor analysis (EFA) when the outcome measure is first used and the factor structure is unknown (Monticone et al., 2021). Later, when EFA has been undertaken, a confirmatory factor analysis (CFA) may be undertaken to ensure that the factor structure is stable across time and between populations, including across cultures.

Criterion validity is a form of construct validity and is the extent to which the score of an outcome measure relates to the gold standard (Mokkink et al., 2010). Researchers assess criterion validity by comparing a test score with the gold standard or its established criterion (Souza et al., 2017). However, this is problematic as first a gold standard measure must be identified and agreed upon between researchers, and a high correlation would indicate overlap between the measures and potential redundancy of the items.

Cross-cultural validity refers to the degree to which the items included in the translated or culturally adapted outcome measure adequately represent or mirror the performance of the items included in its original version (Monticone et al., 2021; Souza et al., 2017). The present study occurs in the Sri Lankan context, therefore cultural considerations are an essential part of psychometric evaluation. Culturally validated instruments are linguistically and culturally adapted to the targeted context with a view to maintaining equivalence to its original version. Therefore, culturally validated instruments should allow the use of measures developed in one cultural setting to be used in another, thus allowing exchange of information globally contributing understanding cultural differences of human phenomenon (Arafat, Chowdhury, Qusar, & Hafez, 2016). Cultural validation of measuring instruments is achieved by performing comprehensive language translation processes in which bilingual expert professional

translators are involved (Gjersing, Caplehorn, & Clausen, 2010; Souza et al., 2017). However, translation of a valid outcome measure does not always mean validity follows in the new context. Consequently, assessing cross-cultural validity of an instrument is particularly important in studies where language translations of instruments are undertaken (Mokkink et al., 2010; Souza et al., 2017). Due to the differences between cultures and linguistic issues, some items in measuring instruments developed in a different language in a certain culture may be irrelevant or may not provide a clear sense in another linguistic and cultural context (Monticone et al., 2021), reducing the psychometric properties and in turn the validity of the score on the outcome measure. The seven-step framework language translation process as recommended by Wild, Grove, Martin, Eremenco, McElroy, Verjee-Lorenz, et al. (2005) is a sound method to translate outcome measures, and will be detailed in Chapter Five.

In summary, appraising the psychometric properties of outcome measures is an essential step in health outcome research. It is of particular importance when undertaking cross-cultural research, such as in the present study. The next section discusses widely used loneliness measures and their psychometric properties.

3.3 Importance of Measuring Loneliness

As discussed in previous chapters, loneliness is a critical predictor of health in older adults and consequently should be assessed as part of health screening. For example, Victor, Grenade, and Boldy (2005) stressed that people who suffer from loneliness are often treated for depression without considering the likelihood that loneliness may be a causative factor for their condition. Assessing for loneliness, particularly in older people may also prevent adverse health consequences linked to loneliness. Further, identifying people with loneliness and measuring their levels of loneliness is important in planning and evaluating loneliness prevention and management strategies, particularly of those at higher risk. In order to accurately identify people at risk of loneliness, first, the most suitable outcome measure in terms of the afore mentioned reliability and validity must be chosen. One of the major limiting factors of studying loneliness is a lack of culturally appropriate and valid measures of loneliness for non-WASP population groups (Hughes, Waite, Hawkley, and Cacioppo (2004).

In light of the adverse health outcomes associated with loneliness, several outcome measures to assess loneliness have been developed. In the next section, an overview of loneliness measuring scales is provided with a specific focus on two that are most widely used: the de Jong Gierveld Loneliness Scale (DJGLS) (De Jong-Gierveld & Kamphuls, 1985; De Jong & Van Tilburg, 1999; J De Jong Gierveld & Van Tilburg, 1999) and the University of California Los Angeles (UCLA) Loneliness Scale (Russell, 1996).

3.3.1 Overview of loneliness measuring scales

Several outcome measures of loneliness have been reported across studies, with a few reported from clinical settings. The present section provides a background of two of the commonly used outcome measures and their theoretical underpinnings, reliability, and validity.

Outcome measures assessing loneliness have been developed based on the theoretical assumption that there is a discrepancy between desired and available relationships which triggers negative thinking patterns inducing feelings of loneliness (C. Victor, L. Grenade, & D. Boldy, 2005). While some self-reported loneliness measures include questions which directly refer to loneliness, other scales indirectly measure loneliness. The direct versus indirect item content relates to cultural conceptualisations, where some scholars assert that wording questions directly is seen as a weakness due to loneliness being stigmatized in many cultures (Jylhä, 2004). Therefore, direct questions to measure loneliness may not elicit a true response from participants as they are reluctant to admit to it due to the fear of being stigmatised and compromising their identity. Similar to some cultural contexts where loneliness is stigmatized, in Sri Lanka, too, experiencing loneliness is considered a social stigma, especially while living in aged care facilities. Therefore, using a scale with indirect items is appropriate to screen for loneliness in the Sri Lankan population. Hence, loneliness measuring scales only using indirect items are reviewed in this section.

The De Jong Gierveld Loneliness Scale (DJGLS) (De Jong-Gierveld & Kamphuls, 1985; De Jong & Van Tilburg, 1999)and the University of California Los Angeles (UCLA) loneliness scale (Russell, 1996) are two scales which have been widely researched and measure loneliness indirectly. Both scales have been subject to recent refinement; hence, revised versions are available for use.

University of California Los Angeles (UCLA) Loneliness Scale (Russell, 1996)

The UCLA loneliness scale was developed based on the assumption that loneliness is a unidimensional emotional state. The original UCLA loneliness scale consisted of 20 items worded in the negative direction. Negatively worded items are problematic in outcome measures as they require an additional cognitive task from the test-taker, which is converting the items' meaning into positive language to understand it before rating the item. Consequently, they tend to have high levels of measurement error. In order to address this issue, the author revised the scale. In the revised version (version two), 10 items out of 20 were positively reworded by developers, simplifying the item responses (Russell, 1996). The items included in the revised version are, "I feel in tune with the people around me", "I lack companionship", "there is no one I can turn to", "I do not feel alone", "I feel part of a group of friends", "I have a lot in common with the people around me", "I am no longer close to anyone", "my interest and ideas are not shared by those around me", "I am an outgoing person", "there are people I feel close to", "I feel left out", "my social relationships are superficial", "no one really knows me", "I feel isolated from others", "I can find companionship when I want it", "there are people who really understand me", "I am unhappy being so withdrawn", "people are around me but not with me", "there are people I can talk to", "there are people I can turn to".

The author has developed the scale to assess the general experience of loneliness based on the common conceptualization that loneliness is a result of deficit in interpersonal relations and is an undifferentiated emotional state experienced by all lonely people in a similar way (Allen & Oshagan, 1995). With the increasing use of the revised scale with many population groups such as older people, college students, and professional groups, several issues arose in using the scale in terms of its wording pattern, particularly in certain statements with double negatives which add additional cognitive demands to interpret and respond (Russell, 1996). Addressing this issue, the author developed a further simplified version of the scale, UCLA version three. In this version, the author added the statement, "how often do you feel" at the beginning of each item. In its latest revision, a three-item shortened scale has been developed (Hughes et al., 2004) for use in large surveys.

The reliability of the UCLA measure ranges from .91 to .82 Cronbach's alpha (Neto, 2014a; Zarei, Memari, Moshayedi, & Shayestehfar, 2016) with the higher reliability observed from version three of the scale. Validation studies have found that the UCLA revised version (version two) and the version three of the scale displayed well-established structural validity and the model fit for one-factor solution hence supports the unidimensional structure (Lasgaard, 2007; Neto, 2014a)

Factorial validity of the UCLA measure has not yet been established, with varying model fit for different factor solutions produced by factor analysis in a wide variety of studies (Lin et al., 2022). However, as this is reported to be a unidimensional scale at the outset, a single factor solution is theoretically the most plausible. While the UCLA original and revised scales have been widely used, some authors critique its focus solely on the social aspect, which is incompatible with the multidimensional character frequently expressed by those experiencing loneliness (Cramer & Barry, 1999).

Cross-cultural validation of the UCLA loneliness scale has been done in cross-national loneliness studies conducted across countries. The authors perform language modifications through a proper language translation procedure to achieve cultural adaptation in establishing cross-cultural validity of the scale. Translated versions of the UCLA loneliness scale have shown a significant level of internal consistency for targeted populations. For example, the Urdu version of the UCLA scale, the Chinese version, and Brazilian versions reported Cronbach α of .91, .87, and .94, respectively (Anjum & Batool, 2016; Barroso, Andrade, Midgett, & Carvalho, 2016; Xu, Qiu, Hahne, Zhao, & Hu, 2018). However, while studies on loneliness in older people are limited in the Sri Lankan context, evidence of cross-cultural validation of a loneliness measuring scale for the Sinhalese population has not been found in the existing literature.

De Jong Gierveld Loneliness Scale (DJGLS) (De Jong-Gierveld & Kamphuls, 1985; De Jong & Van Tilburg, 1999; J De Jong Gierveld & Van Tilburg, 1999)

The DJGLS was developed based on the multidimensional conceptualisation of loneliness (De Jong-Gierveld & Kamphuls, 1985), differing from the unidimensional theoretical foundation of the UCLA. The scale has been developed based on the premise that people understand loneliness by perceiving, experiencing, and evaluating their isolation and lack of communication with others (de Jong-Gierveld, 1987). The

DJGLS consists of 11 items that measure both emotional and social loneliness according to the typology presented by Weiss (1973). The outcome measure's total score is comprised of six negatively formulated items which measure emotional loneliness, and five positively worded items that measure social loneliness. The scale can be used to measure overall loneliness as a unidimensional measure and emotional and social loneliness as separate subscales. A shortened version of the scale was developed containing six items (Penning et al., 2014) to be used in large-scale surveys (Jong-Gierveld, van Tilburg, & Dykstra, 2006).

The DJGLS has been found to be a reliable scale achieving internal consistency and coefficients generally ranging from 0.80 to 0.90, especially in samples with older people (De Jong Gierveld & Van Tilburg, 1999). Test-retest reliability studies have found strong positive correlation between initial and subsequent test scores over a short period of time indicating the temporal stability of the scale (Jaafar, Villiers-Tuthill, Lim, Ragunathan, & Morgan, 2020) . Validation studies of the DJGLS have found significant evidence established for convergent and discriminant validity with ethnically diverse older populations (De Jong-Gierveld & Kamphuls, 1985; Jenny De Jong Gierveld & Tilburg, 2006; Pinquart & Sörensen, 2001)

3.3.2 Importance of measuring Quality of Life of lonely older people

Measuring the quality of life among older people who are lonely holds significant importance for several reasons. Firstly, it provides a quantifiable means to assess the impact of loneliness on their overall well-being, shedding light on the extent of the issue (Perissinotto et al., 2019). This data can inform targeted interventions and policies to address loneliness effectively. Secondly, it helps in identifying specific areas of life that are most affected, guiding efforts to enhance the aspects that matter most to the individual, be it social connections, mental health, or physical well-being. Furthermore, quality of life measurements can serve as valuable benchmarks to evaluate the efficacy of interventions and track improvements over time. Ultimately, by quantifying the impact of loneliness on older individuals, we can work towards a better understanding and more compassionate response to their unique needs, striving for a higher quality of life for this vulnerable population.

3.3.3 Selection of measures for the present study

According to the established validity and reliability, the DJGLS appears to be the most appropriate instrument of the existing measures (Dykstra & Fokkema, 2007; Van Baarsen, Smit, Snijders, & Knipscheer, 1999; Van Baarsen, Snijders, Smit, & Van Duijn, 2001), particularly for older populations. Compared to the UCLA scale, the DJGLS includes fewer items, thereby requiring less time to complete, making it user friendly. Simplified wording of items and the response format of the tool facilitates its administration across all population groups regardless of socio-cultural backgrounds; for example, socio-economic status and education levels (Jong-Gierveld & van Tilburg, 2010). However, it has not been validated in a Sinhalese context. Considering the strengths of the DJGLS, as discussed above, and the identified need for scale validation for the Sinhalese context, this outcome measure was selected for use in this study.

The World Health Organization Quality of Life Brief (WHOQOL-BREF) was chosen for the present study to measure the quality of life of lonely older people for several reasons. Firstly, WHOQOL-BREF offers a standardized and internationally recognized framework for quality of life assessment. This ensures consistency in measurement across different studies and populations, facilitating meaningful comparisons across cultures and different ethnic groups (Goes et al., 2021; Molzahn et al., 2010; Colbourn, Masache, & Skordis-Worrall, 2012). Such comparability is vital for advancing our understanding of loneliness's impact on quality of life among older individuals.

Secondly, as discussed in the previous chapter, loneliness is a complex and deeply personal experience that can affect various dimensions of an individual's well-being. WHOQOL-BREF's multidimensional approach allows for a comprehensive evaluation, encompassing physical health, psychological well-being, social relationships, and environmental factors (WHO, 1998). This holistic assessment is crucial when examining the intricate interplay between loneliness and quality of life in older adults. Furthermore, WHOQOL-BREF can be tailored to specific age groups and circumstances, making it adaptable to the unique needs and experiences of lonely older adults. This flexibility allows researchers and healthcare professionals to ask relevant and sensitive questions, providing a more accurate and nuanced assessment of the challenges faced by this vulnerable population.

In conclusion, the WHOQOL-BREF is a powerful tool for measuring the quality of life of lonely older people. Its multidimensional nature, standardized approach, and adaptability make it an indispensable instrument for research, policymaking, and interventions aimed at alleviating loneliness and enhancing the overall well-being of older individuals who grapple with this pervasive issue.

3.4 Chapter summary

This chapter presented a brief discussion of the psychometric properties of patient reported outcome measures. Assessment of the reliability and validity of outcome measures were shown to be essential to enhance the accuracy of study outcomes, allowing for confidence in decisions made on the basis of the outcome measures. The importance of cultural validation of measuring instruments was discussed when undertaking cross-cultural studies using outcome measures developed in a different population, such as the present study. Next, the importance of measuring loneliness and quality of life were discussed with emphasis, and two widely used loneliness measuring scales in research were reviewed. Finally, selection of the DJGLS for the study is justified over the UCLA scale followed by justifying the use of WHOQOL-BREF. The methodology undertaken to conduct the study is discussed in the next chapter.

Chapter 4 Research Methodology

4.1 Introduction

This chapter provides the link between the foundations of research methodology and the methodology chosen for the current study. The foundations are that different philosophies, or worldviews, with their associated philosophical assumptions, require different approaches; and that the chosen research methodology maintains the integrity of the philosophy throughout the research process of data gathering, analysis, and interpretation of the results. The following discussion relates to the appropriateness and suitability of the choice of pragmatic philosophy, mixed methodology and the convergent design for the current study.

4.2 Pragmatism

Pragmatism, as a research philosophy, arose from the work of American scholars in the late 19th century, mainly through the contributions of Charles Sanders Peirce (1839-1914), William James (1842-1910), John Dewey (1859-1952), and George Herbert Mead (1863-1931) (Dalsgaard, 2014). Amongst the contemporary theorists who contributed to its development were Richard Rorty, Donald Davidson, and W.V.O. Quine (Tashakkori, Teddlie, & Teddlie, 1998). The philosophy of pragmatism draws on diverse approaches and uses both the objective and subjective nature of knowledge (Cherryholmes, 1992). Hence, it represents a coherent philosophy with distinct assumptions (Maxcy, 2003). However, as many scholars argue, the core concept that arises from pragmatism is focusing on the problem and the necessary actions—what works—to solve the problems or to make effective use of what is available in attempting to understand the phenomenon (Hall, 2013; Rossman & Wilson, 1985). Hence, the philosophy of pragmatism, in contrast to positivist and postpositivist philosophies, provides a flexible middle ground, without the need to separate the respective positivist and subjectivist views. According to the philosophy of pragmatism, there are singular and multiple realities existing in the real world which can be the subject of empirical inquiry to solving practical problems. In that sense, pragmatists are free of the practical restrictions enforced by the obligatory selection dichotomy between postpositivism and constructivism. This means that researchers who adhere

to the philosophy of pragmatism are allowed to use what efficiently works in a given situation, rather than limiting themselves exclusively to one approach (J. W. Creswell & Clark, 2017).

John Dewey is identified as the most influential scholar in promoting pragmatism (Biesta, 2010). Due to his contribution, pragmatism evolved as a more detailed and developed form of worldview. In contrast to many philosophers, Dewey saw the world in a unique way. His views were generally the opposite of those of the majority. According to Dewey, the world is an ever-changing process in which many forces interlink and interact (Jia, 2005). He believed in change instead of stability. He saw the uncertainty in the world instead of certainty. He saw interconnections in conflicts. Instead of homogeneity, he relied on diversity and particularity and saw connections in isolation (Jia, 2005). Further, in contrast to the established standard of practice (habit), Dewey considered the concept of "inquiry" as a self-conscious decision making process in resolving uncertainties (Morgan, 2014b). From Dewey's standpoint, people's experiences develop through the inquiry process seeking answers to questions which are interlinked: What are the meanings of our actions? And what are the sources of our beliefs? Experiences create meanings by thoughtful reflection on the beliefs and actions together (Morgan, 2014c).

These unique features of Dewey's view towards the world contributed significantly to promoting pragmatism beyond the crude concept of "what works" to become an anti-dualistic and practical philosophy for research in social sciences. On the basis of Dewey's views, pragmatism has three main concepts that describe its broader perspective which focus on the meaning of human action, beliefs, and their consequences (Morgan, 2014b), as described below:

Pragmatists assume that actions cannot be separated from the contexts and the situations where they occur. Further, people take actions relating to what they have experienced in the world and, therefore, human actions depend on their experiences related to the respective contexts and situations, and the consequences of previous actions. Hence human actions change over time. Thus, an objective universal truth cannot be assigned to any specific action.

In line with the above explanation, the philosophy of pragmatism claims that it is impossible to experience exactly the same situation twice; thus, people's beliefs about actions apt for certain situations are inherently temporary. Consequently, people's beliefs are constantly evolving as a result of the changes that have occurred in the context and situation of their experiences.

Pragmatists recognise that people do not have identical experiences at an individual level, hence no two individual worldviews are identical. However, people can have different degrees of shared experience leading to different degrees of shared beliefs. That is to say, pragmatists argue that while worldviews are unique at the individual level, they are often shared at a broader level.

All three arguments, when considered together, provide a unique view of the philosophy of pragmatism. In contrast to the philosophies that highlight the nature of reality, pragmatism stresses the nature of experience. Instead of the nature of truth emphasised by other philosophies, pragmatism focuses on the outcomes of action and shared beliefs. Therefore, pragmatism distinguishes itself from other theoretical perspectives due to its unique features.

Accordingly, aligned with pragmatist philosophy, the current study was conducted examining older residents' perception of loneliness in the context of aged care facilities to understand how contextually different beliefs and experiences of loneliness impact their health status and quality of life. Further, with the underpinning of the pragmatic philosophy, this study examined how their individual perceptions of loneliness contribute to synthesize a story of a shared view of loneliness in order to fill the existing dearth of current literature on loneliness in the Sri Lankan context.

Along with the unique features specified above, the philosophical assumptions of pragmatism from Dewey's view are discussed in the section below.

4.2.1 Pragmatist Ontology

According to Dewey's (1929) view, the world is seen as a moving, growing, and unfinished process in which the human mind, body, and the world are mutually

constructed (Jia, 2005). The ontology of Deweyan pragmatism claims that an external reality exists, and it is created by ongoing reactions and interactions between people and the world. This implies that reality is relatively stable but precarious and, therefore, one cannot consider reality as fixed, but as a process of change (Garrison, 1994). In contrast to the positivists' view that there is one absolute reality that can be discovered by observations, pragmatists assert that reality is dynamic and people can never achieve a single static reality because the world is ever changing, emerging, and never completed (Dalsgaard, 2014). As an alternative to the ontology of subjectivism, which claims that there is no external reality and reality is purely subjective (Guba & Lincoln, 1982), pragmatists assert that the reality of human qualities and experience are contextual (Dewey, 1929). This means that all human qualities and experiences change according to their context. Hence, in line with Dewey's view, human experiences or phenomena can only be understood relative to the context. As Dalsgaard (2014) stated, the phenomena or human experience does not exist outside the context or the context does not exist outside the phenomena. Furthering Dewey's view, Dalsgaard claimed that context and human experience or phenomena are implicitly and mutually co-constructive (Aldrich, 2008). Drawing on Dewey's analysis of the ontological view in pragmatism, he believed that truth is neither absolute nor arbitrary, but depends on factors such as human interest, habit, and the context in which they live (Hickman, Neubert, & Reich, 2009).

4.2.2 Pragmatist Epistemology

The epistemological view in pragmatism arose out of the groundwork of Dewey (1922), who claimed that learning and knowing is a dynamic and interactive experience. According to Dewey, epistemology in pragmatism asserts that people learn and gain knowledge through their previous experiences and actively engaging with their environment. Accordingly, all human actions that contribute to knowledge development are based on their past experiences and belief systems. Thus, human actions cannot be detached from their experiences and beliefs. This is in contrast to the view of objectivism that people gain knowledge merely by observing the external reality (Pinker, 2004). Pragmatist scholars further claim that examining peoples' perception of experienced reality is important for a more detailed and deeper understanding of reality (Maarouf, 2019). They reject the positivist view that people

learn only by perceiving the detached and external reality (Anderson, 2005). Further, pragmatists, founding on the Deweyan view of epistemology, assert that knowledge is generated from taking actions and learning from the outcomes of those actions (Morgan, 2014a). In contrast to positivists who focus on antecedents of problems and methods, pragmatists stress the importance of the problem and multiple approaches that are available to understand the problem and derive knowledge about the problem (Tashakkori et al., 1998). Therefore, understanding the problem is a critical aspect of pragmatic epistemology. In the same manner, pragmatist epistemology is opposed to the constructivist view that knowledge can be gained only from a subjective point of view. On the contrary, pragmatist epistemology considers knowledge can be gained from both subjective and objective views (Creswell & Clark, 2018b). Consistent with the Deweyan view, experience and actions play a crucial role in the way people gain knowledge, and knowledge is always a result of peoples' actions (Biesta, 2010). Pragmatic epistemology further indicates that knowledge is a tool that helps people to transit uncertain problematic situations into manageable relative certainties (Biesta, 2007; Dewey, 1930).

Overall, the Deweyan (1932) view of epistemology in the pragmatic philosophy emphasises that people gain knowledge through their experiences by actively engaging in inquiry of how, why, and what of those experiences. In order to count something as knowledge, it must have a connection with a practical action and it should have an ability to make a positive difference to human experience (Brinkmann & Tanggaard, 2010).

4.2.3 Pragmatist Axiology

Pragmatists claim that values play a significant role in interpreting results in the research process (Tashakkori et al., 1998). Dewey argued that human values guide their conduct and their value judgement redirects their conduct (Anderson, 2005). Hence, the researcher's values guide their conduct in a research process. Further, pragmatists believe that researchers should use their beliefs, values, and pre-understanding of the problem to enhance the research process and answer the research question, referred to as the 'necessary bias principle' (Maarouf, 2019). In contrast, positivists claim that the research process is value-free and the researcher and the researched are assumed to be independent and should not influence, or be

influenced by the research process (Crotty, 1998b). Pragmatists reject the positivist belief arguing that researchers' beliefs and pre-understandings influence the choice of research question; hence, nothing can be accounted as value-free (Maarouf, 2019). However, the pragmatist axiological view is aligned, to some degree, with the post-positivist belief of value ladenness in research, where they accept the role of value but manage to control it (Creswell & Clark, 2018b; Tashakkori et al., 1998).

In conclusion, as the axiological stance of the pragmatist view argues, irrespective of which research paradigm, there will be some degree of inevitable researcher bias in the research process. From the pragmatic view, this bias is considered important. For this reason, pragmatists accept that the researcher's influence (researcher bias) in the form of ideas, beliefs, and experience should not be a hindrance, but rather a source of support in achieving the research aim (Maarouf, 2019).

4.3 Pragmatism as the philosophical underpinning of the current study

Making the decision of selecting a research philosophy should be based on the intended aim of the study and the research questions that guide the study (Shannon-Baker, 2016). It is also essential for researchers to provide justification for selecting a particular research philosophy in order to establish rigour in the study (O'cathain, Murphy, & Nicholl, 2008). Therefore, in this section, justification is provided for selecting pragmatism as the philosophical underpinning for the current study.

In the current study, four research questions were developed to achieve the intended aim of the study—to understand loneliness in Sinhalese older people living in governmental aged care facilities in Sri Lanka.

As presented in Chapter One, the study questions related to both objective and subjective knowledge are: a) What is the reliability and validity of the translated WHOQOL-BREF and DJGLS for the Sinhalese older population in Sri Lanka? b) What are the levels of loneliness in older Sinhalese men and women living in governmental aged care facilities? c) What is the relationship between loneliness and health status and quality of life of older people in aged care facilities in Sri Lanka? d) What are the perceptions of loneliness of older people living in aged care facilities in Sri Lanka?

Pragmatism is known to be a most appropriate research philosophy for complex studies where both subjective and objective views are required to achieve the research aim (Cherryholmes, 1992).

Based on the pragmatic ontological view, as described earlier, reality is not absolute and changes over time. People experience changing reality differently in relation to their specific context. According to the ontology of pragmatism, human experience changes over time. In this view, loneliness experienced by older people may also change owing to their aging process and their experience of changing loneliness may be different from the other younger age groups. Also, older people's experience of loneliness when living in an aged care facility may differ from those living in the community because the human experience is context bound (Dewey, 1929).

According to the epistemology of pragmatism, people gain knowledge through their experience of phenomena and by interacting with their environment. As pragmatists claim, understanding this knowledge is possible through examining the human perception of events experienced in a specific context (Maarouf, 2019). Consistent with Deweyan epistemology, how people perceive a problem, or a phenomenon, is important because their perception of the problem determines how they solve the problem (Maarouf, 2019). Pragmatists also stress that examining the everchanging reality from both subjective and objective views helps gain a deeper understanding of a particular problem or phenomenon (J. W. Creswell, 2014; Molina-Azorin, 2016). In the current study, the phenomenon of loneliness in older people was examined from multiple views to address quantitative and qualitative research questions.

Generating knowledge about loneliness by answering these multiple research questions is congruent with the epistemological assumption in pragmatism as described earlier. Therefore, being congruent with the ontological and epistemological views of pragmatism, the pragmatic philosophy was chosen as the most appropriate theoretical perspective to underpin the current study (Creswell & Clark, 2018b).After presenting the epistemological stance and theoretical perspective, the next step is to present the methodological approach chosen for the study. Accordingly, a mixed methodology, the chosen methodology for the current study, is discussed in the next section followed by justification of its choice.

4.4 Mixed methodology as a methodological approach

Mixed methodology research started in the fields of social and behavioural sciences with researchers who believed both qualitative and quantitative approaches were beneficial in answering their research questions. With increasing social complexity over time, researchers understood the need of examining complex social phenomena in multiple ways—using both quantitative and qualitative approaches. As a result, mixed methodology research has become a widely used research methodology across many different disciplines (Johnson & Onwuegbuzie, 2004).

In addition to quantitative and qualitative research approaches, mixed methodology is now considered a third major research approach (Tashakkori et al., 1998). Many scholars have defined mixed methodology in different ways. In their definitions, scholars focused on different components of the research process (Creswell & Clark, 2018b) and interchangeably used the words 'mixed methods' and 'mixed methodology'. However, Greene (2006) argued that the word *method* should be viewed in a broader sense as the *methodology* as it includes research design, methods of data collection, and philosophical views that underpin the study. The word 'methods' had been used in many definitions; however, agreeing with Greene (2006), scholars do not view method as simply methods of data collection but from a broader sense as methodology that includes many aspects of the research process (Fetters & Molina-Azorin, 2017). For example, Tashakkori et al. (1998) defined the mixed methodology approach as a product of the pragmatist philosophy that combines qualitative and quantitative approaches within the different stages of the same research process. Similarly, Creswell and Clark (2018b) defined mixed methodology as an approach that combines methods, research design, and philosophical orientations; and further described it as below:

> In mixed methods, the researcher collects and analyses both qualitative and quantitative data rigorously in response to research questions and hypothesis, integrates (or mixes or combines) the two forms of data and their results, organizes these procedures into specific research designs that provide the logic and procedures for

> conducting the study, and frame these procedures within theory and philosophy. (p. 5)

Further, Johnson, Onwuegbuzie, and Turner (2007) defined mixed methodology as a type of research methodology in which researchers combine different components of qualitative and quantitative approaches such as viewpoints, collecting and analysing data, and making inferences to gain an in-depth understanding of a phenomenon. Similar to Creswell and Clark (2018), Johnson et al. also view methodology in a broader perspective. According to Greene (2007), mixed methodology is multiple ways of seeing, hearing, and making sense of the social world and creating multiple viewpoints on the phenomenon or the problem being studied that leads to greater understanding. Glogowska (2015) and W. Zhang and Creswell (2013) concurred, arguing that 'mixing' in mixed methodology refers to the process of linking qualitative and quantitative elements to create a comprehensive account of the issue being studied. Glogowska (2015) further stated that the integration of quantitative and qualitative elements can occur at any step of the research process.

From all these perspectives, many authors agree that adopting mixed methodology in research helps to gain in-depth understanding of a phenomenon. Moreover, because all research approaches and data collecting methods have limitations, use of multiple methods and approaches in a single study can neutralise or counterbalance some of the limitations and disadvantages of certain methods (Andrew & Halcomb, 2009; Johnson & Onwuegbuzie, 2004; Johnson et al., 2007; Scammon et al., 2013; Wisdom, Cavaleri, Onwuegbuzie, & Green, 2012). In view of this argument, there is wide consensus that adopting a mixed methodological approach can strengthen the authenticity of a study. Given these advantages, the mixed methodology approach has become increasingly popular in several fields of sciences as a legitimate and stand-alone research approach.

Specifically, mixed methodology is increasingly used in the field of nursing to strengthen the depth and breadth of understanding of nursing issues (Doorenbos, 2014; Lipscomb, 2008). For example, nurses in the field of gerontology have recognised the need for using multiple approaches to address the unique and challenging health care needs of older people. Therefore, the mixed methodology

approach is increasingly being used for identifying the growing needs and advancement of health care facilities for older populations in health care settings.

Craswell et al. (2020) used a mixed methodology to evaluate the impact of nurse practitioners delivering care to ill, older adults living in aged care facilities in Australia. The authors emphasised that the mixed methodology approach in their study provided emerging evidence for how nurses can contribute to improving the delivery of care to older people. Siette et al. (2021) acknowledged the advantage of using mixed methodology in their study, evaluating the impact of excursion-based social group activities on the quality of life of older adults. The authors identified that using a mixed methodology approach was a strength of their study that helped to evaluate the impact of the intervention on quality of life and gain deeper understanding of the underlying reasons behind the associations of the variables under consideration. Similarly, Kim, Ghasemi, Stolee, and Lee (2021) identified that a mixed methodology approach strengthened their study findings. They explained that subjective views of participants and objective survey data generated findings that led to a deeper understanding of differences in perception between older adults and clinicians regarding how patient-generated health data can be used to improve care for older adults. Dahlan, Nicol, and Maciver (2010) further used a mixed methodology to identify the level of satisfaction with life among institutionalised older people. In addition to meeting the main aim, survey data and focus group interviews identified factors that positively impacted on older people's life adjustment to, and satisfaction with, living in residential care.

Mixed methodology approaches are commonly used in aging research to develop and test research instruments (Bishop et al., 2008; Cox, Green, Seo, Inaba, & Quillen, 2006; Howes, 2008; Hwalek, Straub, & Kosniewski, 2008). Analysis of qualitative data provides a conceptual framework to develop survey instruments which are subsequently examined for psychometric properties by quantitative methods. Furthermore, many nursing researchers in the field of gerontology utilise mixed methodology for a variety of purposes in their work, such as identifying management issues, assessing the effectiveness of aged care, exploring clients' views and satisfaction of care, experimenting and trialling different care models, developing research tools for enhancing aged care, and more (Hammar, Holmström, Skoglund,

Meranius, & Sundler, 2017; Happ, 2009; Henni, 2020; Montano et al., 2020; Phelan & McCormack, 2016; Towsley, Beck, Dudley, & Pepper, 2011).

4.5 Choice of the mixed methodological approach for the current study

As previously described, in the current study, one research question sought qualitative views to explore participants' perceptions of loneliness, while the other questions sought quantitative assessments of the levels of loneliness and their relationship to their health and quality of life (see Section 3.4). Addressing these two types of questions within the same study was not possible using only a quantitative or qualitative approach. Hence, the use of multiple approaches to study loneliness in older people from several dimensions was required. For that reason, conforming to the epistemology of pragmatism, the mixed methodology approach was selected to allow the use of different methods of data collection, analysis, and interpretations to understand the phenomenon of loneliness in older people. Using the mixed methodology approach in the current study added new insights to loneliness in older people in governmental aged care facilities in Sri Lanka, beyond that in current literature.

The mixed methodology approach is classified into different designs. According to Creswell and Clark (2018a), the mixed methodology approach is classified under three co-designs based on timing of mixing qualitative and quantitative approaches in any study. In the next section, these three co-designs are briefly presented along with emphasis on convergent mixed methodology as the specific design chosen for the current study.

Three co-designs of Mixed Methodology approach

The three co-designs of the mixed methodology approach are explanatory sequential design, exploratory sequential design, and convergent mixed methodology design (Creswell & Clark, 2018b). Explanatory sequential design is also known as explanatory design. In this design, collecting data takes place in a sequence, in two different stages of the study (Creswell & Clark, 2018a). Quantitative data are collected and analysed first, followed by qualitative data collection and analysis in the next stage aiming to explain or expand the quantitative results (Ivankova, Creswell, & Stick, 2006).

According to the notation system explained above, the notation assigned to this design is QUAN–qual.

Exploratory sequential design is also known as exploratory design. Here the order is reversed—beginning with collecting and analysing qualitative data. Priority is given to qualitative data in addressing the research questions. Based on the qualitative findings, quantitative data collection is planned in the next step. The purpose of many studies of this kind is to develop instruments, plan interventions, or create new variables, depending on the findings from the analysis of qualitative data (Barnes, 2019; Tashakkori et al., 1998). The notation assigned to this design is QUAL–quant.

In these two designs, qualitative and quantitative approaches are used in sequential order. According to their purposes, both types of data are utilized depending on each other to expand or plan the next step of the study. However, the purpose of the current study was not either expanding or planning one step based on the other step, but to gaining a broader understanding of the phenomenon being studied using both types of data in a complementary way. Hence, collecting of quantitative and qualitative data did not need to follow a sequence. Therefore, these two designs are not appropriate for the current study.

In the convergent design, quantitative and qualitative strands are given equal emphasis in achieving the overall study aim (Creswell & Clark, 2018a). Therefore, both components are presented in uppercase letters in notation: QUAN QUAL. The purpose of employing this design is to bring together the results of quantitative and qualitative analysis for obtaining a comprehensive understanding of the problem or phenomenon being studied.

According to Creswell and Clark (2018a), a convergent design consists of four major steps. In step one, the researcher concurrently collects quantitative and qualitative data on the same issue. Data collection takes place separately and one type of data collection does not depend on the other. In the second, the researcher separately analyses the two data sets using quantitative and qualitative data analysis methods, respectively. Then the researcher moves to step three of the procedure and integrates the two separate results from step two. Finally, in step four, the researcher interprets the combined results gaining a deeper understanding of the phenomenon in relation

to the overall study aim. In the next section, the choice of convergent mixed methodology design for the current study is justified.

Choice of Convergent Mixed Methodology Design for the Current Study

As Morse (2016) explained, choosing a convergent design in mixed methodology enables the researcher to gather different but complementary data on the same issue in order to gain better understanding of the problem**.** Creswell and Clark (2018b) claimed that a convergent design is used to compare quantitative results with qualitative findings to gain a broader understanding of the problem (Barnes, 2019). Furthering the supportive argument, Fetters, Curry, and Creswell (2013) explained that by collecting different types of data on the same topic at the same time, convergent design helps in decreasing measurement uncertainty, thereby increasing the accuracy of the results. Emphasizing another advantage of using convergent design in research, Jordan, Malla, and Iyer (2016) stated that by complementarily combining quantitative and qualitative data, researchers can answer the research questions in a holistic manner. This means consolidation of results in convergent design helps the researcher to obtain greater meaning of the issue from quantitative results with the help of the qualitative findings, or vice versa. Accepting these established arguments, in the current study, both qualitative and quantitative data were deemed concomitantly necessary to answer the multiple research questions to gain an in-depth understanding of loneliness in participants. Thus, the current study was conducted employing convergent design in mixed methodology and both types of data were used in complementary. Consolidated quantitative measurement data and qualitative interview data were of assistance in understanding older people's loneliness from multiple aspects. In addition to these scientific reasons, there were limitations of time available to collect data and the difficulty of accessing multiple settings at different times. These were other compelling reasons to adopt the convergent mixed method design (Creswell & Clark, 2018b) when conducting the data collection for the current study.

4.6 Chapter Summary

The purpose of this chapter was to present the research methodology that underpinned the study. In the first section, Crotty's (2020) framework which provides

an explanation for the structure of the chapter was presented. This framework also provided a logical basis to present the justification of the choice of methodology for this study. According to the framework, first, several philosophical assumptions in research, (epistemology, ontology, axiology) were discussed. The discussion on philosophical assumptions provided a sequential connection to present the paradigms/theoretical perspectives in research. Accordingly, in the next section, a brief introduction to the theoretical perspectives was presented with the detailed discussion of pragmatism, which is the theoretical perspective underpinning this study. Then, rationale for choosing pragmatism to underpin the current study was provided and how pragmatist philosophy is consistent with achieving the aim of this study was considered.

The discussion expanded to show how the mixed methodology approach evolved and its wide use in different disciplines before justification for choosing a mixed methodology approach to the current study was offered. The fit between pragmatist epistemology and mixed methodology approach was debated and the congruence with the aim of the study discussed. Finally, discussion was extended to present the three co-designs of mixed methodology approach and why the first two designs (QUAN-qual, and QUAL-quant) are not appropriate for the current study. In particular, the convergent design was presented in detail with the reason for choosing it for the current study.

Chapter 5 Research Methods

5.1 Introduction

The primary purpose of this chapter is to present the methods undertaken to answer the research questions of the current study. This chapter explains how and why the mixed-method convergent design was chosen to achieve the study aim. Following that, the central aspects of research ethics that were considered are set forth. Then, the study population and setting are described. This is followed by the four steps of the mixed-method convergent design. Step one relates to the data collection procedures. Step two includes the quantitative and qualitative data analysis procedures. Step three of the convergent design involves integration of quantitative and qualitative results to understand loneliness among study participants. Step four describes the interpretation of the study findings. Thereafter, the measures taken to maintain the study rigour are described.

5.2 Overview of the Research Design

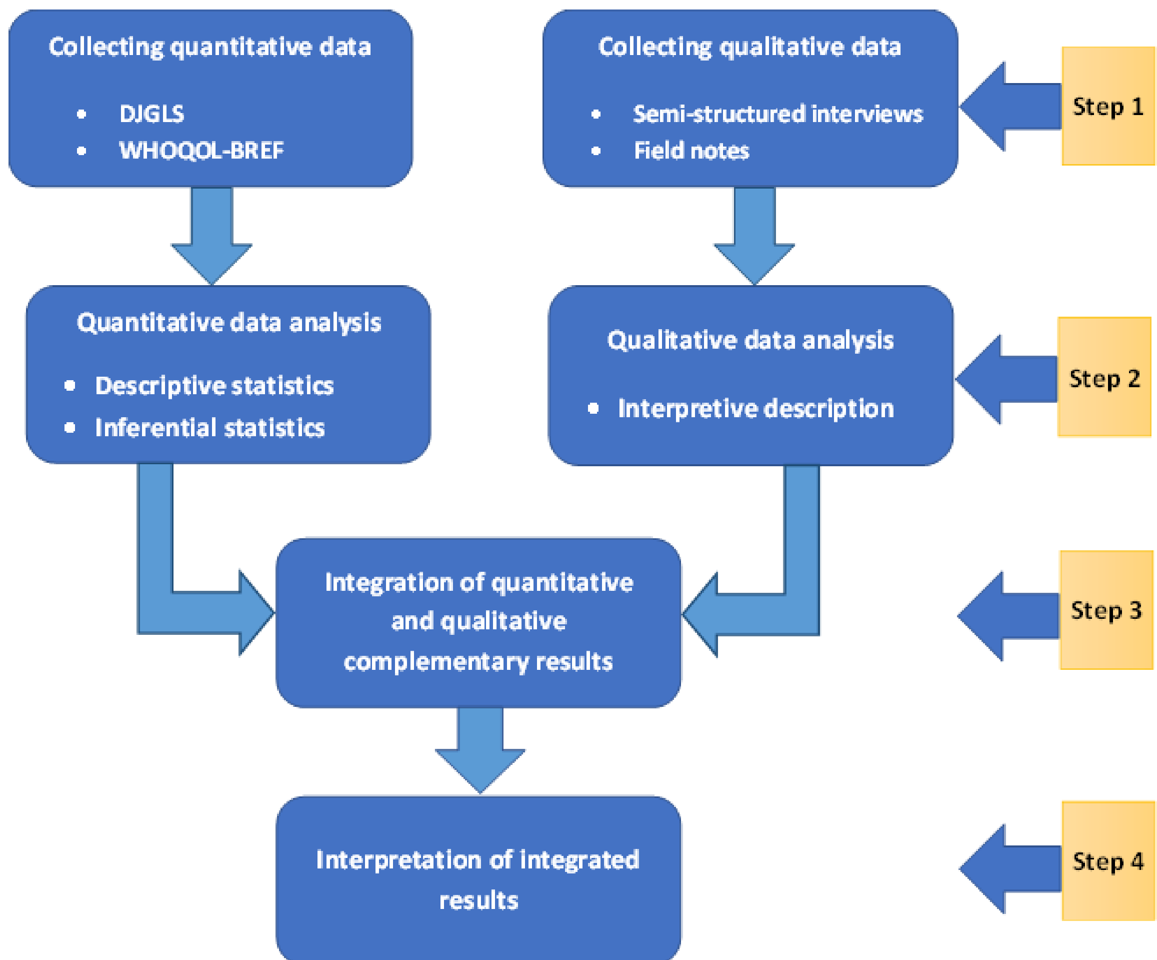
As presented in Chapter Three, a mixed-method convergent design was chosen for this study. Aligned with the pragmatic epistemological stance, this research design allows researchers to collect both quantitative and qualitative data in the same study (Tashakkori et al., 1998). A convergent mixed-method design is believed to be a most effective research design for gaining deeper understanding of a phenomenon when collecting quantitative and qualitative data does not need to follow a sequence (Creswell & Clark, 2018b).

The study was conducted along four main steps of the convergent design (Creswell & Clark, 2018b). In the first step, quantitative and qualitative data were collected concurrently. Quantitative data were collected to identify participants' quality of life and levels of loneliness using two standardised questionnaires, the World Health Organization Quality of Life questionnaire (WHOQOL-BREF) and the De Jong Gierveld Loneliness Scale (DJGLS). Qualitative data were simultaneously collected using semi-structured interviews to explore participants' perception of loneliness. In the second step, the quantitative and qualitative data were analysed separately using appropriate data analysis methods. In the third step, the results derived from the previous step

were integrated to gain a deeper understanding of loneliness in the participants. In the final step, the combined results were interpreted in relation to the research aim. Figure 4 shows the overview of the research methods undertaken in conducting this study.

Figure 2

Overview of the Mixed-Method Convergent Research Design (Creswell & Clark, 2018b)



5.3 Ethical Considerations

When research studies are conducted, ethical issues must be considered to minimize potential risks and ensure safeties of the people involved including research participants and researchers. Ethics approval was granted for this study by the Auckland University Ethics Committee (AUTEC) and the Ethics Review Committee of the Faculty of Medicine, University of Colombo, Sri Lanka (ERC Colombo). Ethics

approval for the study was granted by the committees on March 4, 2020 (Appendix A) and August 20, 2020 (Appendix B), respectively. Permission to access the governmental aged care facilities in Sri Lanka was given by the National Secretariat for Elders (NSE) in Sri Lanka on August 14, 2020 (Appendix C).

Older people living in governmental aged care facilities in Sri Lanka, the target group of this study, may be vulnerable to harm due to the stigma associated with living in residential care. Consequently, all efforts were made to minimise any potential and actual psychological harm to the participants. Information about the research, its implications, and the reasons why they had been approached to participate in this study were provided in written form (Appendix D) and explained verbally. To reduce the power imbalance between researcher and participants, they were invited to select the dates and times of their participations in the study (Moriña, 2021). Informed consent (Appendix E) was gained before data collection commenced.

Confidentiality, discretion, and anonymity of all participants were assured. It was important to maintain confidentiality and not expose participants' information to the staff of the aged care facility to protect the participants' privacy and prevent any possible potential for compromise in their care. Instead of using participants' real names, a code number was assigned for each participant. When participants were being interviewed, the same code number assigned during the quantitative data collection was used in the interview transcripts. To protect privacy, participants' demographic and other personal information (e.g., age, sex, level of education, their thoughts and feelings about loneliness) were compiled and only presented as aggregated data and used at group, district, and provincial levels. Thereby, confidentialities of the participants in this study were assured.

To prevent coercion, participants were not pressured to answer any questions or complete the interviews. If any participant wished to terminate the interview early due to physical or psychological discomfort during the process of recounting their personal experiences, they could stop the interview and receive support if such issues arose. Necessary arrangements were made to provide support or point out the direction where help was available. The support included being available to talk through the issues that arose, as well as offering the counselling services available at the

Department of Psychology in the Faculty of Health Sciences of the Open University of Sri Lanka. This was possible on account of the researcher's affiliation with that faculty.

5.4 Study Population, Translation of Study Instruments and Study Setting

5.4.1 Study Population

In this study, the population focused on was Sinhalese men and women, aged 60 years and over, living in governmental aged care facilities in Sri Lanka**.** The data were collected from a sample chosen from this population group.

5.4.2 Translation of Study Instruments

The research instruments used in this study are the World Health Organization Quality of Life-BREF (WHOQOL-BREF) and the De Jong Gierveld Loneliness Scale (DJGLS). The WHOQOL-BREF had already been translated into the Sinhala language according to the WHO guideline by the WHO field centre at the Faculty of Medicine of the University of Ruhuna, Sri Lanka. This translated version was used in this study without modifications after obtaining permission from the authors.

The original version of DJGLS was translated into the Sinhala language, and back-translation was undertaken by professional translators and bilingual expert to assure the semantic equivalence of the original version. During the process of translation, the 7-step framework, "*Translation and Cultural Adaptation of Patient-Reported Outcome Measures – Principles of Good Practice*" developed by Wild, Grove, Martin, Eremenco, McElroy, Verjee-Lorenz, et al. (2005) was used. The translated version was pretested to assess the understandability and comprehensibility for Sinhalese speakers. This was done inviting six participants who met the study's inclusion criteria but were not participating in the study. Based on these respondents' feedback, some modifications and re-formatting were required. This was completed prior to data collection. Further, it was decided to include four evaluation questions in the questionnaire to assess participants' understandability and relevance of the items. These evaluation questions were: Were the instructions clear and easy to understand? Were the items relevant? Were the items easy to understand? Were the response categories easy to use?

5.4.3 Study Setting

Sri Lanka is a country with nine provinces which have been subdivided into 25 administrative districts. All nine provinces are predominantly agricultural with some urban centres. The aged care facilities are located throughout the country. The Sinhalese people constitute the majority in seven provinces (excluding the Northern and Eastern provinces which were eliminated from the study). These seven provinces with 17 districts were included in the study. The governmental aged care facilities located in these 17 districts were used to select the care facilities for the study. The details of aged care facilities in Sri Lanka were presented in Chapter One. The procedure undertaken to select aged care facilities will be discussed under Section 5.5.4.

5.5 Step 1 of Mixed-Method Convergent Design – Data Collection

According to this design, both quantitative and qualitative data collections were undertaken concurrently. The implementation of the simultaneous data collection procedures for both sets of data is presented in this section.

5.5.1 Study Aim

To understand loneliness in older Sinhalese men and women living in governmental aged care facilities in Sri Lanka.

5.5.2 Participant Recruitment

Inclusion Criteria

The following criteria were considered to include participants to the quantitative sample: a) Sinhalese men and women aged 60 years and above, living in a governmental aged care facility; b) Without any marked cognitive or sensory impairments that might affect their ability to respond to the questionnaires at the time of data collection; c) Having the capacity to give informed consent to participate and ability to verbally communicate well.

Exclusion Criteria

The following conditions were considered to exclude residents from participation in the study: a) Having any relationship to the researcher or data collectors; b) Facing any sudden onset injury or discomfort that could affect their participation in the study.

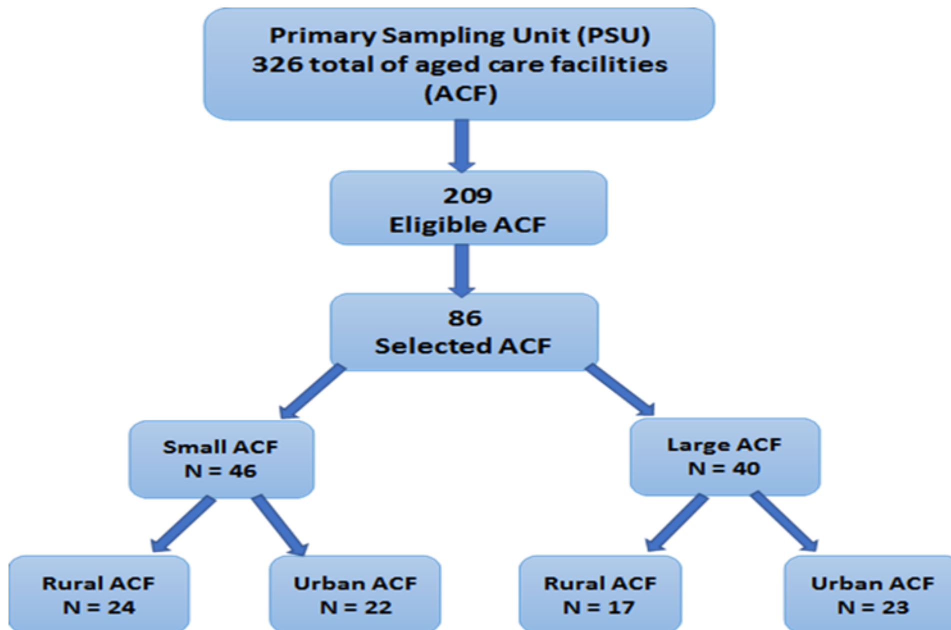
5.5.3 Sampling Techniques Used in the Quantitative Procedure

As there are not many studies on loneliness in Sri Lankan older people, little is known about the prevalence of loneliness among them. Therefore, as a best assumption for sampling method, a 75% prevalence, as reported in a study conducted on loneliness in the Malaysian older population (Aung, Nurumal, & Bukhari, 2017), was selected on the basis that Malaysia is another Asian country and its geographical and social context approximately similar to Sri Lanka. To achieve sufficient statistical power and precision of the analytical results, it was decided to select a maximum target of 613 participants. The aged care facilities were selected to detect an odds ratio of 2.0, assuming a benchmark prevalence of loneliness of 75% with the statistical power of 80% and at 95% confidence level.

Considering practical issues such as travelling time, availability of participants willing to participate, and limited time available to collect data to achieve a reasonable response rate and the desired sample size, the sampling plan required recruiting between four and seven participants from each randomly selected aged care facility. Consequently, a total of 86 facilities were selected for the study. Within each aged care facility, participants were selected for the quantitative sample using the convenience sampling method. The aged care facilities were selected for the study using the multi-stage stratified random sampling method as illustrated in Figure 5.

Figure 3

Design Flowchart for Aged Care Facility Selection (STROBE guideline)(Cuschieri, 2019)



5.5.4 Selection of Aged Care Facilities

Inclusion/Exclusion Criteria

The following criteria were considered to include aged care facilities to the sample: a) aged care facilities with more than 10 residents (care facilities with fewer than 10 residents were eliminated from the sample because the response rate could be insufficient if they were included); b) aged care facilities located in 17 districts in the selected seven provinces in Sri Lanka as discussed under study setting. The selection procedure was implemented in the following way:

The whole list of 325 aged care facilities registered under National Secretariat for Elders in Sri Lanka and funded by the government was obtained and used to select the care facilities. The inclusion criteria resulted in the list reducing to 209 facilities. These were listed under each district of the selected provinces and stratified under the strata of urban and rural, small and large. This was to ensure that the study sample represented the diverse care setting in Sri Lanka. Care facilities with 25 or fewer residents were considered as small facilities and those with more than 25 residents as large facilities. Urban and rural areas were distinguished according to the definition given by Weeraratne (2016). The urban sector of Sri Lanka is defined as the 'Grama Niladhari' Divisions having a minimum population of 750 persons, a population density

greater than 500 persons per km^2, firewood dependence of less than 95% of households, and well water dependence of less than 95% of households. The areas with the above-specified characteristics were identified with the assistance of several Grama Niladhari office bearers and the National Secretariat for Elders in Sri Lanka.

5.5.5 Quantitative Data Collection (Standardised Measurement Data)

Quantitative Research Questions

What is the reliability and validity of the translated versions of international standardised questionnaires (WHOQOL-BREF and DJGLS) for the target group?; what are the levels of loneliness in older Sinhalese men and women living in aged care facilities in Sri Lanka?; what is the relationship between loneliness and health status and loneliness and quality of life of the study participants?

Participant Recruitment Procedure

In the first step, the NSE was informed of the study by a letter and permission was requested to access the governmental aged care facilities. Due to the impact of the COVID-19 pandemic, it took more than 5 months to obtain the required permission. After permission was granted, managers of the selected aged care facilities were informed of the study, together with a copy of the permission letter issued by the NSE. Then, each facility manager's permission was obtained to access settings. Next, an advertisement in the Sinhalese language about the study was sent to each facility manager to display on the noticeboard in the facility for residents' information (Appendix F).

Screening Participants for Eligibility

Arrangements were made with each manager to set convenient dates to initially meet residents at their facilities. Residents were met at pre-arranged dates, where, as the researcher, I outlined the study including its purpose, benefits, and limitations on the use of their information. Eligibility was screened to voluntarily participate in the study and the study information sheets, prepared in the Sinhalese language, were given to those residents who met the inclusion criteria and were interested in participating in the study, they were given one week to read the information. At this point, my contact number was given to the residents and the managers so that they could contact me for more details or inform me of their willingness to participate in the study.

Quantitative Data Collection Measures

Outcome Measures

Demographic information.

Age, gender, educational attainment, marital status, and the number of children were collected. These items were included in the first part of the questionnaire.

Screening question.

Participants were asked to self-identify if they felt lonely, with a single question, "Do you feel lonely?", with a dichotomous yes/no response option. This item was included in the questionnaire specifically to sort those participants who felt lonely for selection in subsequent qualitative interviews.

De Jong Gierveld Loneliness Scale (DJGLS)

The DJGLS is a widely used questionnaire for measuring loneliness, having 6000 citations in Google Scholar, as of June 2022. It has been translated into more than six languages and has shown good psychometric properties for research studies. The scale has two versions, the short scale with 6 items and the original version with 11 items. The 11-item original DJGLS was used as the base for this study. The items of the scale have been developed to measure overall loneliness consistent with the Weiss (1973) typology of social loneliness and emotional loneliness. Five items assess social loneliness, and six items assess emotional loneliness. Each item of the scale has five responses on a self-report Likert scale ranging from 'none of the time' to 'all of the time'. The scale has been evaluated for its reliability to use among older populations (Penning et al. (2014). Further, the reliability of the DJGLS has been well established by a study conducted with older migrants in the Netherlands (Uysal-Bozkir et al. (2017) showing that Cronbach's Alpha ranges from 0.85 to 0.92 across ethnic groups of migrants including Turkish, Moroccan, Arabic, and Surinamese older people. These studies suggest that the DJGLS may be appropriate for older people in some ethnic groups. Validation of this questionnaire for the older Sinhalese people residing in aged care facilities was undertaken as part of this study.

The World Health Organization Quality of Life-BREF (WHOQOL-BREF).

The WHOQOL-BREF questionnaire is a 26-item abbreviated version of the WHOQOL-100 item scale. The 26 items of the abbreviated version measure quality of life through

24 facets under the four domains of physical health, psychological health, social relations, and environment. Participants are asked to rate their experience of each item in the preceding 2 weeks on a 5-point Likert scale rated from 1 (not at all) to 5 (completely). The questionnaire has been cross-culturally validated for many countries and is available in 20 different languages (Group, 1996). It has been widely used to assess peoples' quality of life across many countries in the world (Group, 1995; S. M. Skevington, M. Lotfy, & K. O'Connell, 2004). The scale has been tested across 23 countries around the globe for its validity, reliability, and responsiveness to change, and found to be a reliable tool (Skevington, Lotfy, & O'Connell, 2004). The countries were drawn for this large-scale study from diverse cultures and different levels of socio-economic development. Both male and female, and sick and well adult participants from those countries were recruited from a variety of in-patient and out-patient health care centres and from the general population. The WHOQOL-BREF has been evaluated for discriminant validity and internal consistency of the items. Discriminant validity was significant ($p<0.0001$) for each domain in the total population, with t values of 39.3, 19.9, 13.0, and 7.6 for physical, psychological, social and environmental domains, respectively. Internal consistency was acceptable (>0.7) for three domains. Cronbach's alpha values were 0.82, 0.81, 0.80 for physical, psychological, and environmental domains respectively, and the social domain showed a marginal value of 0.68. Further, it has been shown that WHOQOL-BREF is correlated with WHOQOL-100 at 0.9 of domain score (Group, 1996).

Quantitative Data Collection Procedures

At the commencing stage of this study, approval was obtained to obtain assistance from two data collectors in quantitative data collection. Trained Research assistance were used to administer the translated version of DJGLS and WHOQOL-BREF questionnaires in collecting quantitative data for the study. However, collecting data was commenced later than expected because of the impact of the COVID-19 pandemic. It took over three months to obtain ethical approval from the local ethics review committee in Sri Lanka and over five months to obtain permission to access the aged care facilities from the NSE Sri Lanka. Therefore, limited time was a considerable challenge. Hence, it was decided to obtain the assistance of two more data collectors to expedite the quantitative data collecting procedure and make up for the lost time. It

was after ethics approval had been granted by the AUTEC that this decision was made. Details of this minor amendment to the data collecting procedure needed to be submitted to AUTEC, with approval being granted on October 13, 2020.

Awareness Sessions for Data Collectors

Prior to commencing, two introductory sessions were conducted with the data collectors. One was conducted as a face-to-face session, and the other was on-line, via Zoom. All four data collectors are experienced graduated nurses currently working as research assistants affiliated with reputable universities in Sri Lanka. The purpose of conducting these sessions was to provide them awareness of the study, including the study aim, participant inclusion criteria, the interview protocol, and the study questionnaire. At my initial visit to each aged care facility, the data collectors accompanied me and were introduced to the residents and facility managers.

Commencement of Data Collection

I went to the aged care facilities on the arranged dates (in most cases, the day after my initial visit) and met the potential interested participants. Interviews began by talking with participants about general things in their day-to-day life to help them feel at ease and comfortable. I started to talk to them individually only after ensuring their willingness and readiness to participate in the study.

I met each participant in a particular place or a private room in each facility arranged by the facility manager depending upon the participant’s preference. First, participants were asked to raise any questions for clarifications about the study if they had any. Then, I explained their right to withdraw from the study at any time for any reason. Next, I gave them an informed consent form to sign, obtained their written consent, and cordially invited them to participate in the study.

I then began collecting data using the questionnaire translated into the Sinhala language. The first part of the questionnaire included items to collect participants’ demographic information, followed by the standard questionnaires—DJGLS and WHOQOL-BREF. The questionnaire was used as researcher-administered. Some participants needed more clarification on items before answering, while others answered without requiring additional explanations. Though the pre-test results had revealed no comprehension issues or confusion with items, I discovered that the

phrase ‘quality of life’ in the WHOQOL-BREF was not comprehended well by some of the participants. Therefore, I took time and carefully explained to them what that item meant. Hence, the time needed to complete the questionnaire ranged from 20 to nearly 60 minutes.

5.5.6 Qualitative Data Collection (Conducting Qualitative Interviews)

Qualitative Research Questions

How do older Sinhalese men and women living in aged care facilities in Sri Lanka perceive being lonely?

Study Setting

The study setting for qualitative data collection was the same as described in the quantitative procedure section.

Sampling Technique and Participant Recruitment

Inclusion Criteria

These were the same as in quantitative procedure. The initial steps for participant selection were as described in the quantitative data collection procedure. Purposive sampling (Speziale, Streubert, & Carpenter, 2011) was used to select participants for the qualitative sample. In this method, the researcher identifies and includes individuals who are well informed of the phenomenon of interest and are willing to participate. The concept behind purposive sampling is to concentrate on people with particular characteristics who will be able to provide rich data to assist with answering intended research questions (Etikan, Musa, & Alkassim, 2016). The purposive sampling method includes seven different types of sampling, of which maximum variation, also known as heterogeneous sampling, is one. This sampling method involves selecting individuals across a broad range of characteristics that represent the study population to increase the representativeness of the sample and help achieve a greater understanding of the phenomenon being studied (Etikan et al., 2016). In this study, to achieve the maximum variation, participants were included based on the characteristics of gender, level of education, marital status, and having a family and children; seeking at least one participant from each district. Considering the established theoretical evidence by Guest et al. (2006) in determining sample size in qualitative research, it was initially decided to recruit a subset of between 15 and 25

participants from the quantitative sample. However, in qualitative research, the sample size is not fixed in advance. The adequacy of the sample size is decided during the data collecting process when the data saturation point is reached. Data saturation is a core principle in qualitative research used to determine data adequacy (Hennink & Kaiser, 2020), and, accordingly, the sample size. This means data collection continues to the saturation point, where no new data, no new themes, no new coding are observed in the data (Guest, Bunce, & Johnson, 2006). In this study, saturation was reached after completing the 26th interview. Therefore, the total number of participants interviewed was 26.

Qualitative Data Collection Procedure

Having discussed the study with facility managers and residents, I visited the selected aged care facilities and met with potential participants who were interested in being interviewed. The same steps as described in the quantitative data collection procedure were then followed to approach the interview participants. Next, informed consent was obtained for their participation and digital recording of the interviews. A consent form was signed before being interviewed and interviews started after I verified with participants their readiness. The interviews were conducted in the Sinhala language. I commenced by enquiring the reason for moving to the care facility. Questions were then asked according to the interview protocol to explore their perception of the feelings of loneliness that they experience. Each interview lasted between 30 minutes to one hour.

Qualitative Data Collection Techniques

Semi-structured interviews were conducted to explore participants' perceptions of loneliness. This data collection technique generally consists of a dialogue between participants and the researcher underpinned by a flexible interview protocol (DeJonckheere & Vaughn, 2019). The dialogue contains open-ended questions related to the study objectives (See Table 1). The interview protocol in semi-structured interviews is supplemented by follow-up questions and probes raised by the interviewer during the interviewing process (Whiting, 2008). This interview technique allowed the researcher to collect rich data to explore participants' thoughts, feelings, views, and beliefs about a particular phenomenon they have experienced or are experiencing (McIntosh & Morse, 2015). Participants were free to respond to the

open-ended questions as they needed too; however, the researcher framed and limited these responses by probing and directing participants towards the study focus. This flexible framework gives interviews a unique structure that accords with both quantitative and qualitative strands and is unbound by a single paradigm. Hence, it fits with mixed-method research (McIntosh & Morse, 2015). Accordingly, a semi-structured interview was chosen to explore the perception of loneliness in participants.

Development of the Semi-Structured Interview Guide

The interview guide was developed based on existing literature on loneliness among older people in other countries. Attention was paid in particular to older people's perceptions of loneliness aiming to identify common key aspects participants expressed in relation to how they perceived being lonely. Based on participants' feelings, beliefs, thoughts, and understandings of loneliness identified from the review of existing literature, the following interview guide was developed for conducting semi-structured interviews in this study.

Table 1

Semi-Structured Interview Guide

No.	Interview questions
1	Could you please tell me how your life in the aged care facility is?
2	Why do you think that you feel lonely?
3	What do you think about your lonely feelings?
4	Are there any specific events/incidents in your life that you believe to be reasons for your loneliness?
5	Would you like to share with me those stories or incidents?
6	Are there any specific times in a day, or days in a week that your lonely feelings become intense?
7	Do you feel lonelier when you recall your past life?
8	If so, what past life event (or events) make you feel lonelier?
9	What strategies do you use to mitigate your lonely feelings?

As the primary researcher, I conducted the interviews with all participants in the qualitative sample. During interviews, observations of participants' body language, such as their tone of voice, manner of talking, and facial expressions, were made. Small

keyword-based field notes were made on my observations while engaging in active listening and eye contact with the participants. Shortly after interviews concluded, detailed field notes were created while my memory was still fresh. Making field notes of observations is an important component in qualitative research as it provides rich and valuable contextual data to inform data analysis (Phillippi & Lauderdale, 2018). While making field notes, specific features were noted of the geographic location and physical environment of the facility, and the participant's living units. When I reviewed and reflected on field notes, they helped me to grasp the hidden meanings of participants' words and in making interpretations in the data analysis (Muswazi & Nhamo, 2013).

5.6 Step 2 of Mixed-Method Convergent Design – Data Analysis

5.6.1 Quantitative Data Analysis Procedures

To answer the quantitative research questions, the data were analysed using descriptive and inferential statistics. First, statistical procedures were undertaken to examine psychometric properties of the study instruments including internal consistency, reliability, and factor structure. The internal consistency and reliability of the research questionnaire was examined using Cronbach's Alpha. Exploratory factor analysis was undertaken to examine the factor structure of the study tools. Normality tests and frequency analysis were performed to examine whether normal distribution could be applied to the data. Correlation analysis and Analysis of Covariance (ANCOVA) were performed to examine the possible relationship between loneliness and demographic variables. Multiple linear regression analysis was used to investigate loneliness and participants' quality of life and health status.

5.6.2 Qualitative Data Analysis Procedure

Qualitative data analysis is a process of classification and interpretation of linguistic materials to describe a phenomenon in greater detail (Roulston, 2014). Transcribing is the first step of qualitative data analysis and involves converting the data from the spoken text (semi-structured interviews) to written form (Stuckey, 2014). In this mixed methodology study, I was conscientious about transcribing all the interviews, as the accuracy of the transcripts plays a significant role in determining the quality of the data, and, hence, the study findings (Stuckey, 2014).

Translation and Back-Translation of Interview Transcripts.

I started transcribing after listening and re-listening to the first interview recording and read the transcription several times to see whether further exploration was needed. After the first three interviews were completed, a bilingual expert person translated the transcripts written in the Sinhala language into English. Then, a different bilingual expert person back-translated the English transcripts into the Sinhala language (Lopez, Figueroa, Connor, & Maliski, 2008). Next, I checked the original Sinhala transcripts and back-translated Sinhalese transcripts for retention of the original meanings.

During the translation period, I met the translators and discussed issues raised relating to participants' own words for which there are no English equivalents. For example, the Sinhalese term *kaalakannikama* has no equivalent word in English. It is colloquial in Sri Lankan culture, and people use it in an informal way. However, its closest translation is 'misfortune'. Another example was the term *kunuroddak*, by which, in the context, the participant meant "I am not a valued person to anyone". Having discussed the issues, I proposed that the translator use the participants' own words if there were no English equivalents. After discussing with the translator and resolving translation issues, other transcripts were sent to the translator as I finished transcribing them.

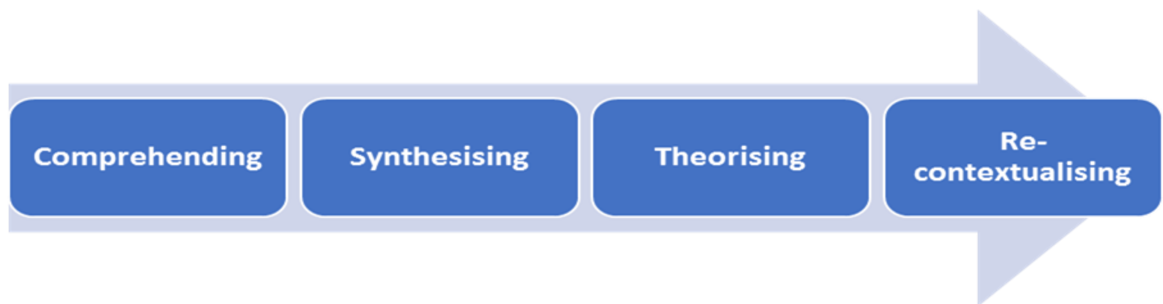
Qualitative Data Analysis – Method of Interpretive Description

Interpretive description has been identified as an appropriate method to analyse qualitative data in health research (Hunt, 2009), with several scholars recommending and widely using this method (Elliott & Timulak, 2021; Teodoro et al., 2018). This data analysis method helps the researcher go beyond the level of superficial description to a form of abstract understanding of a phenomenon (Thorne, Kirkham, & O'Flynn-Magee, 2004). This qualitative methodology aims to generate knowledge that can be applied to nursing practice as well as other health disciplines (Thorne, 2008). Further, as Thorne, Kirkham, and MacDonald-Emes (1997) explained, interpretive description is used to explore human perceptions of their complex experiential health and illness problems to gain a better understanding of those problems and develop new nursing knowledge. Therefore, this data analysis method was used to analyse the data obtained from qualitative interviews aimed at understanding the participants' perceptions of loneliness.

During the process of descriptive interpretation, qualitative interviews were analysed using four steps to generate the themes and to understand the phenomenon of loneliness better among study participants. As Morse (1994) proposed, the four steps are: a) comprehending data, b) synthesising meanings, c) theorising relationships, and d) recontextualising the data into findings (see Figure 6). The four steps are described in the next section.

Figure 4

The Four Steps of the Cognitive Process (Morse, 1994)



Comprehending the Data

Comprehending the data is a process that the researcher engages in to thoroughly understand the data set. According to Morse (1994), this process begins with the researcher's initial understanding of the research setting, participants, and their experiences. Once I finished conducting each interview, I first listened to the audio-taped interview several times and then transcribed it verbatim. Next, transcriptions were translated into English. I then read transcriptions thoroughly to be familiar with what participants expressed about their loneliness. I curiously looked beyond the face value of participants' spoken words, which were taken as cues, to critically and reflectively look into the more important latent meanings of those words that reflect their perceptions of loneliness. At the same time, I compared each transcription with field notes relevant to each participant to ascertain the true meanings of spoken words or to expand their meanings. Next, these concepts were coded and classified under themes with identified meanings. I conversed with the themes by iterating and raising critical questions to find some interrelated themes. Questions included what does this code mean? Why is this code here? Should it be somewhere else? Is this code related to here or somewhere? May it be related to somewhere? Critical questioning helped me identify patterned relationships between themes and understand how participants perceive loneliness and its meaning to them. Thoughtful understanding of participants'

meanings of loneliness led to creating participants' loneliness stories that reflect the whole meaning of their perceptions of loneliness.

Synthesising Meanings

Synthesising meanings is a process of merging individual stories or experiences of several participants by decontextualizing the stories to describe a typical pattern of behaviour or response of people to a phenomenon (Morse, 1994; S. Thorne, 2016). At this step, the researcher provides a composite description of how people respond, act, or behave when they experience a particular phenomenon. In this study, I looked at the themes and patterned relationships relating to loneliness identified from all the transcripts and found common features of their loneliness stories. Common features of loneliness were merged into a composite pattern that described the typical perception of loneliness in older Sinhalese men and women living in selected aged care facilities.

Theorising Relationships

Theorising is a process of constantly developing linkages between themes and patterned relationships, constructing alternative explanations, and comparing and contrasting these explanations with established theories (Morse, 1994). According to Thorne (2008), the researcher must be curious and doubtful throughout this reflective process to raise questions on emerging concepts and identify the contextual relations among concepts.

In this study, I engaged in the process of repeated and curious questioning about emergent themes and patterned relationships found in the synthesis phase. At this point, I raised questions as to how participant beliefs influence them to be lonely. Why do they think so about loneliness? Was there any specific life event that triggered their loneliness? What life expectations did they have? How do they believe so about their loneliness? How did the family environment influence their loneliness? How does moving to the aged care facility affect their loneliness? While raising these questions, I attempted to compare and contrast the emerging themes with the theoretical aspect of loneliness to see whether patterned relationships and themes fit in the established theoretical stance on loneliness. In this step, I continued to raise such curious questions while keeping with significant themes, patterned relationships, and

significant concepts to explore more possible relationships and gain a deeper understanding of participants' loneliness.

Re-contextualising the Data into Findings

In this last step of interpretive description, the researcher organises the conceptualised relationships into a story or narrative form (Thorne et al., 2004) and re-contextualizes the story with newly generated knowledge that can apply to other settings (Morse, 1994). This process is referred to as the generation of an interpretive description product.

During the re-contextualisation phase, I carefully re-examined the common themes and patterned relationships derived from the theorising phase and built a common story to describe the older peoples' perceptions of loneliness. All the important and common themes relating to participants' thoughts, beliefs, and understandings of loneliness were grouped under three main themes. These three themes are discussed in detail, exemplified by the participants' own voices, in Chapter Eight. This final product of interpretive description provided a comprehensive story with a deeper understanding of loneliness in older people.

5.7 Step 3 of Mixed-Method Convergent Design – Integration of Quantitative Results and Qualitative Findings

This is an important phase of the mixed-method convergent design where the researcher combines both quantitative and qualitative results to achieve the intended aim of the study. In this study, both quantitative results and qualitative findings were integrated in a complementary way to describe the multiple aspects of older people's experience of loneliness in order to gain a broader understanding.

In mixed methodology studies, qualitative and quantitative data integration can be presented by a few specific approaches; narrative form, data transformation, and joint display tables (Cresswell & Plano Clark, 2011; O'Cathain, Murphy, & Nicholl, 2010). In addition, Kelle and Erzberger (2003a) proposed that data integration in mixed-method studies can be presented by a triangular conceptual framework that explains the logical relationship between theoretical statements and quantitative and qualitative empirical evidence. As recommended by Kelle and Erzberger (2003b) and Creswell and

Clark (2018b), in this study, integration of findings is presented using a triangular conceptual diagram (Figure 16) and narrative form.

5.8 Step 4 of Mixed-Method Convergent Design – Interpretation of Findings

In this last stage, the combined results of both quantitative and qualitative studies were interpreted. While discussing possible explanations for findings, they were critically evaluated in relation to the existing theoretical propositions and empirical evidence. Finally, inferences were made through interpretation of findings which led to a deeper understanding of loneliness in study participants; hence, achieving the aim of the study.

5.9 Maintaining the Rigour of the Study

Rigour in research refers to the extent to which researchers work to ensure the quality of the studies (Heale & Twycross, 2015). In quantitative studies, rigour is achieved by ensuring the validity and reliability of study questionnaires, while qualitative researchers achieve the rigour of their naturalistic works through trustworthiness. Given the difference in ensuring rigour between quantitative and qualitative approaches, establishing rigour in mixed methodology studies has become a complex task and has not been fully attended to yet (Brown, Elliott, Leatherdale, & Robertson-Wilson, 2015). Consequently, several scholars have attempted to examine how rigour has been addressed in mixed methodology studies. According to Harrison, Reilly, and Creswell (2020), GRAMMS (Good Reporting of A Mixed-Methods Study), the guidelines introduced by O'cathain et al. (2008), are widely used for reporting rigour in mixed methodology studies. For evaluating the overall quality of a mixed methodology study, the GRAMMS framework advises authors to present the following: justification for using the mixed-methodological approach, description of the purpose, data collection and analysis techniques in each method, description of the data integration, limitations of the one method associated with presenting the other method, and insights gained from mixing methods. This study has met all six criteria in the GRAMMS guidelines as proposed by O'cathain et al. (2008) and these are, therefore, used to report the rigour of the current study. Table 2 presents the study’s consistency with the GRAMMS guidelines.

Table 2

GRAMMs Guidelines (O'cathain et al., 2008) for Evaluating Rigor in Mixed Methodology Studies – Comparison with the Current Study

GRAMMS criteria	Evidence of meeting the criteria in the current study
Describe the justification for using a mixed-method approach to the research design.	Apart from the demographic data, nearly all the answers are of the form of presence/absence or are subjectively assessed by the data collectors or self in the form of a 5-response Likert scale. Chapter Four provides the justification of selecting a mixed-methodological approach underpinned by the pragmatic philosophy. The appropriateness of this philosophical view to understand an under-researched phenomenon—loneliness in older Sinhalese residents living in age care facilities in Sri Lanka— was discussed in Chapter 4.
Describe the design in terms of the purpose, priority, and sequence of methods.	Chapter Four discussed the reason for selecting the mixed-method convergent design for this study.
Describe each method in terms of sampling, data collection, and analysis.	Chapter Five provides a detailed description of both sampling techniques and methods used in collecting qualitative and quantitative data and analysis.
Describe where integration has occurred, how it has occurred, and who has participated in it.	Chapter Nine describes the integration of quantitative and qualitative results.
Describe any limitation of one method associated with the presence of the other method.	Chapter Four presents a critical evaluation of limitations in quantitative methods associated with the qualitative methods in answering research questions of the current study. Limitations of the overall study, along with study strengths, are discussed in Chapter Ten.
Describe any insights gained from mixing or integrating methods.	Chapter Nine presents a broader view of loneliness in older Sinhalese men and women in aged care facilities in Sri Lanka using integrated results of both quantitative and qualitative studies. Chapter Ten discusses the implications of the findings and contribution to the current body of

	knowledge to improve the quality of life of residents living in aged care facilities in Sri Lanka.

5.10 Chapter Summary

This chapter has presented a detailed description of the methods used in the study to answer the research questions. The chapter began with a brief introduction to its content, followed by an overview of the research design. Then, the ethical considerations maintained throughout the study process were presented. Next, the study population and setting were described, followed by step one of the convergent design, describing the parallel implementation of quantitative and qualitative data collection procedures. Next, the chapter outlined step two of the study, the quantitative and qualitative data analysis procedures, and then step three of the study design, data integration. The interpretation of the findings, the fourth step of the convergent study design, was then presented. Finally, the steps taken to maintain the rigour of the study were presented followed by the chapter summary.

Chapter 6 Quantitative Results Part I

6.1 Introduction

The previous chapter presented the methods undertaken in conducting the current study. It included methods used in collecting and analysing both the quantitative and qualitative data for this mixed methodology study. The main purpose of this chapter is to present the first part of the quantitative results—descriptive summaries, and psychometric properties of research instruments for the study sample. It includes the quantitative descriptive data analysis of demographic variables of the study samples, psychometric properties of the study instruments (WHOQOL-BREF and DJGLS), and factor analyses of these two instruments. First, the data preparation and editing procedures are described. Following this, sample characteristics including demographic information and distribution of study sample province-wise are presented. Next, results of statistical analysis undertaken to examine the psychometric properties including validity and reliability of the research tools are shown. Factor analyses and factor structures of the two study instruments yielded from the study sample are presented and compared to their existing validated structures from the other study populations. According to the factor analysis results, a revised construct in WHOQOL-BREF was proposed for the study population.

6.2 Quantitative Data Preparation and Editing Procedure

Data collection was completed within 5 months. During this time, the questionnaire was completed by 517 participants.

6.2.1 Editing Questionnaires and checking for missing responses

In the first step, all questionnaires were checked for missing data; for example, incomplete questionnaires or items not answered. Then, all questionnaires were examined for whether the given response patterns were used in the correct way with proper understanding.

Editing of questionnaires involves verifying the accuracy and consistency of responses, and making necessary corrections (Peat & Barton, 2008). All questionnaires were subjected to logical, range, and response set checks to identify mismatches and

inconsistencies between answers, and to find any outliers—the unusual values that deviate from norms (George & Mallery, 2019).

During this process, it was identified that a set of questionnaires from one district had an unusual response to item number 21 (F15.3) in the social domain of the WHOQOL-BREF measure. This item examines participants' sex life satisfaction and was kept unanswered by most of the participants. To identify the reason, the relevant data collectors were contacted, and clarifications sought. According to their explanations and based on my own experience as a data collector in this study, except for a few participants (n=16), the majority were reluctant to answer this item; many said that it was not relevant to them for their age. Therefore, this item was excluded from the analysis and considered as a missing value (Peat & Barton, 2008). However, all the other questions in the WHOQOL-BREF were answered by all participants and therefore, the response rate for other items was 100%. The Loneliness scale (DJGLS) also reported 100% response rate.

6.2.2 Coding Items

In the coding step, all responses for each item were assigned a code with a numeric value enabling entry on the statistical software package. As a preliminary step of analysis, the data set was entered into a MS Excel worksheet and reviewed for any inconsistencies. This completed the data preparation process. Following that, the variable count and case count in the sample were calculated and 517 cases and 120 variables were found. In the final data preparation, the edited data set was imported into SPSS version 27 software and analysis was initiated.

6.3 Geographical Distribution of the Study Sample Across Seven Provinces in Sri Lanka

As described in Chapter Five, study participants were recruited from 17 districts located in seven provinces in Sri Lanka (see Table 3 and Figure 7).

Table 3

Province-wise Distribution of the Study Sample in the Country

Province	N	% In the sample	Number of residents in each selected facility	Number of care facilities selected from each province	Number of care facilities in each province with residents >10
1. Southern Province	95	18%	389	16	18
2. Western Province	93	18%	482	16	112
3. Central Province	82	16%	420	15	17
4. North Western Province	86	17%	710	14	20
5. Sabaragamuwa Province	92	18%	355	14	23
6. Uwa Province	47	9%	209	08	08
7. North Central Province	22	4%	342	04	04
Total	517	100%	2907	87	202

Figure 5

Geographical Dispersion of the Study Sample Across Seven Provinces in Sri Lanka

6.4 Participants' Profile of the Quantitative Sample

6.4.1 Participant Characteristics

Univariate analysis, looking at variables one at a time, is considered the initial point of analyzing survey data (Stockemer, Stockemer, & Glaeser, 2019). In the current study, univariate analysis was performed to describe the sample using descriptive statistics. While preforming univariate analysis, some variables, such as age and education, were recoded and classified. The score of loneliness was categorized under four categories according to the manual of the loneliness scale (De Jong Gierveld & Van Tilburg, 1999). Frequency distribution of variables under each category was reported in percentages. All data were presented in cross tabulation and a general picture of the study sample is presented in Table 4.

Table 4

Demographic Information of Study Participants

S.N.	Characteristic	(*n*)	%
1	**Gender**		
	Male	179	35
	Female	338	65
	Total	**517**	
2	**Age (years)**		
	(60 – 69)	117	22.6
	(70 – 79)	256	49.5
	(>80)	144	27.9
	Total	**517**	
3	**Level of education**		
	No education	58	11.3
	Primary education	308	59.2
	Secondary education	137	26.8
	Tertiary education	14	2.7
	Total	**517**	
4	**Marital status**		
	Unmarried	231	44.7
	Married	179	34.6
	Separated	9	1.7
	Divorced	24	4.6
	Widowed	74	14.3
	Total	**517**	
8	**Nature of Employment**		
	Hard work	127	24.6
	Moderate level	115	22.3
	Sedentary work	98	19
	Non-employee	177	34.2
	Total	**517**	
9	**Having a disease**		
	Yes	401	77.6
	No	116	22.4
	Total	**517**	
10	**Health conditions (self-reported morbidities)**		
	Hypertension	131	25.3
	Diabetes	96	18.6
	High cholesterol	32	6.2
	Arthritis	48	9.3
	Heart disease	35	6.8
	Asthma	68	13.2
	Gastritis	16	3.1
	Kidney disease	16	3.1
	Malignancy	7	1.4
	Joint pain	24	4.6
	Backache	27	5.2
	Total	**517**	

5	**Having children**			**11**	**Self-perceived loneliness status (based on the response for screening item)**		
	Yes	215	41.6		Yes	243	47
	No	302	58.4		No	274	53
	Total	**517**			**Total**	**517**	
6	**Religion**			**12**	**Measured levels of loneliness**		
	Buddhist	454	87.8		VSL (very severe loneliness)	105	20.3
	Christian	57	11		SL (severe loneliness)	125	24.2
	Missing values	6	1.2		ML (moderate loneliness)	211	40.8
	Total	**517**			NL (Not lonely)	76	14.7
					Total	**517**	
7	**Employed**						
	Yes	338	65.4				
	No	179	34.6				
	Total	**517**					

As indicated in Table 3, the geographical distribution of the sample across the seven provinces shows that only two provinces (Uva and North Central) have a relatively smaller number of participants. This is because the number of aged care facilities located in these two provinces are lower than that in other provinces.

As shown in Table 4, 65% of participants were females, representing the majority in the study sample. Almost half (49.3%) of the sample participants were aged between 71 and 80 years; nearly half of the sample (44.7%) were unmarried and 14.3% of participants were widowed.

Regarding social determinants, more than half (59.2%) had primary level education, while 11.3% of participants had not attended school. Only 2.7% of the sample had university level education. The majority (65.4%) of participants were employed; 24% had done hard work while only 19% had engaged in sedentary work. In terms of religion, the majority (87.8%) were Buddhist and 11% were Christian.

Regarding general health conditions, most of the participants (77.6%) had at least one disease condition; the top three being high blood pressure (25.3%), followed by diabetes (18.6%) and asthma (13.2%). In terms of loneliness, as identified from one

screening question of self-perceived loneliness, the majority (53%) of participants reported that they were not lonely. However, the loneliness score (DJGLS) measured by multiple items revealed that only 14.7% participants in the total sample were not lonely using a defined validated threshold (De Jong & Van Tilburg, 1999). Of the participants who experienced loneliness, 20.3% are in the very severe loneliness scale, while 24.2% of participants are in the severe loneliness scale.

The age distribution amongst study participants was examined by performing Shapiro Wilk normality test. Based on the test output, the value of significance (sig) for age is .001 which is <0.05; therefore, the variable age is not normally distributed in the study sample. According to Table 5, the average age of participants in the study is 74.77 years (SD=7.33). Percentiles of the age distribution in the study sample show that 75% of participants are at the age of 70 years and above; only 5% are over 86 years of age. The minimum age of participants is 60 years, because according to the study inclusion criteria, only participants aged 60 and above were included in the sample.

Table 5

Descriptive Statistics of the Age Distribution of the Sample

N=517	Mean	Median	Mode	Std. Deviation	Min	Max	Skewness	Percentiles			
								5	25	75	95
Age	74.77	75.00	70	7.33	60	100	0.226	63.00	70.00	80.00	86.10

6.5 Evaluation of Psychometric Properties of Study Tools

The tool used in this study included two scales: DJGLS and the WHOQOL-BREF. The DJGLS measures overall loneliness by 11 items. Out of the 11 items, five items are positively worded and used to assess social loneliness, while the other six items are negatively worded and used to assess emotional loneliness.

The WHOQOL-BREF has been developed in four main domains: physical, psychological, sociological, and environmental. The physical domain includes seven items, the psychological domain includes six items, the sociological domain includes three items, and the environmental domain includes eight items. The current study was conducted among older people who were residents of aged-care facilities in Sri Lanka, and

spirituality is believed to be a significant aspect of their quality of life. Therefore, in addition to these four domains, the spiritual domain with four items from the long version 100 scale WHOQOL was added to the short version in the current study. The following Tables (Table 6, 7, 8, 9, 10) present the internal consistency reliability for these two scales with all the subscales of each scale in this study.

Table 6

Internal Consistency (Cronbach's alpha) – DJGLS Overall Scale

Scale	**Cronbach's alpha**	**Cronbach's alpha based on standardized items**	**Scale Statistics**			
			Mean	**Variance**	**Std. Deviation**	**No. of Items**
Overall scale with 11 items	.86	.86	7.1	11.28	3.34	11

Table 7

Internal Consistency (Cronbach's alpha) – Emotional and Social Loneliness Sub Scales of DJGLS

Scale	**Cronbach's alpha**	**Cronbach's alpha based on standardized items**	**Scale statistics**			
			Mean	**Variance**	**Std. Deviation**	**No. of Items**
Social loneliness with 5 items	.76	.76	3.63	2.48	1.57	05
Emotional loneliness with 6 items	.77	.77	3.48	4.21	2.05	06

The DJGLS overall scale shows a high and robust internal consistency for this study sample with Cronbach's alpha value of .86 (> 0.7) as indicated in Table 6. Table 7 indicates the individual social and emotional scales have a relatively high level of internal consistency with Cronbach's alpha values of .76 and .77, respectively (Taber, 2018b).

Table 8

Internal Consistency (Cronbach's alpha) – WHOQOL-BREF Overall Scale with 23 Items (Excluding Three Items in Social Domain)

Scale	Cronbach's alpha	Cronbach's alpha based on standardized items	Scale statistics				No. of cases valid	No. of cases excluded.
			Mean	Variance	Std. Deviation	No. of Items		
Overall scale with 23 items	.83	.86	76.19	145.02	12.04	23	515	02

According to Table 8, the Cronbach's alpha values for overall WHOQOL-BREF scale, excluding three items of the social domain sub scale, is .83 (alpha>.7) which indicates high level of internal consistency of the scale for this study sample (Taber, 2018b). Here, the internal consistency of the scale was evaluated after excluding the social domain because one item of the domain reported 97% missing data.

Table 9

Internal Consistency Reliability (Cronbach's alpha) – WHOQOL-BREF Domain-wise Calculation

Domains of the scale	Cronbach's alpha	Cronbach's alpha based on standardized items	Mean	Variance	Std. Dev.	Number of items	Number of cases valid
Physical Domain	.89	.89	22.69	38.85	6.23	07	516
Psychological Domain	.84	.84	19.35	25.29	5.03	06	517
Social Domain	.60	.61	8.13	9.98	3.16	03[1]	16
	.70	.70	5.97	3.69	1.92	02[2]	516
Environmental Domain	.82	.83	28.69	27.15	5.21	08	517
Spiritual Domain	.85	.86	14.52	13.36	3.65	04	516

[1] All three items in the social domain
[2] The item with highest missing values in the social domain has been removed.

As mentioned above, one question in the social domain had missing values for 97% of the participants, therefore, according to the WHOQOL group calculation guideline, the social domain score was calculated only for 3% of the participants who responded to all three questions in the social domain and its score is presented in Table 9 above.

Individual domain score calculations of the WHOQOL-BREF scale show a good internal consistency in the physical, psychological, environmental, and spiritual domains indicating high reliability measures of alpha values, .89, .84, .82, and .85, respectively. However, the social domain shows a relative lower internal consistency with an alpha value of .60. According to Table 10 below, item statistics shows that even if an item is deleted from each domain, no significant difference of internal consistency is shown in the scale.

Table 10

Item Statistics – WHOQOL-BREF

Domain	Item	Mean	St. Deviation	N	Cronbach's alpha	Cronbach's alpha if item deleted
Physical Domain	QOL3	3.11	1.15	514	.89	.87
	QOL4	2.86	1.24	514		.89
	QOL10	3.32	1.08	514		.87
	QOL15	3.48	1.12	514		.87
	QOL16	3.39	1.16	514		.90
	QOL17	3.28	1.10	514		.86
	QOL18	3.26	1.06	514		.86
Psychological Domain	QOL5	3.11	1.09	516	.84	.79
	QOL6	2.95	1.11	516		.80
	QOL7	3.50	1.02	516		.83
	QOL11	3.21	1.12	516		.81
	QOL19	3.20	1.03	516		.80
	QOL26	3.39	1.32	516		.84
Social Domain	QOL20	2.56	1.09	16	.60	.50
	QOL21	2.44	1.41	16		.56
	QOL22	3.13	1.66	16		.40
Environmental Domain	QOL8	3.74	1.12	517	.82	.78
	QOL9	4.01	.84	517		.79
	QOL12	2.48	1.20	517		.83
	QOL13	3.30	.91	517		.81
	QOL14	4.19	.74	517		.81
	QOL23	3.86	.90	517		.79
	QOL24	3.76	.91	517		.78
	QOL25	3.36	1.03	517		.80
	Spirit1	3.68	1.07	516	.85	.77

Spiritual Domain	Spirit2	3.20	1.17	516	.93
	Spirit3	3.80	1.04	516	.76
	Spirit4	3.84	1.08	516	.77

6.6 Exploratory Factor Analysis – DJGLS

As has been discussed in Chapters Three and Five, the DJGLS has proven to be a well-established tool with good psychometric properties for older populations in many countries. However, it has not yet been used with the Sinhalese older population in Sri Lanka. Therefore, how the data from a Sri Lankan context supports its dimensional structure is unknown. Exploratory factor analysis (EFA) is a statistical test used to identify the number of latent factors and what the factor structure of a scale looks like according to participants' responses (Suhr, 2006). For this purpose, EFA was conducted to determine the probable factor structure of the scale in this study sample. The scale consists of 11 items of which six are negatively worded items to measure emotional loneliness and five are positively worded items to measure social loneliness. The total of 11 items were factor analysed using the principal component analysis function of SPSS with varimax rotation. The Kaiser-Meyer-Olkin (KMO-test) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess the suitability of the data for factor analysis. The KMO-test and Bartlett's test results are shown in the following Table 11.

Table 11

Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy

Kaiser-Mayer-Olkin Measure of Sampling Adequacy		0.90
Bartlett's Test of Sphericity Approx. Chi-Square		1506.19
	df	55
	Sig.	< .000

As shown in Table 11 above, KMO measure of sampling adequacy was 0.9 which was above the commonly recommended value between 0.7 and 0.8, and, therefore, the sample was good to conduct EFA (Sofroniou & Hutcheson, 1999). Bartlett's test of sphericity was 1506.19 against orthogonality, which indicated that the data had adequate sphericity at $p < .0001$. The scree plot below (Figure 8) and threshold of

eigenvalues > 1 were used to determine the underlying components (Watson, 2017). The analysis yielded two factors as expected, explaining a total of 48.16% of the variance in the data (Table 12). The results of orthogonal rotation of the solution are shown in Table 12.

Figure 6

Scree Plot Chart for Component Number – DJGLS

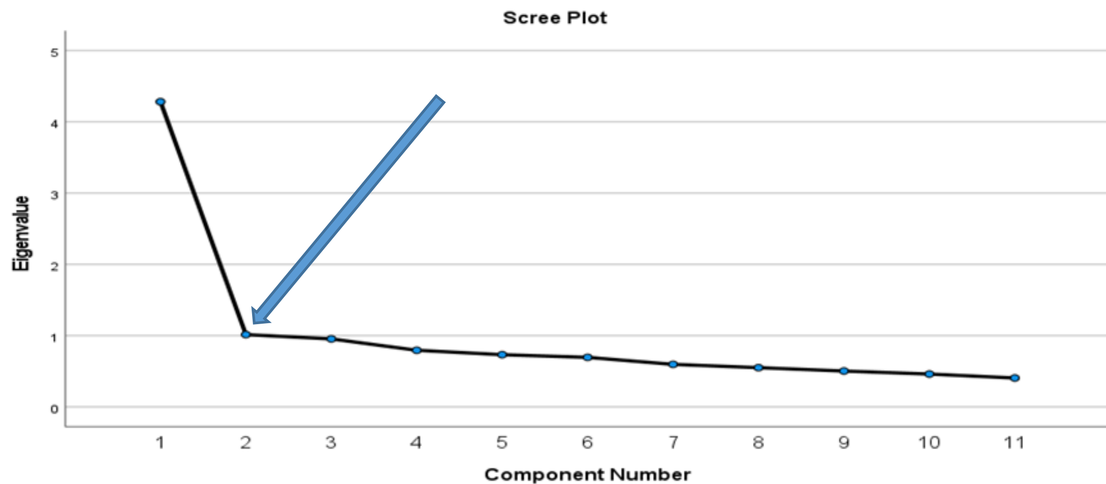


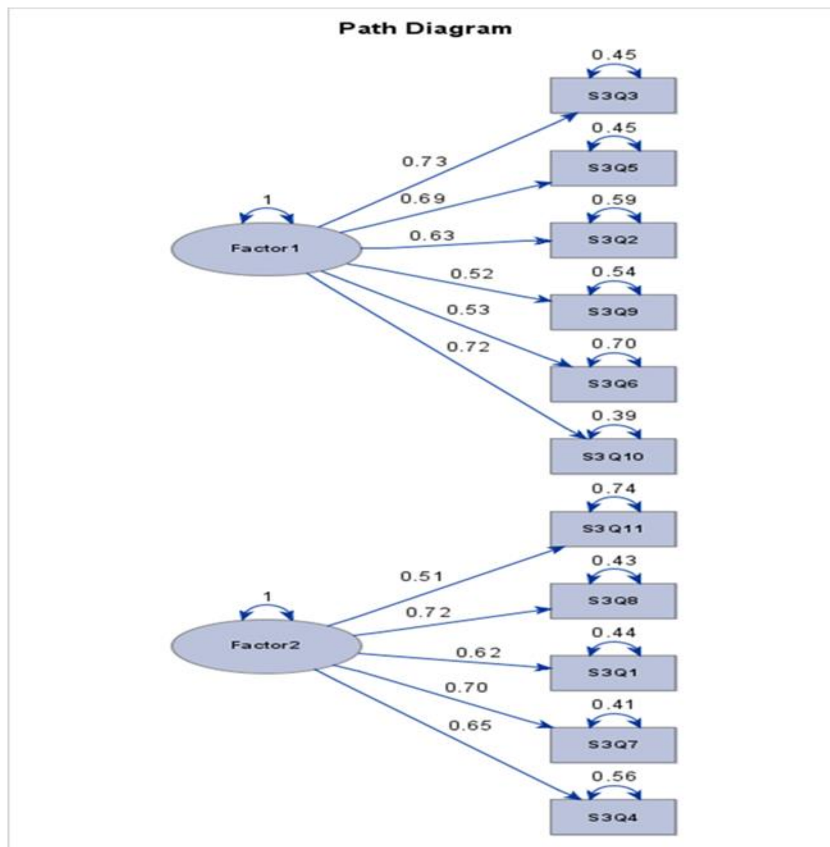
Table 12

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sum of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.28	38.93	38.93	2.84	25.89	25.89
2	1.01	9.23	48.16	2.45	22.27	48.16
3	.95	8.68	56.84			
4	.79	7.23	64.08			
5	.73	6.66	70.74			
6	.69	6.32	77.07			
7	.59	5.43	82.50			
8	.55	5.01	87.52			
9	.50	4.58	92.10			
10	.46	4.19	96.30			
11	.40	3.69	100.00			

Figure 7

Extracted Component Structure of DJGLS Identical to the Original Scale



6.7 Exploratory Factor Analysis (EFA) – WHOQOL-BREF

As explained earlier, the spiritual domain with four items from the original WHOQOL 100 scale was added to the WHOQOL-BREF version in this study. The first two items of the scale that indicate overall general health were excluded from analysis as neither of those two items belong to any domain of health in the scale and those two items represent overall health of participants. Further, QOL21 was excluded from this analysis as it had 501 missing values which indicates a systematic missing in the data set. The reason for higher rate of missing data for this item will be discussed in the discussion chapter. Finally, with the added four items to the WHOQOL-BREF, a total of 27 items (including 23 items from WHOQOL-BREF standard scale under each domain) were included for analysis. The KMO-test Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess the suitability of the data for factor

analysis. As shown in Table 13 below, KMO measure of sampling adequacy was 0.92 which is above the commonly recommended value between 0.7 to 0.8 considered as a good value (Sofroniou & Hutcheson, 1999). Bartlett's test of sphericity was 8676.35 against orthogonality, which indicated that the data has adequate sphericity at $p <$ .0001. Accordingly, EFA was conducted using the principal component analysis function in SPSS with varimax rotation to explore the underlying factor solution for the study sample. Based on scree plot chart (Figure 10) and the eigenvalue (>1) selection threshold, five factors indicated potential optimal number of dimensions.

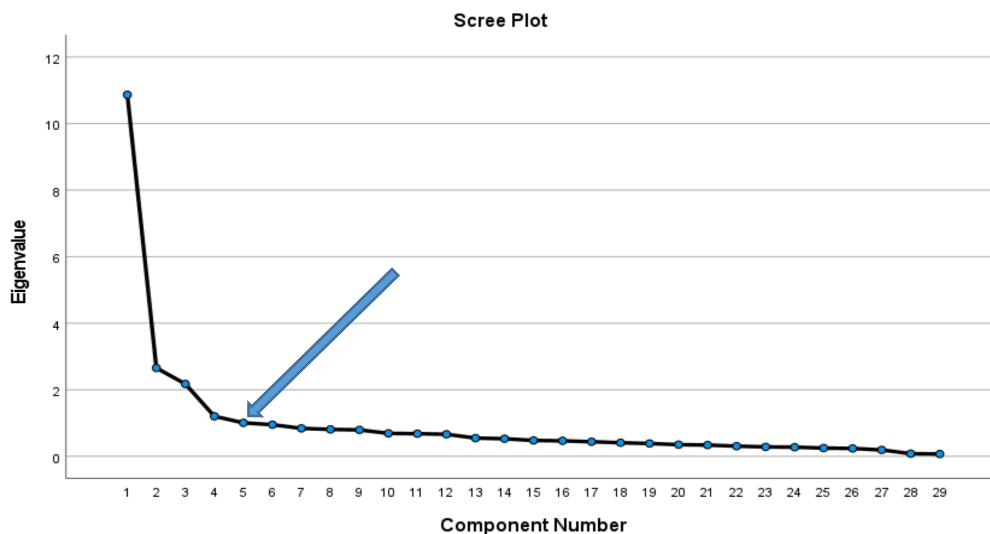
Table 13

Kaiser-Mayer Olkin Sampling Adequacy and Bartlett's Test Results-WHOQOL-BREF

Kaiser-Mayer-Olkin Measure of Sampling Adequacy		0.92
Bartlett's Test of Sphericity Approx. Chi-Square		8676.35
	df	351
	Sig.	.000

Figure 8

Scree Plot Chart for Component Number of WHOQOL-BREF



The scree plot (Figure10) and eigenvalues > 1 were used to determine the underlying components, and the analysis yielded five factors as expected, explaining a total of 63.65 percent of the variance in the data (Table 14). The results of orthogonal rotation of the solution are shown in Table 14 and the factor loading is described in the next section.

Table 14

Total Variance Explained

Component	Initial Eigenvalues			Rotation Sum of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.24	37.91	37.91	5.18	19.17	19.17
2	2.62	9.72	47.63	3.51	13.01	32.18
3	2.14	7.92	55.55	3.44	12.73	44.91
4	1.18	4.39	59.93	2.95	10.91	55.82
5	1.00	3.72	63.65	2.11	7.83	63.65
6	0.85	3.14	66.79			
7	0.83	3.07	69.86			
8	0.81	2.98	72.84			
9	0.76	2.82	75.66			
10	0.68	2.53	78.19			
11	0.67	2.48	80.67			
12	0.54	2.01	82.68			
13	0.51	1.89	84.57			
14	0.47	1.75	86.32			
15	0.45	1.65	87.97			
16	0.42	1.55	89.52			
17	0.39	1.44	90.96			
18	0.35	1.31	92.27			
19	0.35	1.30	93.57			
20	0.32	1.19	94.76			
21	0.30	1.07	95.83			
22	0.28	1.02	96.85			
23	0.26	0.97	97.82			
24	0.24	0.89	98.71			
25	0.20	0.72	99.43			
26	0.08	0.31	99.73			
27	.07	.26	100.00			

Table 15

Component Score Coefficient Matrix

	1	2	3	4	5
QOL3-To what extent do you feel that physical pain prevents you from what you need to do?	0.24	-0.04	-0.04	0.01	-0.15
QOL4-How much do you need medical treatment to function in your daily life?	0.19	-0.003	-0.02	-0.07	-0.11
QOL5-How much do you enjoy life?	-0.07	-0.07	0.29	0.01	-0.09
QOL6- To what extent do you feel your life is meaningful?	-0.08	-0.12	0.32	-0.01	0.07
QOL7-How well are you able to concentrate?	-0.03	-0.06	-0.03	-0.07	0.42
QOL8-How safe do you feel in your daily life?	-0.003	0.18	0.04	-0.02	-0.07
QOL9-How healthy is your physical environment?	0.01	0.29	-0.06	0.06	-0.21
QOL10-Do you have enough energy for everyday life?	0.23	-0.03	-0.09	0.01	-0.04
QOL11-Are you able to accept your bodily appearance?	0.06	-0.01	-0.00	0.03	0.11
QOL12-Have you enough money to meet your needs?	-0.09	-0.09	-0.02	-0.08	0.51
QOL13-How available to you is the information in your day-to-day life?	-0.05	0.09	-0.18	-0.04	0.41
QOL14-To what extent do you have the opportunity for leisure activities?	-0.06	0.23	-0.03	0	-0.03
QOL15-How well are you able to get around?	0.22	0.02	-0.12	-0.01	-0.06
QOL16-How satisfied are you with your sleep?	0.10	-0.03	0.04	0	-0.03
QOL17-How satisfied are you with your ability to perform your daily living activities?	0.21	-0.02	-0.09	-0.01	0.01
QOL18-How satisfied are you with your capacity to work?	0.22	-0.02	-0.09	-0.01	-0.004
QOL19-How satisfied are you with yourself?	0.04	-0.12	0.13	0.02	0.11
QOL20-How satisfied are you with your personal relationship/s?	-0.07	-0.02	0.26	-0.05	-0.10
QOL22-How satisfied are you with the support you get from your friends?	-0.11	0.08	0.21	-0.07	-0.01
QOL23-How satisfied are you with your living place?	-0.06	0.28	-0.01	0.03	-0.12
QOL24-How satisfied are you with your access to health services?	-0.002	0.30	-0.16	-0.08	0.08
QOL25-How satisfied are you with your transport?	-0.01	0.31	-0.16	-0.10	0.06
QOL26-How often do you have negative feelings such as blue mood, despair, anxiety, depression?	-0.01	-0.05	0.33	0.03	-0.26
Spirit1-Do your personal beliefs give meaning to your life?	-0.01	-0.01	-0.05	0.31	-0.00
Spirit2-To what extent do you feel your life to be meaningful?	-0.07	-0.14	0.24	0.07	0.13
Spirit3-To what extent do your personal beliefs give you the strength to face difficulties?	-0.03	-0.05	0.00	0.36	-0.06

Spirit4-To what extent do your personal beliefs help you to understand difficulties in life?	-0.01	-0.03	0.01	0.39	-0.15

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Component Scores

As shown in Table 15 above, analysis yielded a five-factor solution. Items were grouped into new factors (highlighted in different colours) according to the highest factor loading based on correlation coefficient of each question to the extracted factors (Watson, 2017). The EFA results of this study were slightly different from the factor structure of the standard WHOQOL-BREF version. The yielded new factor structure from EFA is described below.

6.7.1 Factor One (indicated in green in the table)

Based on highest component score, seven questions loaded onto factor one: QOL3, QOL4, QOL10, QOL15, QOL16, QOL17, and QOL18. These seven questions all relate to the physical domain in the standard WHOQOL version. Therefore, all items corresponding to the physical domain were correctly loaded onto factor one in this analysis representing the identical structure of the physical domain in WHOQOL-BREF original version.

6.7.2 Factor Two (indicated in yellow in the table)

Six questions loaded onto factor two: QOL8, QOL9, QOL14, QOL23, QOL24, and QOL25. These six questions represent the environmental domain of the standard WHOQOL-BREF version which originally carried eight questions. In this analysis, based on relatively higher factor loading, two questions (QOL12 and QOL13) which were originally in the environmental domain were grouped onto a separate factor (factor five) and only six questions originally from the environmental domain were correctly loaded together onto this factor.

6.7.3 Factor Three (indicated in orange in the table)

As can be seen in Table 15, based on the highest factor loading, seven questions loaded onto factor three: QOL5, QOL6, QOL19, QOL26, QOL20, QOL22, and Spirit2. Out of these questions, QOL5, QOL6, QOL19, and QOL26 were originally from the psychological domain in the standard WHOQOL-BREF version. QOL20 and QOL22

which loaded onto factor three in this analysis were originally in the social domain of the standard WHOQOL-BREF version. The item Spirit2 was originally in the spiritual domain of the WHOQOL-100 scale long version. According to this study data, QOL20, QOL11, and Spirit2 questions have a higher correlation with psychological factors than with their respective social and spiritual domains as included in the standard versions of the WHO scales.

6.7.4 Factor Four (indicated in blue in the table)

According to Table 15, based on the higher component score, three questions loaded onto factor four: Spirit1, Spirit3, and Spirit4. This loading pattern is approximately equal to the factor structure of the spiritual domain which originally represents four questions in the WHOQOL 100 scale version. The analysis of this study data shows that question Spirit2 is highly correlated with items in factor four of which many items account for the psychological domain. The probable reason for this grouping would be that this question is identical to one of the questions that account for the psychological domain in the standard WHOQOL-BREF version (QOL6 and Spirit2 are the same but included in two different domains in the standard WHOQOL-BREF and WHOQOL-100 scale versions).

6.7.5 Factor Five (indicated in purple in the table)

The four questions which loaded onto factor five are: QOL7, QOL11, QOL12, and QOL13 which yields a new factor showing a new dimension of the scale. The loaded four questions onto factor five were originally in the psychological (QOL7 and QOL11) and environmental (QOL12 and QOL13) domains of the standard WHOQOL-BREF version. The above discussed factor loading pattern is shown by the following graphical presentation (Figures 11 and 12).

Figure 9

Presentation of New Factor Three Extracted and Comparison with WHOQOL-BREF Original Scale

Structures of WHOQOL-BREF original scale	New Extraction Factor 3	Re-named New Factor
Psychological domain	QOL 5-How much do you enjoy your life?	Psychosocial domain
	QOL 6-To what extent do you feel your life to be meaningful?	
	QOL 19-How satisfied are you with yourself?	
	QOL 26-How often do you have negative feelings such as blue mood, despair, anxiety, depression?	
Social domain	QOL 20-How satisfied are you with your personal relationships?	
	QOL 22-How satisfied are you with the support you get from your friends?	
Spiritual domain	Spirit2-To what extent do you feel your life to be meaningful?	

Figure 10

Presentation of New Factor Five and Comparison with WHOQOL-BREF Original Scale

Structures of WHOQOL-BREF original scale	New Extraction Factor 5	Re-named New Factor
Psychological domain	QOL 7-How well are you able to concentrate?	Perception of Social self
	QOL 11-Are you able to accept your bodily appearance?	
Environmental domain	QOL 12-Have you enough money to meet your needs?	
	QOL 23-How satisfied are you with the conditions of your living place?	

6.7.6 Re-naming New Sub Scales Extracted

The exploratory factor analysis of WHOQOL-BREF scale in this study created new sub scales. Re-naming those subscales are discussed in the following section.

New sub scale: “Psychosocial Factor” (representing the psychological, social, and spiritual domains in the WHOQOL-BREF original scale)

As described above and shown in Figures 11 and 12, factor analysis of the WHOQOL-BREF scale in the current study showed a different item loading pattern although the number of factors yielded from this analysis is the same as that of the original WHOQOL-BREF scale, which indicates a five-factor solution. The comparison between

the changed item loading pattern in the new analysis with the original structure of the original WHOQOL-BREF scale is shown in Figures 11 and 12. As shown in Figure 11, the items loaded onto factor three represent both social and psychological domains of the original scale. Therefore, a new sub scale extracted from this analysis was named psychosocial domain.

New sub scale: "Perception of Social Self" (representing the psychological and environmental domains in the WHOQOL-BREF original scale)

Figure 12 shows that analysis yielded a distinguishing factor of items from two domains of the original scale—psychological and environmental. QOL7 is the item: how well are you able to concentrate? It examines people's ability to concentrate. The term concentration refers to focused attention or attentional focus (Castle & Buckler, 2009). People need this attentional skill to grasp information and meaningfully interact with environmental and social demands (Tremolada, Taverna, & Bonichini, 2019). QOL7 also examined a significant aspect of people's quality of life that influenced their social relations. QOL11 is the item: are you able to accept your bodily appearance? This item examines one's acceptance of their own body image. According to Davison (2012), people's perception of their bodies does not occur in social isolation and their social world impacts how they feel about their bodies. Hence, this item examines a socially based construct which is an influential aspect of one's quality of life. QOL12 asks, have you enough money to meet your needs? This item examines people's financial situations. Financial stability is a significant social determinant of health (WHO, 2010); therefore, individuals' financial situation directly relates to their social context. QOL13 is, how available to you is the information that you need in your day-to-day life? This question examines the information needs of people and the accessibility to information needed. Islam and Ahmed (2012) stated, access to the right information by people helps them develop confidence to participate fully in social affairs. According to this statement, individuals' information need is a significant aspect of their social life.

Closer examination of the content of all these questions reveals a focus on examining one's subjective evaluation of several aspects of quality of life embedded in the social context. Therefore, to provide an accurate meaningful description of the underlying factor, the new sub scale yielded is named "perception of social self" (Figure 12).

In conclusion, this analysis indicated that sub scale one is identical to the physical domain of the original scale. Of the other extracted sub scales, sub scale two and sub scale four are approximately comparable to the factor structure of environmental and spiritual domains of the original scale of WHOQOL-BREF. Of the other two distinct sub scales extracted, the structure of scale three represents a combination of psychological and social domains of the original scale of WHOQOL-BREF. Therefore, it was named the ‘psychosocial sub scale’. According to the factor loadings, the structure of the last sub scale, sub scale five represents new dimensions of people’s quality of life in relation to the social context. Therefore, it was named ‘perception of social self’. Table 16 below and Figure 13 on page 137 show the EFA-yielded structure of new sub scales of the WHOQOL-BREF Sri Lankan version (WHOQOL-BREF-SL) for this study sample.

Table 16

EFA Yielded New Factors of WHOQOL-BREF for this Study

Item/question	Factor	New Factor
QOL3 QOL4 QOl10 QOL15 QOL16 QOL17 QOL18	Factor 1	Physical
QOL8 QOL9 QOL14 QOL23 QOL24 QOL25	Factor 2	Environmental
QOL5 QOL6 QOL19 QOL26 QOL20 QOL22 Spirit2	Factor 3	Psychosocial
Spirit1 Spirit3 Spirit4	Factor 4	Spiritual
QOL7 QOL11 QOL12 QOL13	Factor 5	Perception of social self

6.7.7 Reliability Estimates for the New Sub Scales of WHOQOL-BREF-SL

Extracted five domains from factor analysis were examined for internal consistency reliability for the study sample. Table 18 shows the comparison of Cronbach's alpha values between five domains in the original scale and extracted domains.

Table 17

Reliability of New Sub Scales of WHOQOL-BREF-SL in Comparison to the Scale Statistics of WHOQOL-BREF Original Scale.

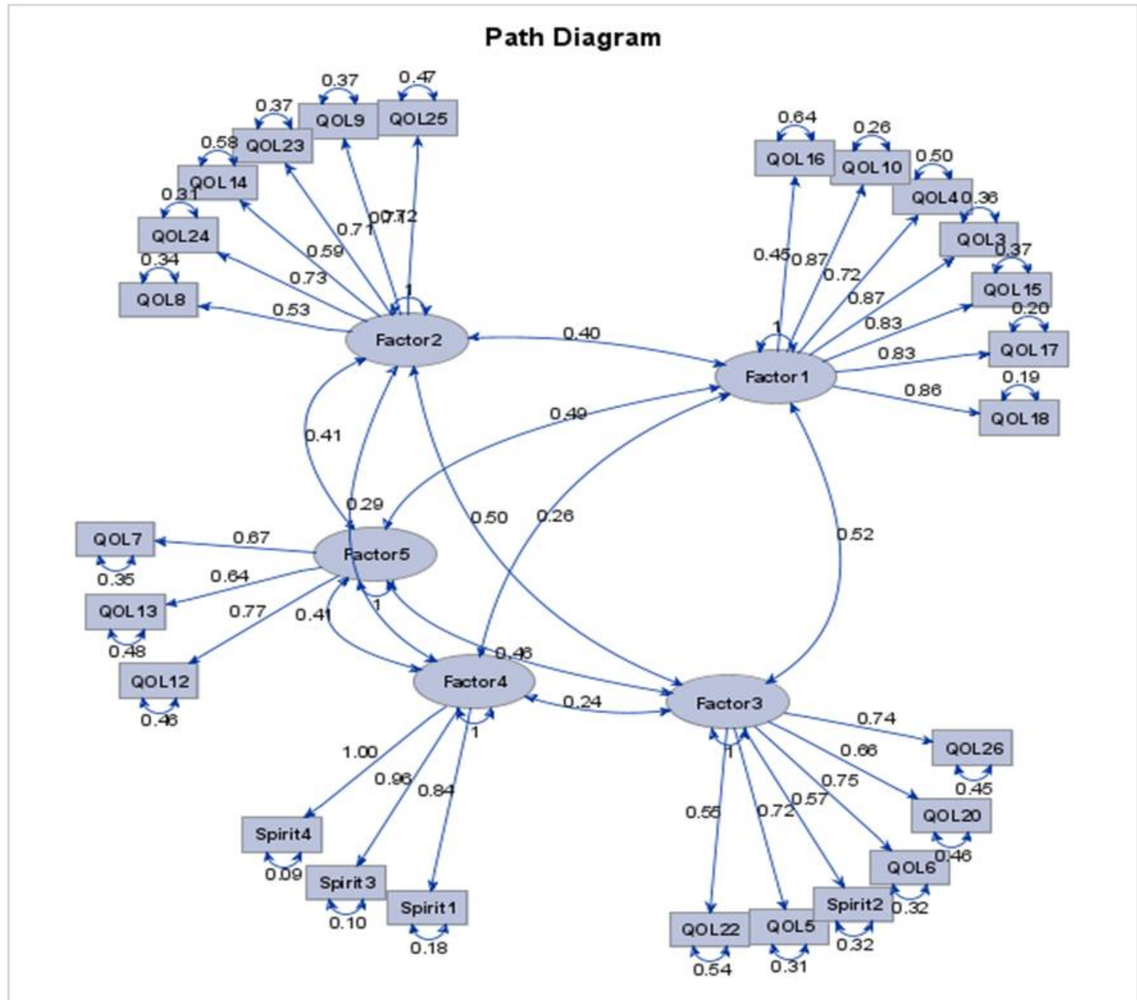
Domains of the original scale and constructed factors		Cronbach's alpha	Cronbach's alpha based on standardized items	Mean	Variance	Std. Dev.	No. of items	No. of cases valid
Physical Domain	Original Sub scale	.89	.90	22.69	38.85	6.23	07	516
	New Sub scale	.89	.90	22.69	38.85	6.23	07	514
Psychological Domain	Original Sub scale	.84	.85	19.35	25.29	5.03	06	517
Psychosocial domain	New Sub scale	.86	.86	21.83	33.73	5.80	07	515
Social Domain	Original Sub scale	.60	.61	8.13	9.98	3.16	03	16
Perception of Social self	New Sub scale	.72	.72	12.48	8.99	3.16	04	517
Environmental Domain	Original Sub scale	.82	.83	28.69	27.15	5.21	08	517
	New Sub scale	.84	.86	22.91	17.80	1.12	06	517
Spiritual Domain	Original Sub scale	.86	.86	14.52	13.36	3.65	04	516
	New Sub scale	.94	.94	11.32	9.12	3.02	03	516

As shown in Table 17, all extracted new sub scales show higher Cronbach's alpha values than the same scores of scales in original WHOQOL-BREF scale. Physical sub scales in new and original construct had the same level of internal consistency with Cronbach's alpha value of .895 (> 0.7). All other extracted new sub scales of psychosocial, perception of social self, environmental and spiritual domains had a relatively high internal consistency than the same sub scales of the original construct. The Cronbach's alpha values of these newly extracted sub scales are .86, .72, .84. and .94 (> 0.7), comparing to their less consistent results of .84, .60, .82 and .86 in the original psychological, social, environmental, spiritual sub scales respectively (Taber, 2018b).

The path-diagram below (Figure 13) further shows the extracted factorial structure of WHOQOL-BREF-SL for this study sample.

Figure 11

The Path-Diagram from SAS Illustrates the Extracted Factor Structure – WHOQOL-BREF-SL



In this diagram, QOL19 and QOL11 were excluded because their factor loading is less than 0.1. The number indicated on the arrow between each item and the factor is the correlation coefficient.

6.8 Chapter Summary

This chapter presented a brief introduction followed by data preparation and data analysis procedures. Participants' demographic characteristics were presented, including geographical dispersion to give readers a general picture of the study sample. Next, frequency distributions and data properties of age, the only continuous characteristic of participants, was presented. Following this, evaluations of psychometric properties were conducted for two quantitative research instruments,

DJGLS and WHOQOL-BREF. The analysis showed both DJGLS and overall WHOQOL-BREF scales have high and robust internal consistency among the study sample. In the final section, factor analysis of study instruments was discussed with a revised factor structure of the WHOQOL-BREF for the study sample. While the DJGLS scale showed the same structural model as its original scale, the analysis of WHOQOL-BREF proposed a different construct pattern in two sub scales from the original scale.

Chapter 7 Quantitative Results Part II

7.1 Introduction

The previous chapter presented part one of the quantitative results of this study. It included participants' demographic profiles, evaluation of psychometric properties, and factor analysis of the study instruments. This chapter presents the levels of loneliness and quality of life estimates of the study participants. In this chapter, descriptive statistics of loneliness and the quality of life of participants are presented firstly, followed by the results of correlation analysis between loneliness and participants' quality of life. In the inferential analysis, the regression analysis of loneliness predicting participants' quality of life is presented, followed by the analysis of covariance to identify significant factors associated with loneliness in the study sample.

7.2 Descriptive Statistics of Loneliness and Quality of Life in the Study Sample

Descriptive statistics of loneliness and the quality of life of study sample is presented in this section. First, loneliness score in study participants is described followed by quality of life score in participants.

7.2.1 Descriptions of DJGLS Score in Participants

The Shapiro-Wilk normality test result of the loneliness score in Table 18 shows that the variable of loneliness is not normally distributed in the study sample and non-parametric statistics must be used (Harwell, 1988).

Table 18

Normality Test - Total Score of Loneliness

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Total Score of loneliness	.158	517	<.001	.897	517	<.001

Table 19 shows the average, standard deviation, percentiles, and skewness values of loneliness score distribution in the study sample. The average loneliness score in the sample is 7.1 (SD = 3.3). According to the classification in the DJGLS scale, Severe Loneliness (SL): 9-10, Very Severe Loneliness (VSL): 11, Moderate Loneliness (ML): 3-8, Not Lonely (NL): ≤ 2. As indicated from the percentiles of loneliness scores, 25% of the participants have a loneliness score equal to or above 10, which reflects one-fourth of the study participants (25%) experienced SL or VSL. The 25th percentile loneliness score of 4.0 shows that 75% of participants experience at least ML.

Table 19

Descriptive Statistics of Loneliness Score - Total Sample

N=517	**Mean**	**Median**	**Std. Deviation**	**Min**	**Max**	**Skewness**	**Percentiles**			
							5	**25**	**75**	**95**
Males	7.12	8.0	3.40	0	11	-.4	1.0	4.0	10	11.0
Females	7.10	8.0	3.32	0	11	-.5	1.0	4.0	10	11.0
Total Loneliness score	7.11	8.0	3.34	0	11	-.5	1.0	4.0	10.0	11.0

Levels of Loneliness across Demographic Variables of Participants

Gender and Loneliness

As shown in Table 20 below, the mean loneliness score among male participants is 7.12 (SD = 3.40) and 7.10 (SD = 3.32) among female participants, and the median score is the same (8.00) for males and females, indicating that the prevalence of loneliness among male and female participants is similar. Percentile scores show that the first quartile score, 4, is identical in both groups. This means 25% of the participants in both male and female groups have rated their loneliness less than or equal to 4, which is the lower end of the moderate loneliness range. The third quartile score, 10, is also similar in both groups with 25% of male and female participants rating their loneliness above or equal to 10, which is in the SL or VSL categories according to DJGLS classification. Gender-based comparison across loneliness categories shows that 22.3% of male and 19.1% of female participants experience VSL. Both genders show approximately the

same percentages in the NL category (14.5 male; 14.8 female), and no difference is shown across gender in the ML category (40.8%).

Table 20

Loneliness Score Across Demographic Variables of Participants

Variable	Observations N	Mean	Median	Std. Dev.	Percentiles		Category of loneliness			
					25	75	VSL %	SL %	ML %	NL %
Gender										
Male	179	7.12	8.00	3.40	4.00	10.00	22.3	22.3	40.8	14.5
Female	338	7.10	8.00	3.32	4.00	10.00	19.1	25.1	40.8	14.8
Age categories										
60-69	117	6.79	8.00	3.34	3.00	10.00	12.8	29.1	40.2	17.9
70-79	256	7.18	8.00	3.41	4.00	10.00	22.7	23.0	39.1	15.2
>80	144	7.25	8.00	3.24	4.25	10.00	22.2	22.2	44.1	14.7
Levels of education										
No schooling	58	7.78	8.50	3.04	6.00	10.00	22.4	27.6	39.7	10.3
Primary (Grade1-10)	308	6.90	7.00	3.42	4.00	10.00	19.5	23.1	40.6	16.9
Secondary (Up to A/L)	137	7.44	8.00	3.28	5.00	10.00	23.4	25.5	39.4	11.7
Tertiary (University level)	14	5.93	6.00	3.12	3.00	8.25	0	21.4	64.3	14.3
Marital status										
Single (Never married)	231	7.26	8.00	3.30	5.00	10.00	22.9	21.6	42.0	13.4
Married	179	6.78	7.00	3.41	3.00	10.00	17.9	22.3	42.5	17.3
Separated	09	6.11	7.00	3.65	2.00	9.00	18.2	36.4	33.3	12.1
Divorced	24	8.21	10.00	2.93	6.00	10.00				
Widowed	74	7.23	8.50	3.40	4.00	10.00	18.9	31.1	36.5	13.5
Employment status										
Employed	338	7.29	8.00	3.27	5.00	10.00	21.9	23.7	42.3	12.1
Not employed	179	6.78	8.00	3.46	3.00	10.00	17.3	25.1	38.0	19.6
Nature of employment										
Heavy work	127	7.54	8.00	3.21	5.00	11.00	28.2	19.4	41.9	10.5
Moderate work	115	6.84	8.00	3.35	4.00	10.00	13.5	26.1	45.0	15.3

Sedentary work	98	7.39	8.00	3.30	5.00	10.00	23.5	25.5	9.8	11.2
Having children										
Yes	215	7.11	8.00	3.36	4.00	10.00	21.9	22.3	41.9	14.0
No	302	7.12	8.00	3.34	4.00	10.00	19.2	25.5	40.1	15.2
Having diseases										
Yes	401	7.14	8.00	3.31	4.00	10.00	20.2	24.2	41.6	14.0
No	116	7.03	8.00	3.48	4.00	10.00	20.7	24.1	37.9	17.2
Location of the facility										
Rural	261	7.21	8.00	3.25	4.00	10.00	23.0	20.7	39.8	16.4
Urban	256	7.02	8.00	3.44	4.00	10.00	17.6	27.6	41.8	13.0
Size of the facility										
Large	240	6.69	7.00	3.31	4.00	10.00	13.8	24.2	44.6	17.5
Small	277	7.48	9.00	3.34	5.00	11.00	26.0	24.2	37.5	12.3

Age and Loneliness

According to table 20 the lowest mean score of loneliness, 6.79 (SD = 3.34) has been reported from the participants in the youngest age group (60-69 years) while the highest average, 7.25 (SD = 3.24) has been reported from the oldest age group (>80 years). Percentiles of the loneliness score indicate that 75% of participants in all age groups rated their loneliness lower or equal to 10, which is the upper limit of SL. However, 25% of participants in the youngest age group (60-69 years) rated their loneliness less than or equal to 3 which is the lower end of ML. About 25% of participants in the oldest age group rated loneliness below or equal to 4.5, indicating they experienced at least ML. According to these results, the oldest people in this study are lonelier than those in the other age groups.

Education and Loneliness

The lowest mean score of loneliness, 5.93 (SD = 3.12) has been reported from the participants who had university level education, while the highest mean, 7.78 (SD = 3.04), has been reported from those who did not attend school. However, comparing the highest and lowest mean scores, no considerable differences of loneliness scores are observed among all four groups of educational levels. Percentiles show that except the participants who had university level education, 25% of all other groups rated loneliness above or equal to 10 which is the upper limit of SL category.

Marital Status and Loneliness

As shown in Table 20, comparison between marital status and loneliness does not show a considerable difference in levels of loneliness across all five marital status categories. A slightly higher average score of loneliness, 8.21 (SD = 2.93), has been reported from divorced participants than the other groups. According to the percentiles, except the participants who have separated from the spouse, 75% of participants in all other marital status groups have at least ML (25th percentile score >3 in these groups).

Levels of Loneliness Relating to Having Children

According to the figures in Table 20, the mean scores of loneliness between participants with children and participants with no children show almost similar scores, 7.11 (SD = 3.36) and 7.12 (SD=3.34), respectively. Percentiles show that 75% of participants in both groups rated their loneliness above or equal to a score of 4. This means that 75% of study participants in both—having children/no children—groups have at least ML. The third quartile score, 10, which is the upper limit of SL category, indicates that 25% of participants in both groups have at least SL.

Living Environment and Loneliness

As Table 20 further shows, the mean loneliness score is similar in the two groups of participants who stay in aged care facilities located in rural areas and urban areas. The mean scores of loneliness in the two settings, respectively, were 7.21 (SD = 3.25) and 7.02 (SD = 3.44). Median score (8.00) in the two groups were identical. In both settings, 25% of participants rated loneliness above or equal to 10, which is the upper margin of the SL category. The mean loneliness score among participants in small and large aged care facilities is 7.48 and 6.69, respectively. Similarly, percentiles indicate that 75% of participants in urban and rural settings had at least ML.

7.2.2 Descriptions of WHOQOL-BREF Score in Participants

According to Shapiro-Wilk normality test results, indicated in Table 21, the level of significance for distribution of the quality-of-life score in the sample is .051. This score is greater than .05; therefore, total score of quality of life is considered as normally distributed within the study sample (statistics from Table 21, and as shown in Figure 14) and parametric statistics can be used.

Table 21

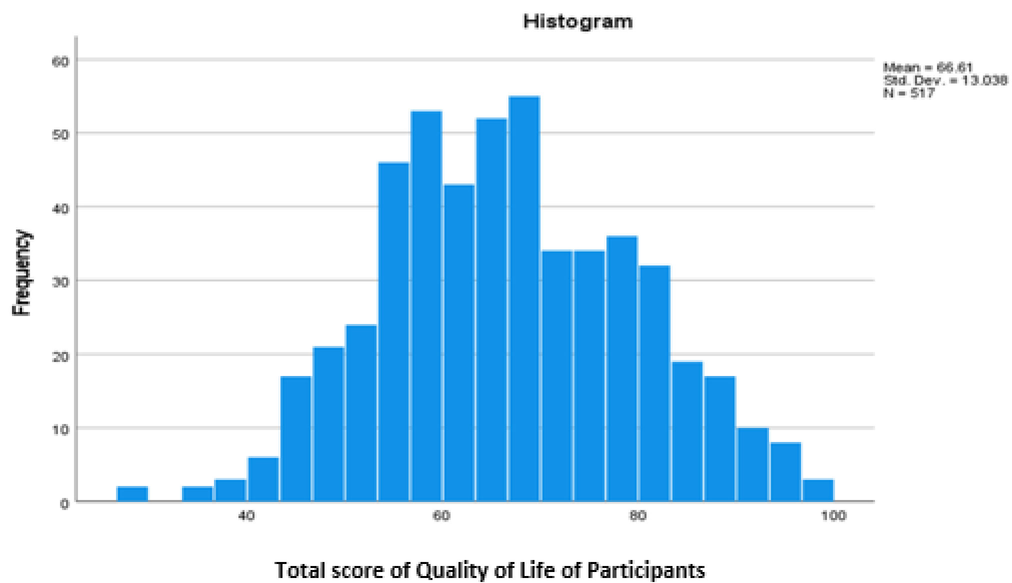
Normality Test for Total Score of Quality of Life of Participants

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Total Score of (all five domains) QOL	.034	517	.200	.994	517	.051

Lilliefors Significance Correction

Figure 12

Normal Distribution of the Total Score of QOL in The Study Sample



According to the WHOQOL-BREF test manual (WHO, 1996) domain scores scaled in a positive direction with higher score denote a higher quality of life. The possible score in each domain ranges from 4 to 20, giving a maximum total score of 80 across the four domains. In the current study, five domains were used in the scale; creating a maximum possible total score of 100, which indicates the best quality of life. As shown in Table 22, the mean quality of life score in participants was 66.61 (SD = 13.03). The median score of the quality of life of the study sample was 65.83 (with a range between 27 and 99 out of a possible total of 100). About 95% of participants scored below 89, indicating only 5% of participants had a considerably good quality of life. About 25% of the participants in the sample scored below or equal to 57.10 which is approximately half of the possible total score of the scale, indicating that only one fourth of the sample had a moderate level of quality of life.

Table 22

Descriptive Statistics of WHOQOL-BREF Total Score in the Sample

N=517	Mean	Median	Std. Deviation	Min	Max	Percentiles			
						5	25	75	95
WHOQOL-BREF Score	66.61	65.83	13.03	27	99	45.59	57.10	76.12	89.34

WHOQOL-BREF Total Score Across Four Categories of Loneliness in Participants

According to Table 23 and Figure 15, the highest mean score of overall quality of life, 80.37 (SD = 10.53), was reported from the group of participants in the NL category. The lowest mean score, 56.79 (SD = 9.52), was reported from participants with VSL. As seen in Table 23, the 25th percentile scores explain that 75% of the participants who are NL gained a quality of life score equal to or above 72.89. This indicates that 75% of the participants in the category of NL have a quality of life better than the average level (>50) of the scale. Whereas 75% of the participants with VSL gained a score equal to or above 49.69, which indicates that this group has a lower quality of life than those in the NL group.

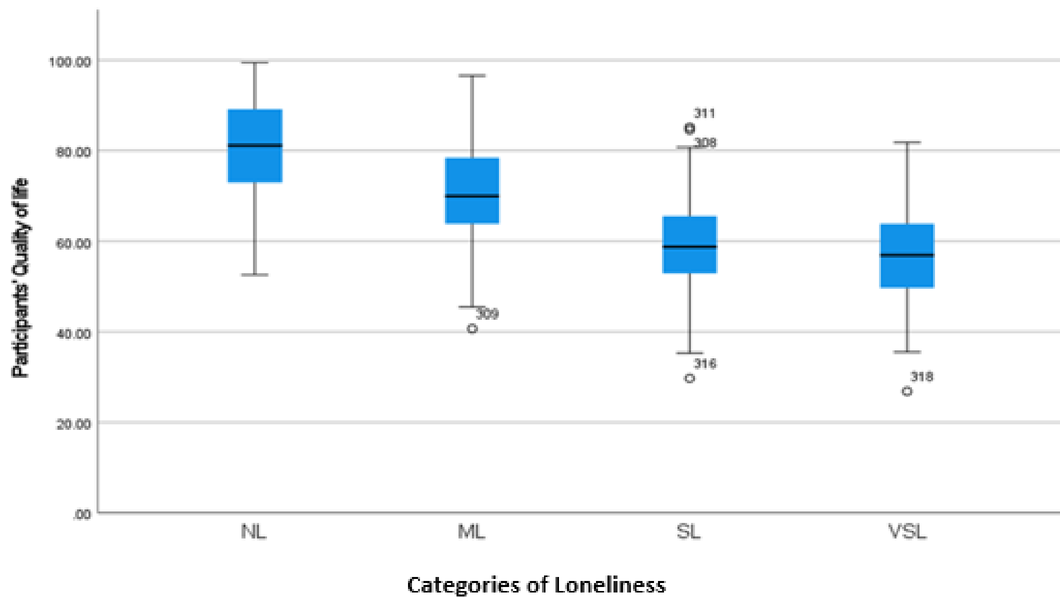
Table 23

WHOQOL-BREF Total Score Across Four Categories of Loneliness in Participants

Category of Loneliness	Observations N	Mean	Median	Std. Deviation	Percentiles	
					25	75
No Loneliness	76	80.37	81.13	10.50	72.89	89.23
Moderate loneliness	211	70.93	69.98	10.45	63.64	78.48
Severe loneliness	125	59.22	58.71	9.73	52.89	65.68
Very severe loneliness	105	56.79	56.93	9.52	49.69	63.92

Figure 13

WHOQOL-BREF Total Score Across across Four Categories of Loneliness in Participants



WHOQOL-BREF Five Factors (Five Domains) of Health Across Four Categories of Loneliness in Participants

According to the Table in Appendix G, the highest mean scores of all five health domains were reported by participants with no loneliness (NL), while the lowest mean scores were reported by participants with Very Severe Loneliness (VSL). Out of all five health domains, the lowest mean score 9.56 (SD = 2.58) was reported by participants with VSL in the social health domain, and the highest mean score 16.68 (SD = 2.18) was reported by participants from NL category in the environmental health domain. Comparing the mean scores of all five health domains within participants of NL, notably the lowest mean score, 15.50 (SD = 3.46), was reported from physical health and their highest mean score 16.68 (SD = 2.18) was shown in environmental health. Within participants with VSL, the highest mean score was reported in spiritual health: 13.12 (SD = 3.04). However, no considerable difference was observed between participants with SL and VSL in mean scores of all five domains of health.

7.3 Association Between Loneliness and Factors of Health in WHOQOL-BREF-Sri Lankan version (WHOQO-BREF-SL)

In this section, associations between newly derived factors (components) from EFA of WHOQOL-BREF were examined using correlation analysis. The analysis was firstly conducted to examine the association between total score of loneliness and individual factors of health in the WHOQOL-BREF-SL scale. Following this, association between subscales of social and emotional loneliness and individual factors of health in WHOQOL-BREF-SL were examined. The results of the correlation analysis are described in the following section and are presented in Tables 24 and 25 below.

7.3.1 Association between Overall Loneliness and Individual Factors of Health in WHOQOL-BREF-SL

As shown in Table 24 below, all constructed factors of health in the WHOQOL-BREF-SL scale are negatively associated with the overall loneliness score. Out of all five QOL factors of health, psychosocial health has the highest negative correlation coefficient with loneliness; the Spearman correlation coefficient is -.73, indicating a strong association (absolute *rho* > .66). The association between loneliness and new factor of spiritual health is the lowest correlation with a Spearman correlation coefficient of -.19, which indicates a weak correlation (absolute *rho* < .33). In summary, overall loneliness is negatively associated with all aspects of quality of life. This means higher level of loneliness is associated with lower quality of life and higher quality of life is associated with low level of loneliness.

7.3.2 Association Between Social and Emotional Loneliness and Individual Factors of Health in WHOQOL-BREF-SL

Table 25 presents the correlation coefficient value of the association between subscales of social and emotional loneliness and individual factors of health in the WHOQOL-BREF-SL scale. All five constructed factors of health are negatively correlated with both social and emotional loneliness.

Emotional Loneliness and Five Factors of Health in WHOQOL-BREF-SL

The association between emotional loneliness and the psychosocial health domain indicates the highest correlation of all five factors of health with a Spearman

correlation coefficient of -.69 (absolute *rho* > .66). This correlation is slightly higher than its correlation with psychological health indicated in the original scale (absolute -.65). Spiritual health indicates the lowest association with emotional loneliness with a Spearman correlation coefficient of -.21 (*rho* < .33). This implies a weak correlation between these two variables and shows a decline in comparison to the coefficient value of the same relationship in the original scale (-.31). The other three factors, physical health, environmental health, and perception of social self are moderately associated with emotional loneliness with Spearman correlation coefficients of -.40, -.55, and -.44, respectively. As presented in Table 25, negative correlation between emotional loneliness and all five factors of health indicates a higher level of emotional loneliness associated with lower quality of life in all five factors of health.

Social Loneliness and Five Factors of Health in WHOQOL-BREF-SL

The association between social loneliness and factors of health in WHOQOL-BREF-SL shows a similar pattern to that with emotional loneliness. The highest correlation is shown between social loneliness and the factor of psychosocial health with a Spearman correlation coefficient of -.67. This reaches the upper limit of the category of moderate correlation (.34< *rho* <.66). This correlation is different from the association indicated in the original WHOQOL-BREF scale in which social loneliness showed the highest correlation with the factor of social health (*rho* = -.60). The lowest correlation is shown between social loneliness and the factor of spiritual health with a Spearman correlation coefficient of -.13. This indicates a weak correlation between the two variables (*rho* < .33) and a slight decline of score from its correlation with the spiritual health factor (*rho* = -.24) in the original scale. Perception of social self indicates a similar association as with emotional loneliness with an identical score of Spearman correlation coefficient of -.44 (rho > .33 < .66).

Overall, emotional, and social loneliness are negatively correlated with all factors of health. This means that higher levels of emotional and social loneliness are associated with lower quality of life in all five factors of health in participants. Compared to the other four factors, psychosocial health has shown the highest negative correlation with both emotional and social loneliness.

Table 24

Relationship between Overall Score of Loneliness and Individual Factors of Health in WHOQOL-BREF-SL Scale

			Total score of Loneliness	**New Physical domain**	**New Psychosocial Domain**	**New Environmental Domain**	**New Spiritual Domain**	**Perception of Social self**
Spearman's rho	Total score of loneliness	Correlation Coefficient	1.000	-.42**	**-.73****	-.60**	**-.19****	-.48**
		Sig. (2-tailed)	.	<.001	<.001	<.001	<.001	<.001
		N	517	514	515	517	516	517
	New Physical domain	Correlation Coefficient		1.000	.60**	.50**	.22**	.57**
		Sig. (2-tailed)		.	<.001	<.001	<.001	<.001
		N			512	514	513	514
	New Psychosocial Domain	Correlation Coefficient			1.000	.66**	.21**	.58**
		Sig. (2-tailed)			.	<.001	<.001	<.001
		N				515	514	515
	New Environmental Domain	Correlation Coefficient				1.000	.29**	.58**
		Sig. (2-tailed)				.	<.001	<.001
		N					516	517
	New Spiritual Domain	Correlation Coefficient					1.000	.43**
		Sig. (2-tailed)					.	<.001
		N						516
	Perception of Social self	Correlation Coefficient						1.000
		Sig. (2-tailed)						.
		N						

Table 25

Relationship between Emotional and Social Loneliness and Individual Factors of Health in WHOQOL-BREF-SL

			Emotional Loneliness	Social Loneliness	New Physical domain	New Psychosocial Domain	New Environmental Domain	New Spiritual Domain	Perception of Social self
Spearman's rho	Emotional Loneliness	Correlation Coefficient	1.000	.69**	-.40**	-.69**	-.55**	**-.21****	-.44**
		Sig. (2-tailed)	.	<.001	<.001	<.001	<.001	<.001	<.001
		N	517	517	514	515	517	516	517
	Social Loneliness	Correlation Coefficient		1.000	-.39**	**-.67****	-.55**	-.13**	-.44**
		Sig. (2-tailed)		.	<.001	<.001	<.001	.003	<.001
		N			514	515	517	516	517
	New Physical domain	Correlation Coefficient			1.000	.60**	.50**	.22**	.57**
		Sig. (2-tailed)			.	<.001	<.001	<.001	<.001
		N				512	514	513	514
	New Psychosocial Domain	Correlation Coefficient				1.000	.66**	.21**	.58**
		Sig. (2-tailed)				.	<.001	<.001	<.001
		N					515	514	515
	New Environmental Domain	Correlation Coefficient					1.000	.29**	.58**
		Sig. (2-tailed)						<.001	<.001
		N						516	517
	New Spiritual Domain	Correlation Coefficient						1.000	.43**
		Sig. (2-tailed)							<.001
		N							516
	Perception of Social self	Correlation Coefficient							1.000
		Sig. (2-tailed)							.
		N							

7.4 Regression Analysis Between Loneliness and Quality of Life of Participants

Regression coefficient of loneliness on participants' quality of life is presented in this section. The impact of overall loneliness and social and emotional loneliness on participants' overall quality of life and individual domains of health are presented in detail.

7.4.1 Regression Analyses of Total WHOQOL-BREF-SL Score Predicted by Overall Loneliness

Regression analysis was conducted to examine the impacts of loneliness on participants' quality of life. In the initial step, the data set was checked against the assumptions of multiple regression analysis for the fitness of using the regression model. Scatterplot and correlation coefficients were used to check linearity of residuals. Collinearity diagnostics were conducted using VIF values. And normality of the residuals was visually checked via normal Q-Q plot. All assumptions were reasonably met and, therefore, regression analysis was subsequently conducted.

At the first step, linear regression was used to examine association between total quality of life and overall loneliness when other factors are present (Table 26), using a backward selection approach.

At the second step, automatic model selection function of SPSS was used to select the final model which examines the association between individual factors of health in WHOQOL-BREF-SL and emotional/social loneliness and the full set of covariates (Tables 27-35). Model selection criteria used both F statistics and Akaike Information Criteria (AIC) followed by a manual comparison of the discrepancies. If the selected explanatory variables through F statistics or AIC were not significant and the coefficient was not clinically/biologically significant, they were excluded. Table 26 presents the results of the analysis which are described in the following section. All the regression models included the full set of 15 variables (gender, age, level of education, nature of employment, high blood pressure, high cholesterol, heart disease, arthritis, asthma, diabetes, area of the facility [urban/rural], size of the facility, having relatives or family members, having opportunity to attend social activities, marital status) and emotional/social loneliness initially in the model selection.

Table 26

Regression Coefficient of Overall Loneliness on Total Quality of Life of Participants

Parameter Estimates							
Dependent Variable: Total Quality of life							
Parameter	B (Regression coefficient)	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper bound	
Intercept	88.35	2.97	29.74	<.001	82.51	94.18	.635
Overall Loneliness	-2.42	.13	-18.83	<.001	-2.67	-2.17	.411
Not schooling	-9.10	3.16	-2.86	.004	-15.26	-2.84	.016
Up to O/L	-6.63	2.94	-2.26	.024	-12.40	-.87	.010
Up to A/L	-3.94	3.01	-1.31	.191	-9.86	1.98	.003
University Lev.	0[a]	.	.	.	.	.	.
Not having High Blood Pressure	2.12	1.01	2.10	.036	.14	4.09	.009
Having High Blood Pressure	0[a]	.	.	.	.	.	.
Having opportunity to attend social activities	4.60	.97	4.77	<.001	2.71	6.50	.044
Not having opportunity to attend social activities	0[a]	.	.	.	.	.	.

a. R Squared = .482 (Adjusted R Squared = .473)

To examine the association of total loneliness and participants' overall quality of life, the regression analysis started with overall loneliness and 15 other variables that might theoretically be good predictors of quality of life. As indicated in Table 26 above, the final regression model selected four variables—total score of loneliness, level of education, high blood pressure and having the opportunity to attend social activities—as the significant predictors of participants' quality of life. Out of all four variables selected, the largest *t-test* score of -18.83 for loneliness indicates it has the largest impact on participants' quality of life compared to the other variables. The regression coefficient of overall loneliness indicates that one unit score increase of loneliness associated with 2.42 (p<.001) score decrease in participants' quality of life after accounting for the effect of the other two variables. According to the regression coefficient (B), as indicated in the table, the quality of life of participants who had an

opportunity to attend social activities was 4.60 scores higher than those who did not have that opportunity, when other variables are constant. In relation to level of education, the quality of life of participants who did not have school education was 9.1 scores lower than those with university education. The participants with primary education had a 6.63 score lower quality of life than that of those with university education. The quality of life of participants who did not have high blood pressure was 2.12 scores higher than those with high blood pressure. Overall, the R square of .482 indicates that 48.2% of the variance of participants' quality of life is explained by these four variables.

7.4.2 Regression Analysis of Individual Factors of Health in WHOQOL-BREF-SL Predicted by Social and Emotional Loneliness with Participants' Demographic Characteristics

Automatic linear model selection was conducted to examine the regression coefficient of individual social and emotional loneliness and other potential predictors on each of the five factors of health in quality of life of participants. According to the collinearity diagnostic test, subscales of the DJGLS, social loneliness and emotional loneliness are highly correlated. Therefore, two sets of separate regression models were used to assess each subscale on individual factors of health. Analogous to the above analysis for total health quality of life, the full regression model with the same sets of variables was used to identify the significant combined predictors of individual factors of health. The results of the regression analysis are shown in Tables 27-35 below.

Table *27*

Regression Coefficient of Emotional Loneliness and Other Predictors on Physical Health of Participants

Parameter Estimates							
Dependent Variable: QOL New Physical Domain							
Parameter	**B (Regression coefficient)**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	3.17	0.29	10.96	<.001	2.60	3.74	0.19
Age 60-69	0.23	0.09	2.34	0.02	0.04	0.42	0.01

Age70-79	0.21	0.08	2.53	0.012	0.05	0.37	0.01
Age >80		.	.	.	.	.	.
No schooling	-0.52	0.23	-2.23	0.026	-0.98	-0.06	0.01
Up to O/L	-0.47	0.21	-2.20	0.028	-0.89	-0.05	0.01
Up to A/L	-0.36	0.22	-1.63	0.104	-0.79	0.07	0.00
University Lev.		.	.	.	.	.	.
Having opportunity to attend social activities	0.28	0.08	3.68	<.001	0.13	0.43	0.03
Not having opportunity to attend social activities		.	.	.	.	.	.
Not having high blood pressure	0.31	0.08	3.87	<.001	0.15	0.47	0.03
Having high blood pressure		.	.	.	.	.	.
Not having heart disease	0.27	0.14	1.97	0.049	0.00	0.55	0.01
Having heart disease		.	.	.	.	.	.
Not having arthritis	0.37	0.12	3.11	0.002	0.14	0.61	0.02
Having arthritis		.	.	.	.	.	.
Emotional loneliness	-0.16	0.02	-9.42	<.001	-0.19	-0.13	0.15

a. R Squared = .260 (Adjusted R Squared = .245)

Table 28

Regression Coefficient of Social Loneliness and Other Predictors on Physical Health of Participants

Parameter Estimates

Dependent Variable: QOL New Physical Domain

Parameter	**B (Regression coefficient)**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	3.27	0.30	11.05	<.001	2.69	3.85	0.19
Age 60-69	0.24	0.10	2.44	0.015	0.05	0.43	0.01
Age70-79	0.21	0.08	2.49	0.013	0.04	0.37	0.01
Age >80		.	.	.	.	.	.
No schooling	-0.49	0.24	-2.06	0.04	-0.95	-0.02	0.00
Up to O/L	-0.44	0.22	-2.02	0.044	-0.86	-0.01	0.00
Up to A/L	-0.32	0.22	-1.44	0.151	-0.76	0.12	0.00
University Lev.		.	.	.	.	.	.
Having opportunity to attend social activities	0.28	0.08	3.62	<.001	0.13	0.43	0.03

Not having opportunity to attend social activities		.	.	.	.	.	.
Not having high blood pressure	0.31	0.08	3.84	<.001	0.15	0.47	0.03
Having heart high blood pressure		.	.	.	.	.	.
Not having heart disease	0.34	0.14	2.41	0.016	0.06	0.61	0.01
Having heart disease		.	.	.	.	.	.
Not having arthritis	0.33	0.12	2.73	0.007	0.09	0.57	0.02
Having arthritis		.	.	.	.	.	.
Social loneliness	-0.20	0.02	-8.76	<.001	-0.24	-0.15	0.13

a. R Squared = .244 (Adjusted R Squared = .229)

Physical Health Factor and Emotional and Social Loneliness

As shown in Tables 27 and 28 above, both emotional and social loneliness significantly associate with the physical health factor in quality of life. The other demographic variables, lifestyle and health conditions significantly associated with physical health are age, having opportunity to attend social activities, high blood pressure, heart disease and arthritis.

As indicated in Table 27, one unit score increase of emotional loneliness associated with .16 ($p < .001$) scores decrease in participants' physical health if all other variables in the model are constant. The regression coefficient of social loneliness also showed that one unit score increase of social loneliness associated with .20 ($p < .001$) scores decrease in participants' physical health (Table 28) when the effects of all other variables are constant.

The other findings are participants with higher education had higher physical health than those with lower level of education after controlling for other variables in the model. For example, physical health of participants with no school education is .52 ($p < .02$) scores lower than those with university level education (Table 27). Participants with arthritis, high blood pressure, and heart disease have -0.37 (Std. E.-0.12), -0.31 (Std. E.-0.08), and -0.27 (Std. E-.0.14) lower physical health scores respectively than those without. Those who had the opportunity to attend social activities had .28 scores (Std. E. = 0.08) higher quality of physical health than those who did not have that opportunity. The physical health of participants in the youngest age group (60-69 years) was .23 higher than that of oldest group (>80 years) in the sample (Table27).

The regression model including emotional loneliness explains 26% of the variance in the physical health domain of the quality of life, and the model including social loneliness explain 24.4% of the variance in the physical health domain of the quality of life.

Table 29

Regression Coefficient of Emotional Loneliness and Other Predictors on New Psychosocial Factor of Health

Parameter Estimates							
Dependent Variable: QOL New Psychosocial Domain							
Parameter	**B (Regression coefficient)**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	4.13	0.17	24.89	<.001	3.80	4.45	0.55
No schooling	-0.50	0.17	-2.88	0.004	-0.84	-0.16	0.02
Up to O/L	-0.34	0.16	-2.12	0.034	-0.65	-0.03	0.01
Up to A/L	-0.22	0.16	-1.35	0.178	-0.54	0.10	0.00
University Lev.		.	.	.	.	.	.
Having opportunity to attend social activities	0.25	0.06	4.40	<.001	0.14	0.36	0.04
Not having opportunity to attend social activities		.	.	.	.	.	.
Not having high blood pressure	0.18	0.06	2.99	0.003	0.06	0.29	0.02
Having high blood pressure		.	.	.	.	.	.
Emotional loneliness	-0.26	0.01	-20.53	<.001	-0.29	-0.24	0.45
a. R Squared = .510 (Adjusted R Squared = .504)							

Table 30

Regression Coefficient of Social Loneliness and Other Predictors on New Psychosocial Factor of Health.

Parameter Estimates							
Dependent Variable: QOL New Psychosocial Domain							
Parameter	**B (Regression coefficient)**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	4.51	0.19	23.54	<.001	4.14	4.89	0.52
No schooling	-0.48	0.18	-2.61	0.009	-0.84	-0.12	0.01
Up to O/L	-0.31	0.17	-1.82	0.069	-0.64	0.02	0.01
Up to A/L	-0.16	0.17	-0.95	0.341	-0.50	0.17	0.00
University Lev.	0[a]	.	.	.	.	.	.
Having opportunity to attend social activities	0.25	0.06	4.23	<.001	0.14	0.37	0.03
Not having opportunity to attend social activities	0[a]	.	.	.	.	.	.
Having relatives	-0.20	0.07	-2.75	0.006	-0.35	-0.06	0.02
Not having relatives	0[a]	.	.	.	.	.	.
Not having high blood pressure	0.16	0.06	2.51	0.012	0.03	0.28	0.01
Having heart high blood pressure	0[a]	.	.	.	.	.	.
Social loneliness	-0.32	0.02	-18.09	<.001	-0.35	-0.28	0.39

a. R Squared = .461 (Adjusted R Squared = .454)

Psychosocial Health Factor and Emotional and Social Loneliness

As indicated in Tables 29 and 30 above, both emotional and social loneliness significantly associated with the new psychosocial health factor of the quality of life. According to the two models above, the other demographic variables, lifestyle, and health conditions significantly associated with psychosocial health are education, having opportunity to attend social activities, high blood pressure, and having relatives.

According to Table 29, one unit score increase of emotional loneliness associated with .26 ($p < .001$) scores decrease in participants' psychosocial health when the effects of all other variables are constant. Social loneliness also showed the same pattern of relationship in Table 30 and showed that one unit score increase of social loneliness associated with .32 ($p < .001$) scores decrease in psychosocial health of participants if all other variables in the model are constant.

According to the other findings of the models, higher education was associated with higher psychosocial health after controlling for other variables in the model. For example, psychosocial health of participants with no school education is .50 ($p < .02$) scores lower than those with university level education and participants not having high blood pressure have 0.18 (Std. E. = -0.06) higher psychosocial health score than those with high blood pressure (Table 29). Participants who had the opportunity to attend social activities had .25 (Std. E. = 0.06) scores higher quality of psychosocial health than those who did not have that opportunity. However, the noteworthy finding in the model is that psychosocial health of participants having relatives was 0.20 (Std. E. = 0.07) scores lower than those not having relatives (Table 30).

The regression model including emotional loneliness explains 51% of the variance in the psychosocial health domain of the quality of life, and the model including social loneliness explains 46.1% of the variance in the physical health domain of the quality of life.

Table 31

Regression Coefficient of Emotional Loneliness on Environmental Factor of Health of Participant

Parameter Estimates with Standard Errors							
Dependent Variable: QOL New Environmental Domain							
Parameter	**B (Regression coefficient)**	**Std. Error**	**T**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	4.47	0.05	93.65	0	4.37	4.56	0.95
Emotional loneliness	-0.19	0.01	-15.63	<.001	-0.21	-0.16	0.32
a HC3 method			a. R Squared = .295 (Adjusted R Squared = .294)				

Table 32

Regression Coefficient of Social Loneliness on Environmental Factor of Health of Participants

Parameter Estimates with Robust Standard Errors

Dependent Variable: QOL New Environmental Domain							
Parameter	**B (Regression coefficient)**	**Std. Error**	**T**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	4.67	0.06	73.07	<.001	4.55	4.79	0.91
Social loneliness	-0.24	0.02	-14.51	<.001	-0.27	-0.20	0.29
a HC3 method			a. R Squared = .277 (Adjusted R Squared = .276)				

Environmental Health Factor and Emotional and Social loneliness

As shown in Tables 31 and 32 above, of all the variables with emotional and social loneliness, the regression model selected only emotional and social loneliness as significant factors associated with the environmental health of participants.

As indicated in Table 31, one unit score increase of emotional loneliness associated with .19 ($p < .001$) units score decrease in participants' environmental health if all other variables are constant. Table 32 showed that one unit score increase of social loneliness associated with .24 ($p < .001$) units score decrease in participants' environmental health when the effects of other variables are constant. This result showed that social loneliness had a slightly higher regression coefficient on participants' environmental health than that of emotional loneliness.

However, the regression model including emotional loneliness explained 29.5% of the variance in the environmental health domain of the quality of life, while the model including social loneliness explained 27.7% of the variance in the environmental health domain of the quality of life of participants.

Table 33

Regression Coefficient of Emotional Loneliness on Spiritual Health of Participants

Parameter Estimates							
Dependent Variable: QOL New Spiritual Domain							
Parameter	**B**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	3.94	0.24	16.20	<.001	3.46	4.42	0.34
Male	-0.23	0.09	-2.52	0.012	-0.41	-0.05	0.01
Female	0[a]	.	.	.	.	.	.
Age 60-69 yrs.	0.30	0.12	2.44	0.015	0.06	0.54	0.01
Age 70-79 yrs.	0.13	0.10	1.25	0.212	-0.07	0.33	0.00
Age >80 yrs.	0[a]	.	.	.	.	.	.
Never married	0.20	0.13	1.53	0.128	-0.06	0.46	0.01
Married	0.37	0.13	2.75	0.006	0.11	0.63	0.02
Divorced + separated	0.24	0.20	1.19	0.236	-0.16	0.64	0.00
Widowed	0[a]	.	.	.	.	.	.
Having family members	0.26	0.12	2.19	0.029	0.03	0.50	0.01
Not having family members	0[a]	.	.	.	.	.	.
No high blood pressure	-0.21	0.1	-2.11	0.036	-0.41	-0.01	0.01
Having high blood pressure	0[a]	.	.	.	.	.	.
No arthritis	-0.36	0.15	-2.42	0.016	-0.65	-0.07	0.01
Having arthritis	0[a]	.	.	.	.	.	.
Large facility	0.17	0.09	1.92	0.055	-0.00	0.34	0.01
Small facility	0[a]	.	.	.	.	.	.
Emotional loneliness	-0.08	0.02	-3.59	<.001	-0.12	-0.03	0.03

a. R Squared =0.075

Factor of Spiritual Health and Emotional Loneliness

As indicated in Table 33 above, the regression model selected eight variables as combined significant predictors of participants' spiritual health. The model excluded social loneliness based on the insignificant *t*-test *p* value ($p > .05$). This means social loneliness has no significant association with participants' spiritual health.

Compared to the scores of other variables, the largest *t*-test value -3.59 for emotional loneliness indicates the highest impact on spiritual health of participants. It shows that one unit score increase of emotional loneliness associated with .08 ($p < .001$) unit scores decrease in participants' spiritual health if the effects of other variables are constant. Having family members or relatives is another significant predictor to

spiritual health of participants. The difference of mean scores between the two groups indicates that the spiritual health of participants who have relatives is .26 scores higher than those who do not have family members and relatives. Gender difference indicate that the spiritual health of men is 0.23 ($p < 0.012$) scores lower than that of women. As indicated by the model, arthritis and high blood pressure are comorbid conditions that are positively associated with spiritual health in this study sample. Participants who do not have high blood pressure and arthritis had, respectively, a .21 ($p < .05$) and .36 ($p < .01$) scores lower spiritual health than those who had the disease conditions. In terms of marital status, married participants had .36 ($p < .006$) scores significantly higher spiritual health than the widowed group.

Table 34

Regression Coefficient of Emotional Loneliness and Other Predictors on Quality of Participants' Perception of Social Self

Parameter Estimates							
Dependent Variable: Perception of Social Self							
Parameter	**B**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	3.10	0.19	21.54	<.001	3.63	4.36	0.48
Having opportunity to attend social activities	0.37	0.07	5.63	<.001	0.24	0.50	0.06
Not having opportunity to attend social activities	0[a]	.	.	.	.	.	.
No schooling	-0.70	0.21	-3.26	0.001	-1.12	-0.28	0.02
Up to O/L	-0.43	0.20	-2.18	0.03	-0.82	-0.04	0.01
Up to A/L	-0.25	0.20	-1.31	0.191	-0.62	0.12	0.00
University	0[a]	.	.	.	.	.	.
Large facility	0.15	0.06	2.51	0.013	0.03	0.27	0.01
Small facility	0[a]	.	.	.	.	.	.
Unemployed	-0.12	0.10	-1.27	0.205	-0.31	0.07	0.00
Heavy work	-0.10	0.11	-0.92	0.357	-0.31	0.11	0.00
Moderate work	-0.22	0.10	-2.17	0.031	-0.42	-0.02	0.01
Sedentary work	0[a]	.	.	.	.	.	.
Emotional loneliness	-0.16	0.02	-10.81	<.001	-0.19	-0.13	0.19

a. R Squared = .325 (Adjusted R Squared = .313)

Table 35

Regression Coefficient of Social Loneliness and Other Predictors on Quality of Participants' Perception of Social Self

Parameter Estimates							
Dependent Variable: Perception of Social Self							
Parameter	**B**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	4.32	0.22	19.44	<.001	3.89	4.76	0.43
Having opportunity to attend social activities	0.38	0.07	5.75	<.001	0.25	0.51	0.06
Not having opportunity to attend social activities	0[a]	.	.	.	.	.	.
No schooling	-0.76	0.20	-3.83	<.001	-1.15	-0.37	0.03
Up to O/L	-0.52	0.18	-2.85	0.005	-0.88	-0.16	0.02
Up to A/L	-0.28	0.19	-1.49	0.137	-0.65	0.09	0.00
University	0[a]	.	.	.	.	.	.
Large facility	0.14	0.06	2.34	0.02	0.02	0.26	0.01
Small facility	0[a]	.	.	.	.	.	.
Not having high cholesterol	-0.25	0.12	-2.06	0.04	-0.49	-0.01	0.01
Having high cholesterol	0[a]	.	.	.	.	.	.
Social loneliness	-0.19	0.02	-9.87	<.001	-0.23	-0.15	0.16

a. R Squared = .306 (Adjusted R Squared = .296)

Factor of Perception of Social Self in WHOQOL-BREF-SL and Emotional and Social loneliness

As shown in Tables 34 and 35 above, both emotional and social loneliness significantly associated with the quality of participants' perception of social self. Demographics and other variables significantly associated with participants' perception of social self were having opportunity to attend social activities, education, occupation, and size of the facility.

Regression coefficient of emotional loneliness showed that one unit score increase of emotional loneliness associated with .16 ($p < .001$) unit scores decrease in quality of participants' perception of social self when other variables are constant (Table 34). According to Table 35, one unit score increase of social loneliness associated with .19 ($p < .001$) unit scores decrease in quality of participants' perception of social self if the effects of other variables are constant.

With regard to the effects of other variables, higher education was associated with higher quality of perception of social self after controlling for other variables in the model. For example, quality of perception of social self of participants with no school education is 0.70 ($p < .001$) scores lower than those with university level education (Table 34). Those who had opportunity to attend social activities had .38 (Std. E. = - 0.07) scores higher quality of perception of social self than those who did not have that opportunity (Table 35). Quality of the perception of social self of participants who stayed in large care facilities was .15 ($p < .05$) scores higher than those who stayed at small care facilities (Table 34). Quality of the perception of social self in participants who had occupations with moderate level work was .22 ($p < .05$) scores lower than those who had sedentary level occupations (Table 34).

The regression model including emotional loneliness explained 32.5% of the variance and the model including social loneliness explained 30.6% of the variance in quality of perception of social self in participants.

7.4.3 Analysis of Covariance Between Demographic Variables and Loneliness

Table 36

Parameter Estimates of Predictors on Participants' Levels of Loneliness

Parameter Estimates							
Dependent Variable: Total score of loneliness							
Parameter	**B**	**Std. Error**	**t**	**Sig.**	**95% Confidence Interval**		**Partial Eta Squared**
					Lower Bound	**Upper Bound**	
Intercept	.38	3.69	.10	.919	-6.866	7.620	.000
Age	.01	.02	.63	.529	-.026	.051	.001
Male	-.16	.34	-.48	.632	-.835	.508	.000
Female	0[a]	.	.	.	.	.	.
No schooling	1.95	1.07	1.82	.069	-.150	4.041	.007
Primary – Up to O/L	1.50	.98	1.54	.126	-.420	3.415	.005
Secondary – Up to A/L	1.82	.94	1.94	.053	-.025	3.668	.007
Tertiary – University	0[a]	.	.	.	.	.	.
Having children	.46	.41	1.11	.267	-.352	1.271	.002
Not having children	0[a]	.	.	.	.	.	.
Unemployed	-.83	.48	-1.73	.085	-1.763	.113	.006
Heavy work	-.25	.54	-.46	.643	-1.315	.812	.000
Moderate work	-.81	.50	-1.61	.109	-1.796	.181	.005

Sedentary work	0[a]	.	.	.	.	.	.
Urban Area	.18	.29	.63	.527	-.382	.744	.001
Rural Area	0[a]	.	.	.	.	.	.
Large facility	-.41	.29	-1.41	.159	-.990	.163	.004
Small facility	0[a]	.	.	.	.	.	.
Having family members	5.72	3.22	1.77	.077	-.618	12.051	.006
Not having family members	0[a]	.	.	.	.	.	.
Being visited by family	-1.35	.31	-4.30	<.001	-1.969	-.735	.036
Not being visited by family	0[a]	.	.	.	.	.	.
Having opportunity to attend social activities	-1.34	.32	-4.19	<.001	-1.968	-.712	.034
Not having opportunity to attend social activities	0[a]	.	.	.	.	.	.
Single	.54	.52	1.05	.296	-.475	1.556	.002
Married	-.06	.45	-.12	.904	-.946	.837	.000
Divorced & separated	.64	.68	.94	.350	-.701	1.974	.002
Widowed	0[a]	.	.	.	.	.	

Multi-way ANCOVA was conducted to determine the effects of demographic variables on participants' loneliness controlling for the variable age. Several demographic variables which were significant predictors of loneliness in previous studies (Cohen-Mansfield et al., 2016; Ferreira-Alves, Magalhães, Viola, & Simoes, 2014; Neto, 2014b) were used for the analysis. As indicated in Table 36 above, only two variables, having opportunity to attend social activities and being visited by relatives, were identified as having statistically significant associations with participants' loneliness ($p < .001$).

The level of loneliness in participants who had the opportunity to attend social activities was 1.34 ($p < .001$) scores lower than those who did not have the opportunity. The variable "being visited by relatives" showed the same effect. After controlling for age, the level of loneliness in participants being visited by their relatives was lower by 1.35 ($p < .001$) score than those who were not being visited by relatives. The results show that age is not a significant covariate for participants' loneliness ($p = .53$) and other demographic factors are not significant predictors of loneliness in participants of this study.

7.5 Chapter Summary

This chapter began by presenting descriptive statistics of loneliness and quality of life estimates of study participants, followed by prevalence of loneliness across demographic variables, and geographical distribution of loneliness in participants. Statistical analysis revealed that the oldest age group, age >80 years, was the loneliest group and there was no significant difference of loneliness between male and female participants in the study sample. Further, it was identified that the prevalence of loneliness is higher in participants with no school education than those with university education. Out of 17 districts, the highest prevalence of loneliness was reported in two districts—Nuwara Eliya and Kaluthara; while the lowest prevalence was reported in Mathara and Rathnapura districts. Correlation and regression analysis revealed that loneliness is negatively associated with participants' quality of life and significantly impacts all aspects of health. The ANCOVA results showed that among the known demographic predictors of loneliness in the existing literature, the feeling of loneliness in these study participants was predicted by only two variables; having opportunity to attend social activities and being visited by relatives.

Chapter 8 Qualitative Study Findings

8.1 Introduction

Chapters Six and Seven presented the quantitative results of this mixed methodology study. This chapter presents the qualitative findings, beginning with the demographic profiles of participants who participated in the qualitative component of the research. The overarching themes and sub-themes derived from the analysis explaining older Sinhalese people's perceptions of loneliness are presented.

8.2 Participants' Profiles

A total of 517 participants were recruited for this mixed methodology study. Participant demographics of the quantitative sample was presented in Chapter Six. Table 38 presents the profiles of participants invited into the qualitative study.

Table 37

Participant Demographics for Qualitative Study

No	ID	Age (yrs.)	Gender	Marital status	Level of Education	Having Children	Location of the facility	Size of the facility	Province	District
1	5SGM	71	Male	M	SE	Yes	Urban	Large	Southern	Galle
2	9SGF	77	Female.	UM	SE	No	Rural	Large	Southern	Galle
3	33SGM	68	Male	UM	PE	No	Urban	Small	Southern	Galle
4	10SMF	75	Female	UM	SE	No	Urban	Large	Southern	Matara
5	17SMF	75	Female	M	PE	Yes	Rural	Small	Southern	Matara
6	3SHM	72	Male	M	PE	Yes	Rural	Small	Southern	Hambantota
7	51WColF	81	Female	M	SE	Yes	Rural	Large	Western	Colombo
8	56WColF	76	Female	UM	PE	No	Rural	Large	Western	Colombo
9	1WGmpF	62	Female	M	NE	Yes	Urban	Small	Western	Gampaha
10	1WKalF	76	Female	UM	SE	No	Urban	Small	Western	Kalutharа
11	11CKF	78	Female	UM	PE	No	Urban	Small	Central	Kandy
12	7CMtlF	70	Female	UM	PE	No	Rural	Large	Central	Mathale
13	2CNuF	78	Female	UM	NE	No	Rural	Small	Central	Nuwara Eliya

14	54NWKuF	70	Female	Widowed	SE	Yes	Rural	Large	North Western	Kurunegala
15	55NWKuM	80	Male	Widowed	SE	Yes	Rural	Large	North Western	Kurunegala
16	6NWPutF	76	Female	M	TE	No	Urban	Large	North Western	Puttalam
17	3SbRtF	80	Female	Widowed	SE	Yes	Urban	Large	Sabaragamuwa	Ratnapura
18	35SbRtM	85	Male	M	PE	Yes	Rural	Small	Sabaragamuwa	Ratnapura
19	4SbKegF	74	Female	UM	SE	No	Rural	Small	Sabaragamuwa	Kegalle
20	13SbKegM	80	Male	UM	SE	No	Rural	Small	Sabaragamuwa	Kegalle
21	5UBF	60	Female	UM	PE	No	Rural	Small	Uva	Badulla
22	6UBM	74	Male	UM	PE	No	Rural	Small	Uva	Badulla
23	5UMnrF	78	Female	UM	NE	No	Urban	Large	Uva	Monaragala
24	6UMnrM	83	Male	M	PE	Yes	Urban	Large	Uva	Monaragala
25	2NCApuM	79	Male	M	PE	No	Rural	Large	North Central	Anuradhapura
26	8NCPolF	74	Female	M	PE	Yes	Rural	Small	North Central	Polonnaruwa

A total of 26 participants were invited for the qualitative interviews of this study. Of them, only nine (34%) participants were males; females were the majority in this sample. About 50% of the total sample were unmarried and only 10% of them were widows. Of the total of 26 participants, only six were at the age of 80 years or above. Each of the 17 districts included in the study represented at least one participant. Only three participants had not attended school and all the others had at least primary level education, while only one female participant had university education.

8.3 Presentation of Findings

This section discusses the three themes, derived from the analysis of the interview transcripts that describe how older people living in aged care facilities perceive being lonely (see Figure 16). The first theme, ‘how I came to be lonely’, describes what participants believe to be the reasons for them being lonely. They identified being overgenerous, overly trusting of others, and no longer being wanted by others led them to be lonely. The second theme, ‘loneliness makes me feel…’, describes how

participants felt hopeless, worthless, disconnected, and unwell; and this led them to 'suffer' as a result of being lonely. The third theme, 'how I cope/manage my loneliness', describes participants' strategies to manage their loneliness, including blaming others and making peace with themselves. Table 39 presents the themes and subthemes which are described in the next section.

Figure 14

The Three Themes Derived from Qualitative Data Analysis

Table 38

Themes and Subthemes

Theme 1: How I Came to be Lonely	Theme 2: Loneliness Makes Me Feel…	Theme 3: How I Cope/Manage my Loneliness
	Subthemes	
• Being over-generous and trusting family members	• Hopeless and worthless	• Blaming others
• No longer being wanted by others	• Disconnected	• Drawing on religion to make peace with myself
	• Unwell and suffering	

8.3.1 Theme 1 - How I Came to be Lonely.

The first theme, 'how I came to be lonely', captures the participants' views on the reasons for their loneliness. A recurring subtheme perceived by the majority of participants was 'being overgenerous and trusting family members'. The second subtheme, 'no longer being wanted by others' describes the rationale for being lonely.

Being Overgenerous and Trusting Family Members

This subtheme represents how participants sacrificed their 'good old days for others', by being overgenerous and trusting. In all their stories, participants outlined a sequential connection between being overgenerous, moving to an aged care facility, and feeling lonely. Their stories related to trusting their siblings, children, and other relatives and being generous to them. One female participant shared how she became lonely by trusting in others and being generous to them.

> *My sister and her husband requested me to transfer the deeds to my property to them. They said they would look after me. My sister's husband reiterated that the property should be transferred to his wife (my sister). He said that there is nothing to worry about. Unfortunately, I trusted them, I thought, being my own sister, she would not deceive me. I trusted them like the sun and the moon. So, I transferred the property to my own sister. I never thought that my own sister, born of the same mother, would do (something) like that. I always trusted my brothers and sisters. I never thought that my own sister would do such a deceitful thing to me. Now I am left with nothing. That is how I came to this place. I feel very lonely here.* (06 NW Put F)

This story draws attention to how over-trusting family members ~~a~~nd being overgenerous lead to people being lonely. This participant strongly believed that her own sister would look after her in her old age. She gifted her properties having faith in her close relatives without retaining anything for herself. Consequently, she had no possessions and moved to an aged care facility where she now identifies she is lonely. A similar story was shared by a male participant.

> *I donated my lands to my sister because her husband divorced her. I assisted my second sister's son a lot, believing that their future would be successful. They are very well off now. They have completely forgotten what I had done for them, giving my land and property. I helped them a lot. As a result, you know what happened, I came here and now I spend the rest of my life being lonely.* (13 Sb Keg M)

This participant sacrificed his possessions for his nephew's future, to help him get ahead and be successful. It seems he believed his family would look after him when he got older. However, this did not happen, and he was forced to move to a facility where he now feels lonely. He believed that the sacrifices he made were the reason for him

being lonely. Another female participant shared her story, of how she made sacrifices in her life, as a mother would, for her son.

> *So, after my husband's death, I brought up my son with a lot of hardship. While my son grew up, I did labour work in houses to feed my son. Later, I flew to the Middle East. There I worked hard. From my hard-earned money, I was able to build a house for my son. I spent my money to build a house for my son. I didn't take a single cent from him to build the house. I did all this to keep my son happy. My only wish is his happiness. But everything turned upside down after a few years of his marriage* [stated in a very sad voice]. *My daughter-in-law is not a good person, she ill-treated me a lot. I spent all the money I had, to build the house. I spent every cent I had on him. But finally, I had to get out of my own house. I now find myself living here feeling very sad and lonely.* (08 NC Pol. F)

Participants identified a variety of sacrifices made to help and support others, and had the perception that they had dedicated their whole lives to others. Another participant shared her story thus:

> *My siblings who were younger than me could go to school, but I could not. Instead, I worked in the paddy fields, earned money, and helped my brothers and sisters so they could have a better life. While they went to school, I worked and did the household chores. My father, mother, and I worked in paddy fields and chenas to earn our living. I looked after the siblings. I was the eldest in a family of eight. I helped all of them. I dedicated my life to all of them. But I don't have any of them now. I think I was over-dedicated. That is why I feel lonely today.* (05 U Mnr F)

This female participant sacrificed her education and future life to ensure her siblings had a better future. She worked hard and all the money she earned went to them. Assuming a similar role to her parents, she contributed her efforts to the upkeep of the family. During the interview she reminisced about her dedication and described feeling lonely and sad because her siblings were no longer with her. She believed that her loneliness was a result of her dedication to others. Similarly, another participant described how he too became lonely by trusting others.

> *I had a lot of property, lands, and paddy fields, a 5-roomed house with a large garden. After I got heart failure, my wife's sister invited us to come there. They told us that they would look after us. So, both of us sold our property trusting them. I over-trusted others and expected much from them. I was deceived by them. I over-trusted*

> *people and I lost everything I had and instead, what I got was nothing except these feelings of loneliness.* (02 NC Apu. M)

The above excerpt describes how this participant linked his loneliness to having trusted others. He sold everything and gave it to his family, believing that he and his wife would be able to live with their relatives for the remainder of their lives and be looked after. This did not happen, and he had no choice but to move to an aged care facility where he now feels lonely.

Some participants believed they were lonely because of particular personality traits. They felt that they did not take enough responsibility for themselves and were not assertive enough. Participants believed that not being able to make their own decisions and not putting themselves first were reasons for their loneliness.

> *Oh! We must think about and take responsibility for our life, and our future. As women, we must be very strong, stand on our own feet and make decisions for ourselves. We shouldn't be at the mercy of others. Today I don't have a single person to share my sorrow with and to support me, which is why I suffer from being lonely so much. When I was younger, the others in the family made all the decisions for me. This should never have happened, but now it is too late. It is too late, and I cannot turn back the clock. I was overly obedient and let myself be controlled because I was the youngest one in my family and the only girl. So now I find myself a single lady, which may be the reason I find myself lonely.* (04 Sb Keg F)

This participant believed that not being independent and lacking autonomy at a young age led to her being lonely now. The excerpt shows how sad she is about her failure to be strong, independent, and able to make her own decisions because others controlled her life. She perceived that being the youngest and the only female in the family, she did not learn to be independent and autonomous, which contributed to her being lonely now. This view is supported by two other female participants who shared similar stories.

> *I am an educated person. I passed the nurse's training examination. It was before my marriage. My husband did not allow me to work, even though we were not married at the time. When I remember this event, it gives me much sorrow and increases my loneliness. I think I was not strong enough to make my own decisions in those days. I depended too much on my husband. Because of him, I didn't even*

> *have a chance to work. That is why I am now lonely and suffer so much in this way*. (03 Sb R F)

> *My father stopped me from completing my education. I would have never been in this state if I had a good education. In those days I was not in a position to make my own decisions. I was pressured by my father and our family doctor. I obviously have a dependent nature, which meant I let others make decisions on my behalf. Therefore, I suffer from loneliness today. I blame myself, now it is too late*. (17 S M F)

These participants believed that their inability to make their own decisions resulted in their current loneliness. They thought that this was due to being obedient to others and respecting their wishes. They sacrificed their rights and freedom, allowing others to make decisions on their behalf. While reminiscing their inability to make their own decisions, they now understood the reasons for them being lonely today.

Some participants outlined self-negligence and sacrifices in their stories of loneliness. According to their stories, many sacrificed themselves and put others' needs before their own. They now realise that all those they helped have overlooked them and left them feeling lonely.

> *Hmm... I think it was my own weakness. I did not care about myself, and I did not think about my future. I forgot myself. It was a mistake I made. If I had thought of my future life in those days, I would have done things differently and wouldn't find myself lonely today.* (06 U B M)

In his story, this participant believed that he was lonely because he was considerate of others and not himself, which resulted in him neglecting and sacrificing his future. Now he understands his self-negligence and sacrifices were his weakness and a mistake, and the reason he is now lonely.

The stories presented above reveal that participants believed that they are now lonely because they were over-generous and overly trusted family members in their past life. Therefore, they neglected themselves, made sacrifices, and did not look out for their needs when they were younger.

No Longer Being Wanted by Others

The second subtheme, 'no longer being wanted by others', describes how participants perceived they came to be unwanted by others. In the participants' stories, they described feelings of loneliness associated with being unwanted on different grounds. Some felt unwanted because of losing strong family bonds and children's love and affection. For other participants, being ill-treated by others and their perceived poor social recognition convinced them that they were unwanted. Still others realised that they could not actively participate in social events because of their poor health. Therefore, they believed that they could not contribute as they once did before and hence, others did not want them. Some were ill-treated by family and relatives and, therefore, believed that they were not important. These feelings led them to believe that they were no longer valuable and as such, were unwanted by others. Participants' stories show how they felt unwanted and lonely due to different life events.

> *There is no one here whom I may address as mine or my own. There are indeed many others here, but I don't feel that they are mine. Many attend to us. They are really good, but I don't feel close to anyone, and that is why I feel lonely. When we have strong bonds to someone, we feel happy and secure. When these bonds are broken, even though they do not want us, we still crave them. When such bonds are not present, then there is much loneliness*. (54 NW Ku F)

This participant related her loneliness to losing the close and intimate bonds with relatives, something she craved. This lack of a familial bond made her feel she was no longer wanted by her loved ones, and hence, lonely. The following excerpt relates a similar story and the importance of having strong family connections:

> *From my childhood, they knew me. I mean my sisters and brothers. That is why I crave their presence. I want to feel that they need and want me to be close to them. Even if a member of my family came to see me once or twice in a month that would be enough to stop me from feeling lonely.* (06 U B M)

This male participant related his loneliness to not having any close emotional family ties. Further, his relatives did not visit him, making him feel he was no longer wanted. This persistent desire for his relatives to visit him and the feeling of being unwanted by

others made him feel lonely. The following female participant described how she felt unwanted and hence, felt lonely.

> *When I was living with them (my daughters), they never took me along, at least to have a change in the routine work. They left me at home and went to attend meetings, festivals, occasions, and such events. I did the work at home without even bathing. They had many vehicles, sometimes two each. But they never took me anywhere. When I remember these indifferent attitudes, my loneliness is aggravated.* (03 Sb R F)

According to this participant, her daughters did not love her and ignored her. Therefore, she felt she was not important to them. Although she wanted to attend her daughters' family events, they did not want her presence which made her wonder why she was excluded from many important family activities. This unpleasant situation made her feel neglected. Although she expected her daughters' kindness, love, and friendly relationship, she was treated with indifference instead. This experience made her feel ill-treated, and no longer wanted by her daughters. These miserable feelings lead to her being lonely. The following excerpts show how feelings of being ill-treated and neglected made participants feel no longer wanted by others and hence, feel lonely.

> *Our family bonds were lessened with the lapse of time. The other fact is that my brother's children are just like my own. They are my own blood. If they neglected me this way, what can I say about my sister's children? …Yes, it was I who brought up his children. Five children. I never thought they would behave like this! When I recall how they have neglected me, I feel very lonely*. (11 C K F)

This participant related her loneliness to being neglected by close relatives. Although she expected her loved children would visit her and be close to her, it did not happen. They did not visit her. Therefore, she felt she was neglected and no longer wanted by her loved children and close relatives. This miserable feeling fuelled her loneliness.

Some participants related their loneliness to losing social prestige and poor social recognition. They believed that after moving to the aged care facility they lost the prestige and recognition they had in society. Some of them were worried and frustrated as they could no longer play their previous social role. They believed that they were no longer wanted by others and no longer important people. These

miserable feelings lead to these participants being lonely when living in the aged care facilities. The following participant stories show how different life events impacted their feelings of being unwanted by others and, subsequently, their loneliness.

> *I did tuition classes for ordinary level students those days. I taught them English and mathematics. There were students around me those days. I held tuition classes from 1975 to 1980. Many children came to my home. The children and their parents respected me very much. Now all that is lost. When I remember the time I spent on tuition… mmm… I feel that I am unwanted and valueless now. So, now I feel seriously lonely. There were so many people with me then, as I was a teacher. When I recall these events, I feel that I am "nobody" along with my old age! On such occasions I feel very lonely.* (01 W Kal F)

This participant believed that she lost her social value after withdrawing from her teaching role and became an unwanted person. She recalled her teacher's role and the social connections she had in the past. She compared her past life to her life now in the aged care facility and felt useless because she could no longer contribute to society as she did in the past; hence, she felt valueless. Her implicit intimation, *"I felt I am nobody"*, shows her feelings of being insignificant and valueless. These feelings reinforced her loneliness.

Some participants' stories described their loneliness as being a problem specific to their poor health. They believed others did not like them and did not want them because of their poor health conditions and weakened working ability. As people age, a general decline in abilities occurs; therefore, in old age, people can no longer do what they were able to do before. Thus, participants believed they were no longer wanted by others. This feeling led to them being lonely. The following participant's perceptions revealed how they experienced loneliness because of their decreased functional ability and poor health conditions.

> *If I count on my experience, I feel it more and more. When I feel bodily pains and find it difficult to do something by myself, then I feel lonely. When I feel sick and weak, I feel I am lonely because there is no one with me. We feel that we don't have anyone with us and that we are not good enough to do things by ourselves. In our youth, as we were all ready to help others, they also needed us. Now they do not need us. But we need them. None of them are with us now and we feel very lonely. That is the truth, we have to face the truth.* (11 C K F)

This participant’s story draws attention to how loneliness relates to declining physical ability and loss of functional capacity. She felt pain in her body and found it difficult to get along by herself. Yet, she did not get anyone’s help when needed and, therefore, felt she was alone and helpless. She believed that others did not like her because she was physically weak and sick. She felt others left her out. She reminisced about how others wanted her in the past when she was able to work and strong. She compared her past life to her life now and thought about how she became unwanted now. She believed that her poor physical health was the reason for her now being lonely.

The findings presented above show how participants attributed their loneliness to no longer having important emotional bonds with members of their family, being neglected, ill-treated, and having poor health, and how this made them feel they were no longer wanted.

The first theme, ‘how I came to be lonely,’ and two subthemes, ‘being overgenerous and trusting others’ and ‘no longer being wanted by others’ have been discussed. The first subtheme explained how different life experiences of being overgenerous and trusting others led to participants being lonely. Some participants explained that being overgenerous in their earlier years led to a lonely life now. Some participants explained self-neglect at a young age was the reason for them being lonely now. Others described their loneliness as a result of their inability to make their own decisions at a young age. These participants stressed that they sacrificed their rights and freedom for others in the family to make decisions regarding them and, therefore, they came to be lonely today. Others who deeply trusted relatives eventually experienced breaches of trust, leading to them now feeling lonely. Some participants revealed that their unrealistic and unmet life expectations made them feel lonely now.

The second subtheme, ‘no longer being wanted’ explained how participants felt unwanted, resulting in feelings of loneliness. Different life experiences that explained why participants felt they were no longer wanted were discussed. Loss of love, affection, and strong family bonds were reasons for some older people to feel unwanted and lonely. Others explained that their experience of being ill-treated and neglected, and losing social value and prestige made them feel valueless and unwanted. These factors resulted in loneliness. Other participants described their

loneliness resulting from the feeling of no longer being wanted because of their poor health, declining physical strength, and functional ability.

8.3.2 Theme 2 – Loneliness Makes Me Feel…

The second theme, 'loneliness makes me feel…', illustrates how participants feel when they experience loneliness. During the interviews, participants were asked to explain how being lonely made them feel. Hopeless and worthless, disconnected, unwell, and suffering were the common experiences explained by many participants. Hence, these were identified as subthemes that represented most participants' experiences of loneliness.

Hopeless and Worthless

The subtheme 'hopeless and worthless' describes how participants felt when they experienced loneliness living in the aged care facility. Though many participants felt hopeless, the causes, why they experienced hopelessness, varied among the participants. The following excerpt shows how one participant became hopeless in her lonely life.

> *I don't think of anything now. If I think of anything at this time and if I lose hope of those, then there would be more suffering. Therefore, I have no hopes of anything because I have no one with me. I am alone. We must understand that one is the creator of one's own shadow… This is what I feel about my loneliness. No hopes in this lonely life.* (05 U Mnr F)

This participant related her hopelessness to her aloneness. She stressed that there was no point in being hopeful about anyone if she did not have anyone with her. She believed she could not be hopeful when she has no one in her lonely life. This participant's excerpt shows that anyone can be hopeless when experiencing loneliness resulting from feeling alone and not having any one around. The following participant described his hopelessness in his lonely life with a death wish.

> *Nothing special Miss. Finally, we all say goodbye to this life. I sometimes feel like I had died in an accident while driving my vehicle. Who should I live for now? No hopes* [He looked at the sky for a while through a window]. (03 S H M)

Similarly to the previous participant, this participant also connected his hopelessness to not having anyone with him in his life. He demonstrated a strong miserable feeling of hope for his death. He questioned for whom he should live if he did not have anyone of his own in his life. In his lonely life, his only hope was to die. Another female participant shared her story, describing her feeling of 'no expectations':

> *This is my life. It is very lonely. I cannot expect anything from anyone. I am lonely, meaning that I don't have anyone of mine. Then what to expect from whom? This is my lonely life in short. What else can I say? I told you everything* [a slight smile appears]. (54 NW Kul F)

Similarly to the above participants, this participant also became lonely and hopeless as she did not have anyone to connect with. While experiencing loneliness, she questioned from whom she could expect connection. This story emphasises that people become hopeless when they experience a lack of relationships with others. All participants connected their feeling of hopelessness to the absence of relationships with others that accompanies loneliness. They all described that lacking in relationships and losing connections with others meant they had no one to retain hopes on for the rest of their life. All these stories show how loneliness induces feelings of hopelessness.

Other participants outlined a connection between loneliness and the feeling of worthlessness. They explained how loneliness made them feel worthless. According to many participants, losses such as the death of a spouse, losing properties, declining functional ability, and changes in bodily appearance made them feel worthless. Some used the word emptiness to show how they felt worthless in a lonely life. In their own words, participants describe how they felt worthless while being lonely:

> *As there are none here dear to me, I feel lonely… When I think of all these things, I feel very lonely here, and then and I feel I am worthless. Now I have become a worthless woman. Just a woman. My husband died. We have none of the property we had then.* (51 W Col F)

According to this participant, while living a lonely life, she identified that her husband's death and losing her properties made her feel worthless. She understood that her loneliness, accompanied by the death of her spouse and loss of her properties, made her feel worthless. Another female participant described how she felt worthless:

> *What I mean now, you know now I am old. I was very pretty when I was young. Now I have lost my beauty with my age. And also, I have no strength even to take care of myself. Then I feel helpless and feel very lonely. That means I have no one with me because I have no value. I feel like that when I am very lonely.* (17 S M F)

This participant connected her worthlessness to losing her beauty, declining physical strength, and her feeling of helplessness accompanied by her loneliness. While feeling lonely, she believed that everyone left her alone because she was a worthless woman. For this participant, while being lonely, the feeling of diminished strength and losing her beauty appeared to be difficult losses that made her feel worthless. The following participant described her loneliness as a feeling of emptiness that made her feel valueless.

> *As I experience it, I think loneliness is a feeling that gives us a feeling of emptiness in our mind. I feel like my life doesn't move forward and I need some help from somebody to push myself. But I know I do not have anybody here to help me and therefore,… mmm… I feel I am unwanted and valueless now. I am stuck. This is how I feel loneliness.* (01 W Kal F)

This participant showed a connection between her sense of emptiness and worthless feeling accompanied by loneliness. She believed that her mind was empty because she did not feel connected with others. Her symbolic reference to needing someone's push indicates that her empty feeling demanded human connection and togetherness to move forward in her life. However, she did not have anyone to help fill her emptiness. Therefore, she believed people do not like her because she is worthless.

Disconnected

This subtheme describes how participants felt disconnected which went onto result in loneliness. All the participants who felt disconnected explained that when it came to being lonely, they felt they were isolated from everyone and everything. They described how they felt disconnected because of losing relationships with others while living in the aged care facility where now they feel lonely. They believed their lives were confined to the facility environment and, therefore, they could not meet many people or make any social connections. Hence, they felt they were isolated and disconnected from others. The feeling of being disconnected is stressful, especially when it is triggered by loneliness in old age adversely affects mental well-being. Lonely

people who felt disconnected dealt with their emotions differently and expressed their feelings accordingly. The following excerpts from the participants in this study show how loneliness made them feel disconnected.

> *Useless, they won't visit me. I don't know, "blood is thicker than water". So, if I had my own sister, she would have visited me. There is nobody to sympathise with us. Because of my loneliness, I think no one can see me and no one can hear me. I feel like I am disconnected from the whole world.* (02 C Nu F)

This female participant felt disconnected from the "*whole world"*. Although she had many other people in the facility, she believed that losing her sister's close relationship was the profound reason for feeling disconnected from the whole world. She also expected sympathy and wanted to be connected with others. However, she did not get their company and kindness as expected. This feeling made her feel deserted and disconnected. Another participant revealed how her loneliness made her feel disconnected.

> *When I am lonely, I get fully disgusted. The feeling of loneliness is very painful to me. I feel like I cannot speak when I feel lonely because I have nobody here to talk to. And I feel all connections are lost. I wish I could die. Without living amidst loneliness and solitude.* (51 W Col F)

This participant related her feeling of being disconnected to her life in the aged care facility. She believed that she feels disconnected because her life is confined to the aged care facility where she misses many of her previous relationships. While feeling lonely and missing relationships, she felt disgusted and could not speak to anyone around her. This miserable situation deprived her of the people surrounding her, and she felt all her connections were lost. Another male participant shared his feeling of disconnection below.

> *Here, I don't have anybody to talk to. I mean to share ideas and to talk with sense. If I had somebody with the same status, then we can discuss matters regarding any topic. So, I feel lonely here as I do not have anybody who matches my ideas, education, and status. I feel I have lost all connections I had with my people. I mean in my society*.
> (13 Sb Keg M)

According to this participant, he believed he felt disconnected after leaving his society and moving to the aged care facility because of losing his previous relationships with

colleagues. Although he expected to find new connections that matched his status, it did not happen. He could not find people from the aged care facility to build a quality relationship with who matched his expected level. Therefore, he felt disconnected and believed that the lack of quality relationships in his lonely life was the reason for him now feeling disconnected.

Unwell and Suffering

The third subtheme, 'unwell and suffering', captures several important aspects of negative feelings described by many participants about their experiences of loneliness. Most participants expressed their feelings of being unwell and experiences of suffering from loneliness. Some participants explained that when experiencing loneliness, over time they felt loss in their physical strength and working capacity and felt ill and diseased. Some others admitted that they became sick and are being treated because of their loneliness. Most participants expressed that loneliness was in itself suffering because it triggered very miserable feelings that painkillers could not treat. Other participants explained that loneliness is a persistent, sorrowful mental pain that cannot be relieved. While being interviewed, some participants found it hard to articulate how being lonely made them suffer and they became tearful. Participants' experiences of being unwell and suffering depended on the context in which they became lonely. Therefore, although all participants in the study experienced loneliness, the intensity of suffering and the feeling of being unwell resulting from loneliness varied. All participants described their loneliness as a cause for their sickness, unwell feelings, and suffering. The following participants shared how their feelings of loneliness affected them in different ways and explained their varying experiences of being unwell and suffering.

> *My brothers and sisters, whom I looked after just as my children, and even my adopted daughter didn't come to see me. So, I am very lonely. I spent my time thinking of my lonely feelings for a long time now. I feel I then lost my strength and it weakened me, and I could not work as before.* (05 U Mnr F)

This participant believed she lost her strength and became weak because she was thinking of her loneliness over a long time. She assumed that constantly thinking of her loneliness while recalling particular memories made her feel weakened. Another participant shared a similar experience and explained his feeling of loneliness.

> *I stayed in a temple and worked there. My brothers and sister are still living. But they don't come to see me. I have no one to visit me. That is why I feel lonely. So, my life is lonely since I left my home. While in this lonely life, I was thinking about my past and lonely life. As time passed, I became weaker and weaker while thinking about my lonely life. I could not work. After some time, I spoke to a gentleman and explained the situation here. He found this place for me.* (06 U B M)

This participant also believed that he became weak because he was thinking about his loneliness over time. Both participants believed that their thinking about loneliness for a long period impacted them physically. Another male participant explained how loneliness led him to a negative change in his behaviour that affected his health and physical strength.

> *Because of loneliness, the pain of separation from (my) children and wife, I got addicted to drinking alcohol. Then, I got sick. I feel I am disabled and have no strength. I have no one of my own now. I am old now. Getting older means others move away from us, leaving us alone. This feeling always comes to me*. (03 S H M)

This participant believed that he became addicted to drinking alcohol because of his loneliness caused by losing his family connections. He tended to drink alcohol to distract himself from his lonely feelings; however, he got addicted and sick. He then felt weakened and had no strength to work. Finally, he realised that he had become a sickened and weak person because of his alcohol drinking behaviour which he used to distract himself from his loneliness. The following participant believed her experience of feeling lonely made her ill and diseased.

> *Now, just staying doing nothing; you know, in those days I had never taken a single medicine… until I came here I didn't take a single medicine. Now I take 3-4 types of medicine, that is because I think a lot… You know why? I keep thinking about my lonely feelings, about my lonely life for years. Loneliness made me sick. Yes, now I take medicine. I have diabetes and pressure.* (09 S G F)

This participant believed that thinking about her loneliness over a long period of time affected her health, causing her to contract diabetes and high blood pressure. The following participant also shared a similar experience of loneliness causing ill health.

> *I am fed up with my life because I am lonely here. I try not to think about it, but I am always very worried about my lonely life. I have blood pressure and also, I am a diabetic patient now. I am under treatment. I did not have any of these diseases before. I mean when I was in my home.* (10 S M F)

According to this participant, although she tried to avoid thinking about her loneliness, she could not do it and she was always worried. She believed that her worries about loneliness were the reason for her now being sick and diseased with diabetes and high blood pressure. While these participants described how loneliness made them physically ill, some participants explained how loneliness made them also suffer more by unearthing traumatic memories.

> *I think that when we get older, we feel lonelier than when we were younger. I deserve this loneliness. What can I do? When I feel lonely, I feel so sorry for myself. It is a very sorrowful pain because lonely feelings always remind me I am alone. Sometimes, I keep thinking for hours and hours… there is no one with me to disturb me* [mild smile]. *Then, many memories in my life come into my mind. Those are only memories. But they are very painful and cause me suffering. What can I do? That is that. What can I do other than think about those days in this lonely life?* (04 Sb Keg F)

According to this participant, when she felt lonely, she tended to recall her painful memories. However, her indirect expression "*no one with me to disturb me*" reveals that she wished to have someone around her to avoid recalling painful memories. Yet, she did not have anyone in her lonely life. Although she did not want to recall her unpleasant memories, her lonely feelings compelled her to reminisce about them and made her suffer. Therefore, she believed that loneliness is a miserable feeling that made her suffer from recalling her painful past.

Loneliness stories presented here stressed that when people do not have anyone around them, they felt lonely and then tended to recall their past which induced in them sad feelings that they did not like. Even though they did not want to, without their knowledge, their lonely feelings urged them to recall their miserable past, triggering unwanted suffering in them.

The second theme, 'loneliness makes me feel…' was discussed in this section. How study participants experienced loneliness was described under three subthemes,

'worthless and hopeless', 'disconnected', and 'unwell and suffering'. When they experienced loneliness, some participants felt they had no future and then became hopeless; while others felt their lives were empty and of no value, hence worthless. Several participants described how loneliness resulting from outliving their relatives and friends in the aged care facility made them feel disconnected. Further, some participants revealed how they believed that loneliness made them sick and diseased, while others reported that in their loneliness, painful memories flooded their minds, causing pain and suffering. All these participants said that they experienced loneliness as a negative feeling that made their lives miserable and uncomfortable.

8.3.3 Theme 3 – How I Cope/Manage My Loneliness

The third theme, 'how I cope/manage my loneliness,' elucidated another aspect of participants' loneliness and explains how they tried to manage their lonely feelings. The several strategies they used to cope with loneliness reflected the subjective nature of loneliness and the contextual differences in participants' stories. Some participants blamed others, criticising and hating them, believing that they were responsible for their loneliness. Others tried to make peace with themselves by self-accepting, blaming themselves for their loneliness, and engaging in religious activities. The two subthemes derived from the analysis of participant stories relating to efforts to manage loneliness are 'blaming others' and 'making peace with themselves'.

Blaming Others

The first subtheme, blaming others, explains how participants attempted to release their emotional burden triggered by loneliness. They did this by expressing their dislike in feelings towards others and criticising others. Some participants believed their relatives were the reason for their loneliness. While talking about their lonely feelings, some became very aggressive and showed cruel emotions towards people they believed to be the reason for their lonely life. Some criticised their children and talked about relatives angrily with cruelty and hatred. The following quotes show how participants perceived their loneliness as a fault of others' acts and how they blamed others for their loneliness.

> *I get very angry with my wife's sister. It was she who deceived me. I have no connection with those of my wife's family. It is the deception that the sister-in-law has done. It irritates me a lot… Otherwise, I*

> *wouldn't be in this lonely life, I mean it is because of my wife's relations, we happened to be lonely like this.* (02 NC Apu. M)

This participant believed that he came to be lonely because of his sister-in-law's deceitful behaviours. His feeling of loneliness made him emotionally uncomfortable and stressed. The mental pain of being lonely, added to the feeling of anger at being deceived by relatives, was highly distressing. His stress, anger, and feeling of mental agony from being victimised by deception were directed toward his sister-in-law, whom he believed to be the cause of his loneliness, He tried to relax by thinking he would not be lonely if he had not faced the relative's deception. The following participants shared similar stories of blaming their relatives-in-law for their loneliness.

> *Everything happened because my son married the wrong woman. An unkind, selfish woman* [she was angry and sad]. *My son is very good but because of this wicked woman my son has changed. When I remember my son, I feel sorry, and at the same time, I hate my daughter-in-law. It is she who put me in this lonely situation… He is my own child. He was good before. But that wicked woman (daughter-in-law) changed him. Therefore, she is the reason for my loneliness too.* (08 NC Pol F)

> *How can I tell you madam, my daughter-in-law, oh! She is very cruel. The worst person I have ever seen. In vain, my one and only son was snared by her tricks. After six months of his marriage, our happiness blew up… When outsiders join a family, especially people with bad attitudes, we may have to face this kind of situation. Especially mothers from daughters-in-law. What to do? She is the reason for my loneliness.* (10 S M F)

These participants believed that how their daughters-in-law ill-treated them were the cause of their loneliness. Therefore, they moved to an aged care facility, where now they are lonely. The pain of separation from their sons added to the awful lonely feelings caused by their daughters-in-law. This was an intolerable distressing pain that made them angry. Therefore, they blamed and cursed their daughters-in-law and tried to express their emotions in this manner as a way of coping with their lonely feelings.

More participants blamed their relatives-in-law for their loneliness, but the following participant criticised his sisters whom he believed to be the reason for his loneliness.

> *When I recall my good old days, sometimes when it is difficult to bear the loneliness, I call my two sisters. It's I who always calls them. But*

> *they don't give me any phone call. I become aggressive when I think of my sisters and the time I spent with them… Sometimes I wonder how these women, I mean my sisters, can forget what I have done for them. If they can do that to their brother, I don't want them for ever. Truly I don't.* (33 S G M)

This participant believed he came to be lonely because his sisters had forgotten him. He became aggressive when he remembered the past life he had spent with his sisters. He tried to call them when he felt intolerably lonely. However, often when he tried, he could not reach them. This led him to think his sisters had forgotten him and thus, feel severely lonely. This miserable feeling made him feel aggrieved and aggravated his angry feelings toward his sisters. He released the tension caused by loneliness by blaming his sisters and trying to manage his miserable lonely feelings.

Drawing on Religion to Make Peace with Myself

The second subtheme, 'making peace with myself', explains how participants accepted loneliness, believing it was their fault. This subtheme showed participants' positive attitudes toward the strategies they employed to manage their loneliness. While accepting loneliness as a result of their own faults, they made up their mind to manage their loneliness for the benefit of others. Most were motivated to engage in religious activities and occupy their mind with religious beliefs for their own solace. By doing so, they tried to distract themselves from lonely feelings. Many participants described religious practices as a way of managing their loneliness and said it was the strength of their religious beliefs that made their minds peaceful. While accepting inevitable loneliness, some participants made efforts to connect with peers and tried to temporarily disengage from their loneliness. Some engaged in activities, such as hobbies, keeping themselves busy to fill the time. However, most participants expressed lifelong suffering from loneliness, demonstrating their inability to permanently escape from it. The following quotes illustrate the variety of strategies participants used in a positive way to manage their loneliness.

> *What I think of this situation is that this is all that I deserve by my birth. This is not the fault of any other person, nor is it the fault of my children. This is all that I deserve. I might have done evil things in my previous birth. That is why I face this situation.* (01 W Gmp F)

This participant believed that her loneliness was a consequence of some evil deed she had done in her previous life. Instead of blaming others, she blamed herself, as a form of fatalism and demonstrated a positive attitude toward others. Her belief seemed strongly related to Buddhist philosophy, which explains that either good or bad, what we currently experience is a consequence of our actions in a previous life. Many study participants similarly perceived their loneliness as a consequence of some bad deed they had done in a previous birth as shown in the next three quotes:

> *This is madam… My fate. Now see I am from Anuradhapura, and from such a far place I had to come here. This is the place I have to be in for the rest of my life. This is madam… the "karma" that comes from what we have done in our previous life... the way we have wished. So, I am now here... I fell into this fate as a result of the evil things I did in my last birth. Yes… That's why we have to suffer like this. I am sure I must have done the same thing to others in my last birth. I strongly believe the reason is that. We are born alone. Live alone and die alone. People like us are compelled to live a life like this. As once I told you, this is my fate*. (02 C Nu F)

> *I think it is a consequence of karma practised in my previous birth. I have not committed any sin other than my drinking habit as I remember… I feel that I am a very miserable man, and I am very unlucky. This is what I got, this lonely life in turn for what I had done in my previous birth, what else is there? There is nothing I can do. I have to face this. This is what I deserved.* (03 S H M)

> *The loneliness that I feel is very painful. I believe this is the result of an evil thing that I have done in my previous births. This is my karma. Nobody can change it. I must suffer by myself. This is my fault… However, this is my fate. I have my two brothers who are well off. They have their own good lives. It is only my life which is lonely here. I cannot get rid of it in this life, but I invoke Lord Buddha for a good rebirth.* (17 S M F)

As described by all these participants, loneliness was a very painful and awful experience that they felt resulted from some evil deed they had done in their previous births. . As many participants said, it was suffering, and they understood they did not have any ways to escape it. Therefore, they made up their mind to endure loneliness and believed that it was their own fault. Finally, their strong belief in retribution helped them endure living a lonely life.

The following quotes describe how other participants used religious acts to occupy their minds and cope with their loneliness.

> *I am a Buddhist. Buddha is the only person who has given us relief. Most of the time I recite 'pirith' and 'gathas'. I also offer flowers to Lord Buddha. Yes… In the end, only Buddha helps us to overcome our sorrows. Whenever I think of Lord Buddha's teachings and whenever I worship in the morning and evening, it helps me to tolerate my loneliness.* (02 C Nu F)

> *I have great faith in Lord Buddha. The Lord Buddha helps me to soothe my distressed mind. I offer flowers to Buddha and recite 'gatha' and 'pirith'. It makes me calm and forget the loneliness. My only wish and plea to God is for this type of thing not to happen to anybody, even to an enemy.* (10 S M F)

> *Now I am following Buddhist philosophy… our Lord Buddha and Buddhism helped me to realise this reality I am experiencing now. The only thing I do is worship Lord Buddha. Chant 'gathas' and 'pirith'. I think my loneliness can be cured to some extent if I get a chance to go to a temple to engage in meditation.* (08 NC Pol. F)

All these participants talked about the strength of their belief in Lord Buddha and religious practices that helped them manage their loneliness. Although they experienced the miserable challenge of loneliness, their belief in Buddhist philosophy, Buddhist teachings, and religious acts helped them to be strong and to focus their mind on staying positive and courageous. As some participants described, while managing their loneliness, they blessed others not to experience the awful loneliness in their lives. This shows how religious beliefs helped them develop positive attitudes while soothing their minds.

While many participants engaged in religious acts with strong religious beliefs to help manage their loneliness, others attempted to connect with other people to help suppress their lonely feelings. The following quotes show how they tried to overcome their loneliness by connecting with others.

> *When these things come into my mind, I move toward somebody else and start a chat. What else should I do, then?... The other thing is that when I chat with someone here, I can suppress my sorrowful lonely feelings, not forever, but temporarily. That is something… I don't think much about it now*. (03 S H M)

This male participant believed he could not change his life and he would suffer from loneliness forever. Although he tried to distract himself from lonely feelings and occupy his mind by talking to someone, he, nevertheless, understood that distraction from loneliness was only temporary, and he would suffer from loneliness forever. Although he had peers in the facility, their acquaintance was not strong enough to prevent his loneliness. However, he enjoyed some relaxation by talking with his peers, as did the following participant.

> *I like to talk to people. In here, I mean in this home, when I feel lonely, I like to talk to others and listen to them. While listening to others I feel some of them have faced the same situation as me. Then I think: Oh! We all are in the same boat. It helps me to make up my mind and tolerate my lonely feelings to some degree.* (09 S G F)

This participant believed that loneliness is a common experience undergone by many which helped her to cope with her loneliness. This belief gave her the strength to endure her lonely feelings. Her own words, "*we are in the same boat*", demonstrate her shared feeling that she was not alone, that there are also other people in her lonely group. This shared feeling encouraged her to make up her mind to cope with loneliness. Her story revealed that the sense of being a part of any group or being connected with others gives people the strength to tolerate even negative or undesirable situations. Her way of thinking further highlighted the importance of connecting with others. The following two examples capture other ways of seeking connection to mitigate participants' loneliness.

> *At a time like this, I feel lonely a lot. Then I go to someone here and try to help them with their needs. Some people here can't walk properly. So, I help them to walk and sometimes I wash their clothes. Then, at least for that moment, I can forget my miserable lonely feelings.* (09 S G F)

> *I sweep the garden, weed the plants, flower plants, and look after anyone who needs my help, I attend to it. Those are the things I do. Then I can suppress my loneliness for the time being; but cannot prevent it, you know? What can I do? This is what I deserve...* [a deep breath]. (07 C Mtl F)

Both participants' stories indicate their effort to fill up time by engaging in activities that help others. They believed that occupying their mind by thinking about and supporting others would help them overcome their loneliness. It also shows that they still sought connections with others by helping them. However, they understood that being busy with such simple activities around the facility provided them with only a temporary distraction from loneliness and just filled up their time.

8.4 Chapter Summary

This chapter has presented the findings of the qualitative study on participants' perceptions of loneliness as explored through semi-structured interviews. Participants' profiles were presented, followed by the three main themes derived from the analysis relating to participants' perceptions of loneliness. The three themes discussed were, 'how I came to be lonely', 'loneliness makes me feel…', and 'how I manage my loneliness'. The discussion on 'how I came to be lonely' was presented under two subthemes that captured participants' different views on reasons for their loneliness. These subthemes were illustrated in their testimonies of how 'being overgenerous and trusting others' and then 'no longer being wanted by others' leading them onto a lonely life. Some of the participants had made many sacrifices for others earlier in life, putting others first, having faith in them and trusting them while neglecting themselves. As a result of all their efforts expended for others, these older participants have come to feel deeply lonely in aged care facilities. Some participants felt unwanted by others and lonely due to relatives' ill-treatment and negligence, loss of family bonds and social respect, and declining health. The second theme, 'loneliness makes me feel…'was elucidated as feeling worthless and without hope for their futures. They further explained that they felt disconnected from others and isolated in deprived environments in aged care facilities while experiencing physically unwell feelings and suffering because of their loneliness. Finally, the third theme, 'how I manage my loneliness', revealed that some participants projected their loneliness by blaming and criticising others. They expressed their feelings of anger, hatred, and strong dislike towards others whom they believed to be the reason for their loneliness. According to many participants' stories, they came to be lonely because they were ill-treated by relatives-in-law. However, some participants tried to manage their loneliness by making their minds peaceful through helping others and engaging in religious activities

such as practicing meditation, and worshiping Lord Buddha. Many participants' ideas were based on Buddhist philosophy, and this strategy engaged participants' positive attitudes toward themselves and others.

These three overarching themes had common intersections. The interpretive description has provided coherent professional knowledge that can inform nursing and allied health management and practice in addressing loneliness in older people. The first theme that represented participants' perceived reasons for their loneliness provides nurses and other health professionals insight on how people can come to be lonely. This knowledge can facilitate the process of screening and assessing older people at a risk of loneliness. The second theme addressing participants' perceptions of how they experience loneliness offers nurses and other practitioners' knowledge to understand how loneliness impacts people and its effects on their health. This knowledge can help nurses to plan and implement appropriate interventions to minimise or prevent older people's suffering. The third theme revealed how participants manage their loneliness and provided insight into their beliefs, and attitudes, and the efforts they make to cope with loneliness. This knowledge may help nurses and all allied health professionals to implement appropriate interventions that were suggested by participants such a religious practices, connecting with peers and engaging in hobbies.

Chapter 9 Integrating the Quantitative Results and Qualitative Findings

9.1 Introduction

Chapters Six and Seven presented the quantitative results of this mixed methodology study, and the qualitative findings were presented in Chapter Eight. The purpose of this chapter is to present the integration of both quantitative results and qualitative findings to address the overarching aim of this mixed methodology study.

Integration of the results is considered a key feature of mixed methodology studies. Integrating both types of results support assessing the validity of quantitative data by using qualitative findings and explaining quantitative findings further by using qualitative data or vice versa (Bryman, 2006; Lewin, Glenton, & Oxman, 2009; O'Cathain et al., 2010). In this convergent mixed methodology study, quantitative results and qualitative findings are integrated in a complementary way to describe the multiple aspects of loneliness in older Sinhalese people living in aged care facilities in order to gain a broader understanding of the phenomenon.

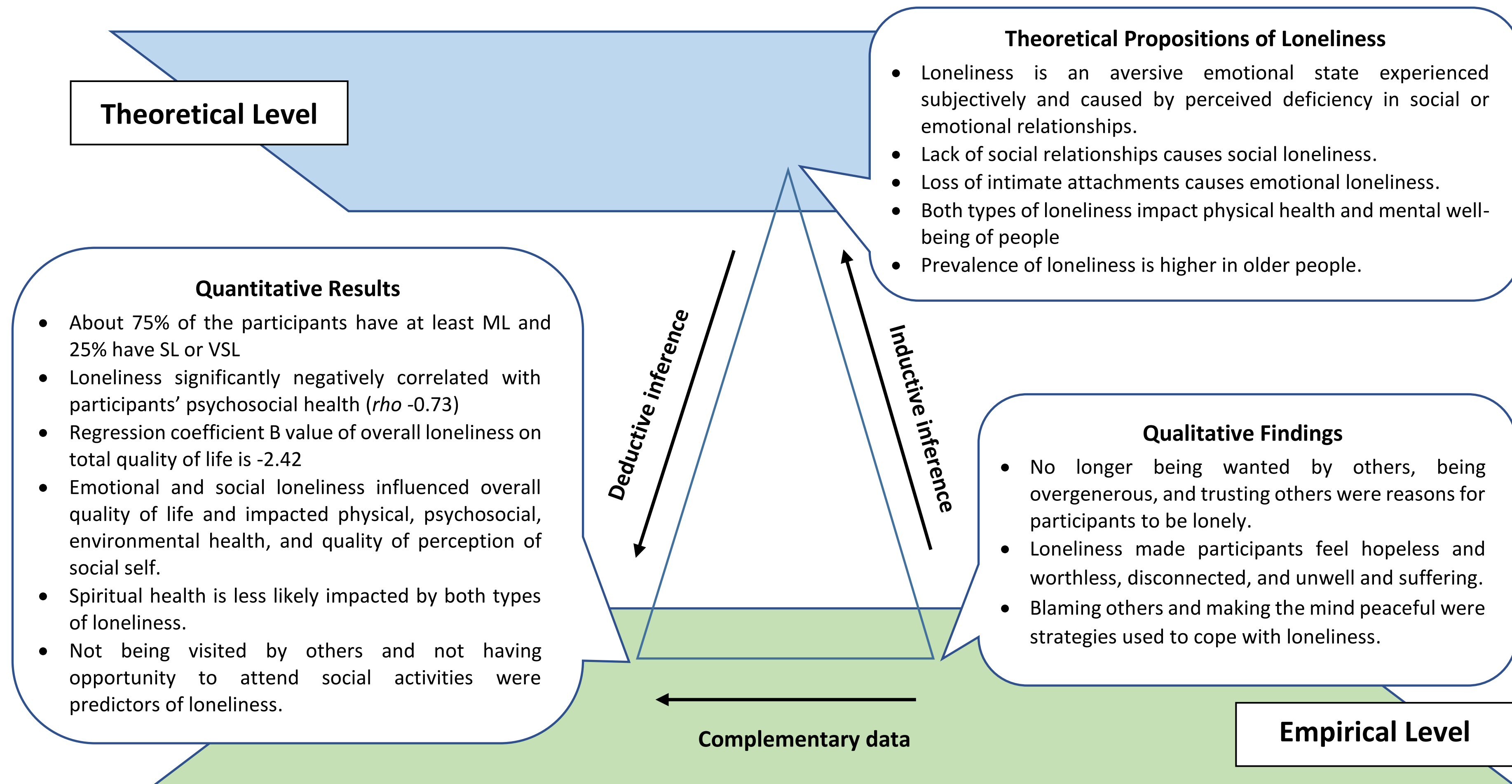
First, the overall picture of the study findings is presented by a triangular conceptual diagram (Figure 17), as proposed by Kelle and Erzberger (2003a). This triangle metaphor illustrates the relationships between quantitative and qualitative empirical findings and the established theoretical propositions of loneliness. Results from survey data are then presented by weaving approach in narrative form, supported by relevant qualitative themes derived from interview transcripts. Specifically, significant quantitative and qualitative findings that could be integrated comparably are selected to present an expanded view of loneliness. The findings related to the third and fourth research questions (What is the relationship between levels of loneliness and participants health status and quality of life? And what are the perceptions of loneliness in older Sinhalese people living in aged care facilities in Sri Lanka?) are presented complementarily with qualitative themes and statistical findings.

9.2 Integration of Results Using a Triangular Conceptual Diagram

In this section, the complementary study findings are presented using a triangular conceptual diagram proposed by Kelle and Erzberger (2003a). According to the authors, the points of the triangle represent the theoretical propositions and empirical statements. The two long lines between the points (the sides of the triangle) indicate the logical relationships between existing theoretical propositions and empirical statements. Accordingly, Figure 17 presents the quantitative and qualitative findings of the current study and their logical relationships with the existing theoretical propositions of loneliness.

Figure 15

Triangular Conceptual Diagram of the Relationships between Theoretical Assumptions, Qualitative Empirical Findings and Quantitative Empirical Findings (Kelle & Erzberger, 2003b)



As indicated in Figure 17 above, at the upper point of the triangle—the theoretical level—the concepts in Weiss's (1973) theory of relational loneliness and other theoretically established propositions of loneliness are presented. At the empirical level, the study's quantitative results and qualitative findings are offered at the left and right corner points of the triangle base.

The quantitative results were drawn from standardised measurements—the DJGLS and WHOQOL-BREF; and hence, deductive inferences (Kelle & Erzberger, 2003a). As presented in Figure 17, the downward arrow from theoretical level to quantitative results shows that theoretical statements established in loneliness are further proved by quantitative empirical evidence through the deductive process. The upward arrow from qualitative findings to theoretical views shows that inductively deduced qualitative evidence supports the theoretical statements. The arrow toward the quantitative results from qualitative findings shows that quantitative results are complementary and further supported by qualitative findings, adding more insight to gain a broader picture of loneliness in participants.

To elaborate on the deductive inference, a significant quantitative finding shows that about 75% of the participants in the study sample have at least ML and 25% of the sample have SL or VSL. This finding indicates a high estimated prevalence of loneliness among older people living in the aged care facilities, confirming the developed theoretical statement regarding the prevalence of loneliness being high in older people (Gardiner et al., 2020). Another significant study finding reveals that loneliness impacted participants' quality of life, showing a strong negative correlation. The regression analysis showed that one score increases of loneliness associated with 2.42 scores decrease in participants' overall quality of life. Further, the study found that emotional and social loneliness negatively impact participants' physical, psychosocial, and environmental health. As shown in the conceptual diagram, all these deductive inferences support the established theoretical level statements that loneliness impacts people's physical health and mental well-being. The quantitative results found that not being visited by relatives and not having the opportunity to attend social activities were causes of participants' loneliness. This deductive empirical evidence, drawn from measurement data, supports the theoretical level statements that explain the reasons

for social and emotional loneliness—loss of intimate attachments causes emotional loneliness, and lack of social relationships causes social loneliness.

With regards to the deductive inferences, according to the triangular conceptual diagram, the right-angle corner of the base represents the inductive empirical evidence found from qualitative analysis. Some of the findings show that no longer being wanted by others was a cause for participants' loneliness. This inductive inference supports the statement regarding emotional loneliness at the theoretical level while complementing the quantitative results that not being visited by relatives was a predictor of loneliness. The underlying meaning of these two statements supports the idea that older people experienced a lack of close relationships that triggered their loneliness. Another inductively deduced observation from qualitative findings is that loneliness made participants feel hopeless, worthless, disconnected, and unwell, and caused suffering. These experiences represent participants' physical and mental ill-health and confirm the theory-level statements that explain the negative impact of loneliness on people's physical and psychological health. It also complements the quantitative findings, correlation, and regression coefficients of loneliness on participants' physical and mental health. However, inductive empirical evidence presents a new insight, that being overgenerous and trusting others was a reason for them to be lonely. Neither of these findings support nor complement existing theory-level statements about loneliness. It also does not complement the deductive empirical results of the study. Hence, it added a new aspect to be further investigated.

In conclusion, the three angles of the triangular diagram are represented by inductive inferences, deductive inferences, and theory-level propositions, and show the logical relationship among them. Further, the logical relationship proves that study findings are supported by existing theoretical propositions of loneliness while expanding the view of loneliness by adding new insight.

9.3 Integration of Results in Narrative Form

The integration of quantitative and qualitative data in narrative form occurs through three methods: weaving, contiguous, and staged approaches (Fetters et al., 2013). According to Fetters et al. (2013), weaving involves presenting qualitative and

quantitative findings on a theme-by-theme or concept-by-concept basis. In the contiguous approach, researchers present their qualitative findings and quantitative results separately in two different sections in the same report. The staged approach is used for the integration of results, mostly in multistage mixed methodology studies when the results are presented in stages.

In this study, the weaving approach in narrative form is used to present the integrated study findings. According to Creswell and Clark (2018b), using the narrative form for integration of results is the most straightforward way and it allows the reader to directly compare the results and determine whether the results are concordant or discordant. Therefore, in this section, integrated results are presented in narrative form. First, findings in relation to research questions three (what is the relationship of levels of loneliness to health status and quality of life of participants?) and four (what are the participants' perceptions of loneliness?) are presented. To that end, quantitative results from correlation and regression analyses are presented to show the strength of associations between loneliness and participants' quality of life and health status, while presenting comparable qualitative themes to indicate the nature of the association. Presenting different data findings in narrative form and describing complementary aspects of loneliness through the weaving approach helps to expand the insight and, hence, gain a broader understanding of loneliness in older people living in governmental aged care facilities in Sri Lanka.

9.3.1 Impact of Loneliness on Health and Quality of Life

This section describes how loneliness impacts participants' physical and psychosocial health, and quality of perception of social self.

Association of Loneliness with Participants' Physical Health

Results of the correlational analysis showed that overall, loneliness is moderately - associated with participants' physical health in a negative direction. According to the results, emotional and social loneliness are also moderately associated with physical health. These negative correlations indicate that participants' physical health decreases if loneliness increases. The results of regression analysis present the strength of these associations with other factors. These negative impacts of loneliness

on physical health found by statistical calculation was illustrated by participants recounting their experiences as follows:

> *I think I became very weak because of my lonely feelings. I have aches in my body here and there. I cannot work like before… When I feel lonely, I feel so sorry about myself. Then, I feel like my heart is paining. I cannot eat too when I think of my loneliness.* (09 S G F)

> *At the beginning of my coming here, I thought much of my being lonely here. As a result of that my sugar level increased and I was given an injection. I got diabetes. I thought of my illness, and it irritates me much.* (05 U Mnr F)

> *I am fed-up with my life because I am lonely here. I try not to think about it, but I am always too worried about my lonely life. I have blood pressure and also, I am a diabetic patient now. I am under treatment. I did not have any of these diseases before. I mean when I was in my home*. (10 S M F)

> *After my family left me, I became lonely. Since then, I am spending this lonely life thinking of my lonely feelings… Now I am taking medicine for my heart trouble… Since a long time. I mean sometime back after my family left me. Yes miss, I take them as the doctor told me.* (55 NW Ku M)

Findings from both data sets supports the claim that loneliness profoundly affects participants' physical health.

Association of Loneliness with Psychosocial Health of Participants

Correlational analysis between overall loneliness and psychosocial health of participants revealed that loneliness was strongly related to psychosocial health in a negative direction. Further, emotional, and social loneliness also show strong negative correlations with participants' psychosocial health, with Spearman correlation coefficients of -0.69 and -0.67, respectively. The regression analysis results indicate that if one score increase of emotional loneliness associated with .26 (p<.001) scores decrease in participants' psychosocial health and one score increase of social loneliness associated with .32 (p<.001) scores decrease in participants' psychosocial health. The negative impact of emotional and social loneliness on participants' psychosocial health is further highlighted by the following excerpts.

> *There is nobody in this world for me. No hopes, the same thing will happen in the future. My life in the future will not be better, I will be worse. Now I am old, and feel very lonely, no one with me. So, I don't have any big hopes… Now we are old, and we can do nothing.* [With a sad and sorrowful face] *What to do? We have to bear everything. We are born alone. Live alone and die alone. People like us are compelled to live a life like this. As once I told you, this is my fate*. (02 C Nu F)

> *Oh! Miss, I don't think of anything now. If I think of anything at this time and if I lose hopes in those, then there would be more suffering, despair, and sorrow. Therefore, I don't think of anything else now. I have no hopes of anything. We must understand that one is the creator of one's own shadow… This is what I feel about my loneliness. No hopes in this lonely life.* (05 U Mnr F)

> *Loneliness is a severe suffering. I can't endure it. Sometimes I cry because I feel that there is no one with me. I feel abandoned. When I am lonely, I feel like I am a worthless woman. That is why nobody is with me.* (05 U B F)

> *Miss, this is very difficult to explain. When I am lonely, I feel like I lack something in my life. I feel like I am empty and then feel very sorry about myself… I am not a useful woman for others now.* (04 Sb Keg F)

> *It is a pain. Loneliness is a pain not because of a wound on my body but because of a wound in my mind. No painkillers for this pain. When I am lonely, I feel so sorry about myself. It is a very sorrowful pain in the mind. Medicines alone cannot dispel my loneliness.* (06 U B M)

The subthemes that emerged from qualitative analysis converge with the quantitative results and further explain how loneliness impacts participants' psychosocial health. Their feelings of worthlessness and hopelessness evidence how their psychosocial well-being is affected by loneliness.

Association of Loneliness with Quality of Participants' Perception of the Social Self

The results of the correlational analysis show a moderate negative correlation between the quality of participants' perception of social self and overall loneliness, with a Spearman correlation coefficient of -0.48 (*rho* > .34 < .66). Emotional and social loneliness show a similar negative correlation to the perception of social self with a Spearman correlation coefficient value of -0.44. These correlations explain that if loneliness increases, the quality of participants' perception of social self is decreased. The regression coefficient B values indicate the strength of these relationships.

The perception of social self is a newly derived factor in the factor analysis of WHOQOL-BREF for the study sample. The items loaded onto this component primarily address participants' social context related to life, including their body image, financial situation, and availability of information required by them. The qualitative finding complementarily re-presented participants' views on their social life relating to regression results.

> *As there are none here dear to me, I feel lonely… When I think of all these things, I feel very lonely here and I am worthless. Now I have become a worthless woman. Just a woman. My husband died. We have none of the property we had then.* (51 W Col F)

> *What I mean now, you know now I am old. I was very pretty when I was young. Now I have lost my beauty with my age. And also, I have no strength even to take care of myself. Then I am feeling helpless and feel very lonely. That means I have no one with me because I have no value. I feel like that when I am very lonely*. (17 S M F)

> *So, I am very lonely. Then I feel what a life I have. Mmm…* [facial expression indicates he is not happy] *Can you see them over there?* [pointing to a group of men] *They are well-built, and my appearance is not that good. So, they don't care about me. They refuse me. None of them talk with me and they are not friendly with me because I am an ugly man.* (33 S G M)

> *When one loses his or her inherited properties and his or her own people, you feel lonely… Then there is nothing in one's possession and there is no one with you, then there is loneliness. Then we feel our value is lost and we are no more valued.* (54 NW Ku F)

> *Living is useless without them in this lonely world. When I am lonely, I feel that I am not a worthwhile person to anyone and became unwanted and useless. Then I feel great sorrow.* (07 C Mtl F)

> *When I remember the time I spent on tuition... On such occasions I feel very lonely, and I am useless… I feel that I am unwanted and valueless now. There were so many people with me then, as I was a teacher. When I recall these events, I feel that I am "nobody" along with my old age!* (01 W Kal F)

Quantitative findings of correlation and regression analysis results showed that loneliness negatively impacts participants' perception of the social self. The participants' voices, presented above, further prove the negative impact. Beyond that, the excerpts provide insight into how their perceptions of social-self have been impacted by loneliness.

9.3.2 Effect of Demographic Variables on Loneliness (Predictors of Loneliness)

Multi-way ANCOVA statistical test was conducted to determine statistically significant effects of demographic variables on participants' loneliness. Out of the 11 variables included in the model, only two variables were identified as significantly associated with loneliness—being visited by relatives and having the opportunity to attend social activities. The following section presents their associations supported by qualitative data.

The Effect of "Being Visited by Relatives" on Participants' Loneliness

After controlling for their age, statistical analysis showed that the level of loneliness in participants being visited by relatives was significantly lower by 1.35 ($p < .001$) score than in those not being visited by relatives. This finding explains that participants who are not visited by relatives feel lonelier than those who are visited by relatives, irrespective of age. This result is further substantiated by the following quotes.

> *I am alone now, aren't I? Those five siblings who were younger to me do not come to see me. So, I think I am lonely now... She (a sister) has said that she has no such sister. So, miss, just think how unkind they are! How they have neglected me. How could they do such an inhuman thing to me? When I think of these, I feel that I am so distant from them and feel lonely. My own brothers and sisters do not care about me. I do not have my own people with me. So, I am very lonely.* (05 U Mnr F)

> *Oh! Madam, what can I have for that? I wish at least one of my children would come to me. I don't think any of them will come to see me at least to take a glance! It is only a hope. So, my loneliness cannot be mitigated.* (55 NW Ku M)

> *Useless madam, they won't visit me. Don't know, "blood is thicker than water". So, if I had my own sister, she would definitely visit me. Nobody is there to sympathise us. No one to visit me. They neglected me, you know? I am so lonely.* (2 C Nu F)

> *Oh! Madam, I don't know. What I think is, if only my children were with me then, it will be okay. I want to see my daughter at least once before I pass away. My daughter's son, my grandson, comes to see me albeit rarely. But my daughter doesn't come to see me.* (01 W Gmp F)

The above excerpts support the impact of "being visited" versus "not being visited" on participants' perceptions of loneliness revealed by the findings of the statistical analysis. In addition, the quotes provide information about the nature of participants' expectations for visits by relatives, how and who they expect, and the intensity of their feelings.

The Impact of "Having the Opportunity to Attend Social Activities" on Participants' Loneliness

The ANCOVA results indicate that level of loneliness in participants who had the opportunity to attend social activities was lower by 1.34 ($p < .001$) scores than in those who did not have the opportunity after controlling for age. This means that participants who can go out and attend social activities feel less lonely than those who do not have that opportunity, irrespective of age. Similarly, the qualitative findings highlight the participants' need for involvement in activities outside the facility to mitigate their loneliness.

> *We are not allowed to go anywhere, we have to be within this premises, nowhere to go… I don't have friends to go out and meet. From the day I stepped into this home, my life is like this. I mean my lonely life.* (2 C Nu F)

> *Then I feel lonely... the other thing is, I don't have freedom to go out to a temple and perform rituals. Although we engage in meritorious deeds here, listen to the sermons on the T.V. and radio, we are not allowed to go to the usual temple and feel the serenity there! When I went to the temple those days, I met my friends and others who were*

> *known to me. I spoke to them freely. A Thero, a priest is invited for sermons. That is very good. I feel that I am confined to this place. We meet, speak, and move with the same people every day. When I think of these situations, I feel very lonely.* (1 W Kal F)

> *I think my loneliness can be cured up to some extent if I get a chance to go to a temple to do meditation. But I do not have a chance to go out and attend some religious activities at temples. We are not allowed to go and meet other people.* (8 NC Pol F)

> *It is very enjoyable when I am surrounded by the small children. They like to keep me company. They won't allow me to stay alone. I taught them practical life. They were happy and I was happy. I won't feel sad or lonely when I am with them. And also, I feel like I am a valuable person and respected by them because I taught them everything in their day-to-day life. Now I have lost that lovely company of my grandchildren, and their respect. Therefore, I feel very lonely.* (09 S G F)

The impact of not having the opportunity to attend social activities on participants' loneliness was presented by the ANCOVA results. Further, quotes from the interviews explain how and what participants expected in terms of attending activities outside the facility.

In addition to the integrated findings in this chapter, both the quantitative and qualitative analysis of this study uncovered some unique insights that deepen understanding of loneliness experienced by the participants. For example, correlation and regression analysis found that emotional and social loneliness were negatively associated with participants' environmental and spiritual health, which were not complemented by qualitative findings. Similarly, qualitative findings from the in-depth interviews revealed that being overgenerous, overly trusting others, poor social recognition, and poor health were seen by participants to bring about feelings of loneliness, providing a contextual insight into the phenomena of loneliness which is not included in the psychometric instrument used in the quantitative data collection in this study.

9.4 Chapter Summary

This chapter has presented the integrated results of the quantitative examination and thematic findings of the qualitative exploration of loneliness in older people living in aged care facilities in Sri Lanka. The integrated findings strengthen understandings of the complex phenomenon of loneliness for this cohort of participants. Using triangulation as a conceptual metaphor helped to understand the relationship between theoretical propositions and empirical study findings. This was achieved through interpreting equally weighted quantitative and qualitative complementary findings derived from parallel analysis. The triangular metaphor further illustrated that empirical evidence from quantitative and qualitative data supported existing theoretical views of loneliness.

The narrative form presentation of integrated results through the weaving approach (Fetters et al., 2013) facilitated further understandings of loneliness in Sinhalese older people living in aged care facilities. Parallel presentation of quantitative results and qualitative findings on the impact of loneliness helped develop an understanding of the complexity of the impact of loneliness within this Sri Lankan context. Participant quotes elaborated how loneliness affects their health to varying degrees. The presentation of predictors of loneliness found by ANCOVA results was elaborated by qualitative themes regarding how participants become lonely in the restricted environment in aged care facilities. The integration of these results further deepens the contextual understanding of how participants become lonely due to loss of family relations and social connections when living in aged care facilities.

Chapter 10 Discussion

10.1 Introduction

This mixed methodology study aimed to understand loneliness as experienced by older Sinhalese adults living in governmental aged care facilities in Sri Lanka. To achieve the study's aim, quantitative and qualitative methods were used to collect data, seeking answers to the following key research objectives:

a) Examine psychometric properties of the translated versions of DJGLS and WHOQOL-BREF for the Sinhalese population in the Sri Lankan context; b) Determine the levels of loneliness in older Sinhalese men and women living in aged care facilities in Sri Lanka; c) Examine the relationship of levels of loneliness to health status and quality of life in participants; d) Explore the perceptions of loneliness in older Sinhalese men and women living in aged care facilities in Sri Lanka.

The findings in relation to these objectives were presented in Chapters Six, Seven and Eight. Chapter Nine presented the integrated results of this mixed methodology study. The intent of the current chapter is to critically discuss the key findings in relation to the study's aim, and present key recommendations grounded in the study findings. First, the major findings of the study and their significance in the context of existing literature are critically discussed. Next, the strengths of the study and identified limitations are presented. Then, recommendations are outlined for further research and the changes required in the management system of aged care facilities to prevent loneliness in residents. Finally, the chapter is concluded by highlighting the importance of alleviating loneliness in order to improve the quality of life of older people living in aged care facilities in Sri Lanka.

10.2 Discussion of Major Findings

This mixed methodology study provides a composite view of loneliness as it is manifest in the study participants' lives, drawn from multiple findings in relation to the study objectives specified above. These findings are discussed in the following section.

10.2.1 Psychometric Properties of DJGLS for Sinhalese Older Population

This study examined the 11 item DJGLS to establish the psychometric properties of the Sinhalese version, including an exploratory factor analysis to test the two-dimensional structure of loneliness. The test outcomes of the overall loneliness scale show a high and robust internal consistency for the study sample with a Cronbach's alpha value of 0.86 (> 0.7). This result is consistent with findings that indicated high Cronbach's alpha value of 0.82 for Peruvian older adults (Caycho-Rodríguez et al. (2021) and Cronbach's alpha value of 0.89 for Spanish older people (Tomás, Pinazo-Hernandis, Donio-Bellegarde, and Hontangas (2017).

The subscales of emotional and social loneliness in this study displayed a relatively high level of internal consistency with Cronbach's alpha values of 0.77 and 0.76 respectively. This finding is similar to Uysal-Bozkir et al. (2017) reported Cronbach's alpha values of 0.73 or higher for emotional, and 0.78 or higher for social loneliness in older adults from five ethnic groups. However, the internal consistency shown by the emotional and social loneliness subscales of the current study is slightly lower than the respective Cronbach's values of 0.81 and 0.85 found by De Jong Gierveld and Van Tilburg (2010) who studied older people from seven countries.

In summary, the robust internal consistency of the overall DJGLS and its subscales for Sinhalese older adults in this study is consistent with findings of many studies conducted with older populations globally. Hence, the current study provides substantial evidence that the reliability of the DJGLS overall scale and subscales are acceptable for measuring loneliness among Sinhalese older people.

Although the DJGLS, overall and subscales, has provided high internal consistency for each dimension for this study sample, some authors have argued that it is a unidimensional scale that can only be used to measure overall loneliness (Grygiel, Humenny, Rebisz, Świtaj, & Sikorska, 2013a). Thus, in addition to a reliability test, in the current study, EFA was conducted to determine the dimensional structure of the scale for the study population. The analysis yielded two components which is an identical factor structure to the original DJGLS. Similar to the current study findings, in-depth statistical analysis of many other studies have also proven that the structure of DJGLS is well-reflected by two factors rather than one (Buz, Urchaga, & Polo, 2014;

Dykstra & Fokkema, 2007; Giraldo-Rodríguez, Álvarez-Cisneros, & Agudelo-Botero, 2023; Grygiel, Humenny, Rebisz, Świtaj, & Sikorska, 2013b; Post, van Duijn, & Baarsen, 2001; Van Baarsen et al., 1999). Moreover, the yielded two factor structure of the current study further supports the scale developers' argument that the 11 items in the scale are consistent with the seminal theorist, Weiss's (1973) distinction of social and emotional loneliness (De Jong & Van Tilburg, 1999). Therefore, the scale can be applied both as a unidimensional measure and as two subscales (De Jong-Gierveld & Kamphuls, 1985; De Jong Gierveld & Van Tilburg, 1999).

In the current study, relatively low factor loading into the components revealed that two latent factors represented by two components are correlated, which means the items representing emotional and social loneliness in the scale share meaning. A similar pattern of factor loading was observed in the Persian version of DJGLS (Hosseini, Froelicher, Sharif Nia, & Ashghali Farahani, 2021) confirming two factor solution. Comparably, a study of older people in Bulgaria found a lower correlation between the two components confirming a deeper distinction between the items in emotional and social loneliness (Jenny De Jong Gierveld & Van Tilburg, 2010). However, while some authors have argued that the11 item DJGLS supports a unidimensional structure measuring overall loneliness (Grygiel et al., 2013a), another study presented evidence of a three factor structure (Iecovich, 2013). These inconsistent results of dimensionalities may be explained by the culturally distinct nature of loneliness across countries.

Nevertheless, the factor analysis results of the current study and many other studies of older adults, as well as other age groups, have shown a two factor solution fits better. The evidence proved that the emotional and social loneliness subscales are two solid dimensions of the overarching loneliness concept (Jenny De Jong Gierveld & Van Tilburg, 2010).

10.2.2 Psychometric Properties of WHOQOL-BREF for Sinhalese Older People

This study also assessed the psychometric properties of the WHOQOL-BREF for the Sinhalese older population. The response rate of the items in the study sample was very high (99.6%); similar to a study of Taiwanese older people (97.5%) by Liang et al. (2009). However, a high missing value (97%) was reported for item 21 which examines

sexual experience in quality of life. Similar missing patterns were also reported from other studies conducted on older populations, 17% and 5.2% respectively by H.-F. Hwang, Liang, Chiu, and Lin (2003) and Power, Quinn, Schmidt, and Group (2005). However, compared to the reported missing value rates for item 21, sexual life, of the WHOQOL-BREF in other studies, the current study reported a remarkably higher missing rate, showing a very poor response rate to the item. The very low response rate for item 21 in this study and the reported low response rates from several other studies show older people's reluctance to answer this question. There are two possible explanations for the extremely low response rate reported in the current study. First, the cultural orientation towards answering questions regarding one's sexual life. Openly talking about one's sex life in older age is socially unacceptable, and sexual activities are not appropriate in old age in Sinhalese culture (UNFPA Sri Lanka, 2019). (Culturally constructed reality); hence, the reluctance to answer. Second, all participants were aged care residents, and except one, all had outlived their spouses, and may not have had an intimate relationship in their recent life.

Moreover, in explaining older adults' reluctance to answer item 21, Fleck, Chachamovich, and Trentini (2003) noted that item 21 strongly stressed sexual activity, representing the act of sexual intercourse instead of the broader concept of sexuality. Given these claims, and the very low response rate, it is suggested that some modifications are required to re-wording the item to improve the applicability of the WHOQOL-BREF scale Sinhalese version. Furthermore, some authors have suggested that item 21 needs to be replaced by another item from the social health domain in the WHOQOL full version scale (H.-F. Hwang et al., 2003), or the words "sexual life" replaced with "intimacy" (Power, Quinn, & Schmidt, 2005) to avoid cross-cultural misinterpretations or misunderstandings.

Internal consistency reliability of the WHOQOL-BREF overall scale was examined. The study findings showed a Cronbach's alpha value of 0.83 for overall scale, except three items in the social domain, indicating high level of internal consistency for the study sample. Compared to the results of studies on older people in Brazil (0.92; Chachamovich et al., 2007) and Spain (0.90; Lucas-Carrasco et al., 2011), the current study shows a relatively low level of internal consistency (0.83). However, it is similar to the Cronbach's alpha values shown in studies on older people in Germany (0.85;

Conrad et al., 2014) and Chile (0.88; Espinoza, Parraguez, Torrejon, and Lucas-Carrasco (2011). Overall, a significant difference cannot be seen in internal consistency of the overall score of the WHOQOL-BREF scale between the Sri Lankan older population and those from other countries.

In the EFA of the WHOQOL-BREF for the study sample, results yielded five factors as expected due to the added spiritual domain. Except for the added domain, the four-factor structure of the WHOQOL-BREF yielded from this study is similar to published studies on older populations in other countries (Espinoza et al., 2011; Kalfoss, Low, & Molzahn, 2008; Yao, Chung, Yu, & Wang, 2002). However, the EFA results in the current study indicated a slightly different item loading pattern from those of the original version of the WHOQOL-BREF scale, resulting in new factors as discussed in Chapter Six. A similar combination was reported in the study on a Taiwanese older population by Yao et al. (2002) in which the items from environmental and social domains construct a separate factor which is different from the original scale.

The items not well-captured by designated factors with poor loadings show that participants' responses were not closely related to specific items that represent their social and psychological factors in the scale. This means the data from the older Sinhalese population do not confirm the established factor structure of the WHOQOL scale. The findings of this study showed that some items in certain factors do not empirically belong to the intended factors for this study sample, consistent with the notion that a group of items that represent different factors can change depending on the study population (Knekta, Runyon, & Eddy, 2019; Wigfield & Eccles, 1992). Hence, the structural changes in the WHOQOL-BREF scale reported from this study's participants may be attributable to cultural differences (Yao et al., 2002) present in the Sri Lankan context. In the Sri Lankan population, responses of specifically older Sinhalese participants to specific items in respective domains may be based on Sinhalese culture-specific values and beliefs. These culture-related changes reflected in their responses may be a possible reason for the factors' structural changes in the scale. This reasoning can be further elaborated by the fact that the item loading changes were found mainly in the psychological, social, and environmental domains. The responses for the items in these domains appear to be influenced by participants' culturally and socially constructed values, thoughts, and beliefs. This argument is

further exemplified by a piece of qualitative finding of this study that demonstrated participants' specific ways of perceiving their loneliness. As mentioned in Chapter Seven, in the qualitative findings, being overgenerous and trusting family members were believed to be the reasons for participants being lonely in later life. These novel findings are not supported by the existent literature and make a significant contribution to the global literature on loneliness by reflecting a culturally unique view of the Sinhalese older population's experience of loneliness. Therefore, on these grounds, changes in the original factor structure of the scale for this study sample can be understood.

Re-naming the New Factor – Perception of Social Self

As presented in Chapter Six, the newly constructed factor was named 'perception of social self'. It includes four items loaded from the psychological and environmental domains in the original scale. Item seven (QOL7- how well are you able to concentrate?) examines people's ability to concentrate. The term concentration refers to focused attention or attentional focus (Castle & Buckler, 2009). People need this attentional skill to grasp information and meaningfully interact with environmental and social demands (Tremolada et al., 2019). Thus, QOL7 also examines a significant aspect of people's quality of life that influences their social relations. Item 11 (QOL11: are you able to accept your bodily appearance?) examines one's acceptance of their own body image. According to Davison (2012), people's perception of their bodies do not occur in social isolation and their social world impacts on how they feel about their bodies. Hence, this item examines a socially based construct which is an influential aspect of one's quality of life. Item twelve (QOL12: have you enough money to meet your needs?) examines people's financial situation. Financial stability is a significant social determinant of health (WHO, 2010) and, therefore, individuals' financial situation directly relates to their social context. Item thirteen (QOL13: how available to you is the information that you need in your day-to-day life?) examines the information needs of people and the available accessibility to information. Islam and Ahmed (2012) stated that access to the right information helps people develop confidence to participate fully in social affairs. Accordingly, individuals' information needs are a significant aspect of their social life.

Closer examination of the content of all these questions reveals a focus on examining one's subjective evaluation of several aspects of one's quality of life embedded in the social context. Therefore, to provide an accurate, meaningful description of the underlying factor, the new factor yielded is named 'perception of social self'. However, further studies are warranted with confirmatory factor analysis (CFA) to validate and confirm the new structure of WHOQOL-BREF for the Sinhalese population.

Internal consistency reliability of the individual domains of the newly yielded structure was examined. All domains in the new structure reported slightly higher Cronbach's alpha values than the original scale's values and indicate robust internal consistency of the new structure of WHOQOL- BREF for the study sample. The value for the physical domain was similar in both scales as it was not changed in EFA. These results align with many studies reporting acceptable Cronbach's alpha values for all individual domains of the scale for their older populations (Kalfoss et al., 2008; Lucas-Carrasco, Laidlaw, & Power, 2011; Usefy et al., 2010; Yao et al., 2002).

However, in the current study, the lowest internal consistency was shown in the social domain in the original scale and the comparable domain, perception of social self, in the constructed scale—0.60 and 0.71, respectively. Similar patterns were observed in several other studies on older adults in Brazil: 0.61 (Chachamovich, Trentini, & Fleck, 2007), Canada: 0.67 and Norway: 0.55 (Kalfoss et al., 2008), and in Spain: 0.55 (Lucas-Carrasco et al., 2011). The observed low Cronbach's alpha value for the social domain in many studies may be, on the one hand, due to the limited number of items assumed to be poorly related in this domain (Yao et al., 2002). On the other hand, it may also be due to the fact that the item related to sex life might be perceived by older people as unrelated to their social life (Kalfoss et al., 2008). Particularly in the current study, the reason for low Cronbach's alpha value for social domain or perception of social self is most likely due to older people's tendency to downplay sexual activity in the Sinhalese culture. As previously reported, there was a significant rate of missing value for item 21 in the social domain related to sex life. During my experience as a data collector in the current study, it was revealed that Sinhalese older people considered sex life as not relevant in older age, and thus refused to answer this item; hence, the reason for low Cronbach's alpha value for the social domain in this study sample.

While the perception of social self (social domain) of the WHOQOL-BREF scale demonstrated the lowest internal consistency for this study sample, its highest Cronbach's alpha (0.93) was reported indicating robust internal consistency from the spiritual domain. Similar findings were reported by Grover, Shah, and Kulhara (2013) (α=.93) who validated the Hindi version of the scale for older people, and Molzahn and Pagé (2006) who studied Canadian older adults (α=.90). As indicated in these studies and the current study, the spiritual domain showed a higher internal consistency for older populations, and no difference across cultures were noted. These results show that participants' responses were closely related to the items and the intended meaning was captured by the spiritual domain. However, despite the reported high Cronbach's alpha value for the spiritual domain in the current study sample, EFA showed that one item was poorly coherent to the domain. This item, "To what extent do you feel your life to be meaningful?" showed high factor loading on to a separate factor, indicating that participants' responses were not related to this item. This means that study participants might have thought about the meaning of life differently or their view of spirituality might be different from what the item intended. Importantly and of note is that spirituality is an intrinsic experience of one's personal belief system and does not have a universal definition (Shaw, Gullifer, & Wood, 2016). Therefore, seeking the reason for the different item loading pattern in the spiritual domain in this study needs to be examined further.

In this study, internal consistency of the other domains in the constructed scale also showed significantly higher levels of Cronbach's alpha values: 0.89 for physical domain, 0.85 for psychosocial domain, and 0.84 for the environmental domain. These findings align with the results of Norwegian, Canadian, and Taiwanese studies on older people which reported internal consistency Cronbach's alpha values between 0.75 and 0.89 for all domains (H.-F. Hwang et al., 2003; Kalfoss et al., 2008). Therefore, the constructed structure of WHOQOL-BREF from EFA of the current study is shown to be reliable for this study population. However, validation of the scale with constructed factors for Sinhalese older population is required for further use.

10.2.3 Levels of Loneliness in Study Participants

According to the findings of this study, one fourth of the participants had at least severe loneliness (SL), while three fourth of the participants had medium level

loneliness (ML). This shows that loneliness is a highly prevalent issue in Sri Lankan aged care facilities. The finding is supported by many studies that found higher levels of loneliness in older people living in residential care facilities in Poland, Malaysia, Norway, Spain and Sweden (Aung et al., 2017; Drageset, Kirkevold, & Espehaug, 2011; Nyqvist et al., 2017; Prieto-Flores, Forjaz, Fernandez-Mayoralas, Rojo-Perez, & Martinez-Martin, 2011; Trybusińska & Saracen, 2019).

Further analysis of the current study indicates an average score of loneliness in participants, 7.1 (SD = 3.3). This value is close to the threshold differentiating ML (3-8) from SL (9-10) and also indicates that the majority of the participants in the sample are considerably lonely. The probable reason for the reported high level of loneliness in participants is that the current study participants were residents in aged care facilities where residents were less socially embedded and had relatively less contact with close relatives and friends, exacerbating loneliness (Weiss, 1973). This explanation is further supported by the fact that loneliness has been attributable to aged care facilities where residents experience less contact with society and relatively fewer ties with relations and friends (Savikko et al., 2005).

The high prevalence of loneliness in older people reported from the current study does not show much difference from the study findings from other countries. However, the cross-national equivalence of loneliness measuring tools used in those studies is not well understood and different measuring tools make it difficult to compare the prevalence of loneliness in older adults in distinct regions of the world (F. Yang, Zhang, & Wang, 2018). Therefore, cross-cultural, or cross-national comparison must be done with caution. However, as consistent with other studies, the findings of the current study showed that even though the degree of loneliness varies among populations, loneliness in older residents living in long term care facilities is a highly salient concern globally, irrespective of ethnic, cultural, and social differences.

10.2.4 Predictors of Loneliness

Multi-way ANCOVA results found that amongst the many demographic variables, only two variables explained participants’ loneliness. Having the opportunity to attend social activities and being visited by relatives were significantly associated with loneliness in participants. According to the results, those who attended social activities

and were visited by relatives were less lonely than those who did not attend social activities and were not being visited by relatives. This indicates that their loneliness is influenced by losing close contacts with relatives and lack of wider social contacts. This shows that besides being in an under-resourced and disadvantageous environment in aged care facilities, older people's loneliness is profoundly influenced by lack of social relationships and close attachment with relatives. These results are consistent with Weiss's (1973) conceptualisation of loneliness and indicates that participants in aged care facilities experience both social and emotional loneliness. A possible explanation for these results might be the fact that in countries with collectivistic cultures, like Sri Lanka, when people lose their social ties and attachments with relatives, they experience more loneliness than those in individualistic cultures (Lykes & Kemmelmeier, 2014). Embedded in a collectivist culture, weakening in family bonds experienced when moving to an aged care facility, and reduced social ties within the restricted aged care facility environment, might profoundly affect older people's feeling of loneliness.

The results of the current study are supported by international empirical findings that gathering with family members, friends and neighbours, and having very good relationships with family significantly reduced the levels of loneliness in older people living in institutions (Lykes & Kemmelmeier, 2014; Prieto-Flores, Fernandez-Mayoralas, et al., 2011; Prieto-Flores, Forjaz, et al., 2011; Trybusińska & Saracen, 2019). Moreover, some studies claim that loneliness is associated with the degree and extent of social participation and social contacts (Dahlberg et al., 2015b; L. Dahlberg, Andersson, & Lennartsson, 2018; Dong et al., 2012; Mellor, Stokes, Firth, Hayashi, & Cummins, 2008; K. Yang & Victor, 2008). However, in contrast, Aung et al. (2017) found that being visited by family members was not significantly associated with levels of loneliness in institutionalised older people.

In addition to family relationships, literature documents that loneliness in institutionalised older people is significantly associated with poor vision and hearing, having lung disease or arthritis and poor health, having no or a small number of children, poor social support, low perceived control, and low preference satisfaction (Andrew & Meeks, 2018; Buber & Engelhardt, 2008; Korporaal, Broese van Groenou, & Van Tilburg, 2008; Pinquart & Sorensen, 2001; Savikko et al., 2005). However, despite

many factors that have been identified as significant predictors of loneliness in older people living in aged care facilities, the participants of the current study demonstrated that their loneliness was significantly influenced by losing family and social relationships. Literature both supports and negates this finding, reflecting how loneliness in older people is influenced within different cultural contexts. Finally, these different views demonstrate how culture moderates the effects of different predictors on people's experience of loneliness (Barreto et al., 2021; de Jong Gierveld, Van der Pas, & Keating, 2015; Van Tilburg et al., 2004).

On the whole, correlational and inferential analysis of the study showed participants' loneliness was significantly associated with, and a high proportion of variance was explained by two predictors: not being visited by family members, and not having opportunity to attend social activities. This finding is further informed by the theoretical perspective of the social exclusion model of older people by (Burholt et al., 2020). According to this conceptualization, loneliness is an outcome of social exclusion (L. Dahlberg, McKee, Lennartsson, & Rehnberg, 2022). Social exclusion is a process by which people are prevented from participating completely in social activities regarded as standards for the society they live in (Burchardt, Le Grand, & Piachaud, 2002). There are many indicators of social exclusion, and several such indicators are lower frequency of social contacts, living alone, no emotional support and intimate relationships, and lack of civic participation (L. Dahlberg et al., 2022). In view of this, the predictors of loneliness identified in this study are obvious indicators of social exclusion. Hence, study participants experience social exclusion resulting in feeling lonely in aged care facility environments.

10.2.5 Relationship of Levels of Loneliness to Health Status and Quality of Life in Participants

Correlational analysis found that participants' self-rated general quality of life and satisfaction with their general health were negatively associated with loneliness (*rho* = -0.52 and -0.35). It was also found that participants' overall quality of life is strongly negatively associated (*rho* = -0.66) with their total loneliness scores. Correlational analysis further revealed that all domains of health of participants—physical, psychosocial, environmental, spiritual, and perception of social self—were negatively

associated with the total score of loneliness. Descriptive statistics of this study also indicated the participants with VSL showed the lowest mean score of overall quality of life (56.79, SD = 9.52) and participants who are NL reported the highest mean value (80.37, SD = 10.50). The regression analysis of this study further demonstrated that loneliness negatively impacts participants' quality of life, with the largest t-test value of -18.83 ($p < .001$) compared to other selected explanatory variables with relatively lower t-test values, education (-2.86), high blood pressure (-2.10), and having the opportunity to attend social activities (4.77). The results indicate the strongest influence of loneliness on participants' quality of life, overpowering the effect of some health issues (high blood pressure) and level of education, which are most likely factors impacting on one's health status. A similar pattern was indicated by the relationships between emotional and social loneliness and individual domains of health. This indicates that higher levels of loneliness in participants significantly worsen their quality of life in all domains. The possible reason for this result may be that living in an aged care facility has profoundly affected participants by triggering strong feelings of loneliness undermining the effects of other predictors of quality of life. These findings have been reflected in previous studies on older people living in residential and long term care facilities in many countries (Hellström, Persson, & Hallberg, 2004; Jakobsson & Hallberg, 2005; Tan et al., 2021; Trybusińska & Saracen, 2019; Verhagen et al., 2014; Zhu et al., 2018).

In particular, the findings of this study indicated highest significant negative impacts by both emotional and social loneliness (t = -20.53, t = -18.09) on participants' psychosocial health. This demonstrates that participants' psychosocial health was significantly negatively influenced by emotional and social loneliness more than the other aspects of health. The possible reason for this result can be explained in part by emotional and social loneliness, which refers respectively to the absence of an attachment figure in one's life and deprivation of social contacts (Weiss, 1973), and might be experienced by older people in aged care facility environments where they outlive their close relatives and are deprived of other important social contacts. This situation may impact their psychosocial health; which is defined as the condition that involves the dependency between an individual and their social environment consisting of social relationships with networks of family and friends, and the social

structures within the environment (Peter, Helfer, Golz, Halfens, & Hahn, 2022). According to this definition of psychosocial health, a lack of relationships results in unfulfilled psychological and social needs in life. This is made evident by the results of the current study where emotional and social loneliness mostly impacts upon psychosocial health of participants living in an aged care facility.

Emotional loneliness showed the least impact on study participants' spiritual health, and social loneliness indicated no impact. The possible reason for these results may be that spiritual health helps people constantly feel connected to someone or something; therefore, they never feel a deficit in attachments or relationship with others (Gallegos & Segrin, 2019). Furthermore, in certain cultures, older people maintained spiritual beliefs and practices sustained by beliefs in higher natural powers and regularly worshiping gods as a buffer against loneliness (Daie, Mahmoodi-Shan, & Mehrbakhsh, 2022), serving to provide concentration and distraction. Therefore, their spirituality may not be affected by the state of social and emotional loneliness. Hence, the relatively lower effect of emotional loneliness, and no impact of social loneliness on participants' spiritual health in this study can be understood. This understanding is further supported by the qualitative findings of this study that show many participants drew on religion to make peace with themselves in mitigating loneliness. More than 87% of the participants in the sample were Buddhist and many of them believed that engaging in Buddhist religious activities helped provide strength to distract themselves from lonely feelings, invoking Lord Buddha to relieving their lonely feelings. Literature confirms this argument and provides further support that a higher level of spiritual connection in older people is associated with a lower level of loneliness (Daie et al., 2022; Han & Richardson, 2010; Kavoosian, Hosseinzadeh, Jaliseh, & Karboro, 2018).

According to the findings of this study, compared to the other variables which are known covariates that impact on people's health, overall loneliness, and its subtypes—emotional and social loneliness—significantly negatively impacted upon participants' physical, psychosocial, and environmental health and their quality of perception of social self. However, a noteworthy finding is that the spiritual health of these participants was not impacted by social loneliness, while emotional loneliness showed least impact compared to its impact on other domains of health.

The finding of this study are further informed by key concepts in the loneliness model, a theoretical pathway developed by Hawkley and Cacioppo (2010) to explain the impact of loneliness on health. As described in the Chapter Two, according to this theory, loneliness produces psychological and physiological reactions in the body and mind. These reactions trigger neurobiological, psychological, and physiological changes leading to adverse health outcomes that reduce the quality of life of lonely people. In line with this theoretical explanation, how high levels of loneliness in this study's participants led to their poor quality of life is clearly understood.

As evidenced by the Asian and Western studies earlier outlined in this section, the negative impact of loneliness on quality of life of older people living in care homes has been widely documented in relation to multiple ethnicities and nationalities. Aligning with this well-established argument, the current study findings, too, substantiate that loneliness is a significant risk factor that negatively impacts the quality of life in residential living older adults. Therefore, loneliness is known to be a high-risk factor, particularly in older people living in aged care facilities, and close attention to its management is required in order to improve the quality of life of older people.

10.2.6 Perceptions of Loneliness in Older Sinhalese People Living in Aged Care Facilities

In this study, the qualitative analysis of participants' perceptions of loneliness illustrated a complex picture in their later life. Participants perceived loneliness as dependent on their individual and contextual experiences. They perceived a range of experiences as contributing to their loneliness, such as being overgenerous, trusting others, and no longer being wanted by others. Participants explained that being overgenerous and trusting others—related to personal attributes in their early life such as self-negligence, inability to make their own decisions, having faith in and hopes for other led to being lonely. Conversely, different reasons for loneliness in old age such as missing parent-children relationships, close friendships, difficulty in making social connections, lack of social engagement have been reported in global literature (Dong et al., 2012; Hauge & Kirkevold, 2010; J. Hwang et al., 2019); however, absent is

the current finding of being overgenerous and trusting in others. Nevertheless, this novel view of loneliness in this study adds to the existing body of knowledge.

The finding of no longer being wanted by others as a perceived reason for participants' loneliness in this study corroborates the findings from a qualitative study on older Norwegians by Hauge and Kirkevold (2010), espousing that not being important to others and being forgotten by others were perceived reasons for participants' loneliness. The participants of the current study also conceptualised their feeling of no longer being wanted by others as an outcome of their diverse negative life experiences. As one participant specified, although she wanted to take part in family routines and social activities, no one invited her; hence, she felt unwanted. Similarly, participants in Graneheim and Lundman (2010) study on the Swedish older population explained that their needs not being understood by their children and others, ill-treatment and oppression by relatives, declined health and functional ability, loss of social respect and prestige, and being rejected by others made them feel they were ignored and no longer wanted by others. Similar reasons for loneliness can be found in the literature from China, Sweden, Iran, and several other cultural contexts including among the American, Australian and Canadian older populations (Dong et al., 2012; Hauge & Kirkevold, 2012; Heravi-Karimooi, Anoosheh, Foroughan, Sheykhi, & Hajizadeh, 2010; Kitzmüller, Clancy, Vaismoradi, Wegener, & Bondas, 2018).

In addition to triggering loneliness, the feeling of no longer being wanted by others seriously threatened older people's self-concept, causing older adults to lose purpose and meaning in life (Graneheim & Lundman, 2010; Kvaal et al., 2014; Stanley et al., 2010) which is likely to impact their mental health. To regain their life purpose and strengthen their concept of self, older people need to develop respectful caring relationships and feel that they are needed (J. M. Smith, 2012). However, for participants in the current study, residing in aged care facilities where they had outlived their spouses and siblings and felt deprived of social contacts, regaining respectful and caring relationships was believed to be a difficult task. Therefore, appropriate interventions need to be planned to address this issue.

The qualitative findings further revealed participants' perception of how they experienced loneliness. Some participants experienced loneliness as hopeless and

worthless. They felt that if they did not have anyone related to them, there was no longer any reason to live and thus, no future. They described their loneliness making them feel empty; and hence, life becoming hopeless and worthless. This is consistent with the theoretical explanation that emptiness is the immediate feeling of loneliness (Mijuskovic (2012). Living in a deprived environment, such as an aged care facility, and not being able to overcome the difficulties associated with loneliness or meet their expectations to get rid of loneliness, participants became hopeless. This finding is further supported by empirical evidence from several countries including Turkey, Sweden, USA, and South Africa, that a constant state of loneliness, with no hopes for dispelling it, makes people feel empty and sad, and, hence, of no value (Aydın & Kutlu, 2021; Graneheim & Lundman, 2010; Morlett Paredes et al., 2021; Roos & Klopper, 2010; Taube et al., 2016).

The participants of this study have experienced a high level of hopelessness resulting from loneliness in aged care environments where they experience a lack of social relations, poor resources, lack of autonomy and poor control of their lives (Otsuka et al., 2010; Roos & Malan, 2012). Hopelessness is a subjective feeling in which people have no freedom, or limited options, and are thus unable to exercise their own power and have no motivation (Aydın & Kutlu, 2021; Morlett Paredes et al., 2021). Another view related to hopelessness is that depending on individuals' resources and available support from surrounding social networks, the level of their hopelessness could change (Taube et al., 2015). In view of this, the feeling of hopelessness in this study's participants, living in the under-resourced aged care facility environment, can reasonably be understood. The feeling of hopelessness causes people to despair, question the meaning of their life, and regret their past life (Demirel, Yılmaz, & Üngüren, 2015). As seen in the interview data, according to participants, loneliness was not curable and was seen as a constant mental pain; the root cause of their loneliness was irreversible in many cases and, thus, participants became deeply hopeless. The intense feeling of hopelessness of some participants in the current study made them think of and even wish for death, a finding consistent with several qualitative and mixed-method studies conducted on older people in different countries including Sweden, Norway, and South Africa (Graneheim & Lundman, 2010; Kvaal et al., 2014; Roos & Klopper, 2010; Roos & Malan, 2012; Taube et al., 2016).

Qualitative analysis further identified that loneliness stemmed from participants' sense of disconnection from society. Literature reveals that for some older people, loneliness meant loss of connection with others; therefore, lonely people keep striving to seek connections (Davies et al., 2016; Hauge & Kirkevold, 2010; Kitzmüller et al., 2018; Stanley et al., 2010). Participants in the current study perceived loneliness as a feeling that convinced them they were isolated, helpless, and confined to the aged care facility, leaving them feeling profoundly disconnected from all others. Participants highlighted how their social disconnectedness gave way to feelings of extreme vulnerability while living in aged care facilities. The possible reason for the feeling of disconnectedness in study participants was in part due to perceived weakened relationship with, and declining visits from, family members, and lack of social contacts in the deprived environment of the care facility.

The study participants were also likely to perceive loneliness accompanied with feelings of unwellness and suffering. For many participants, unwellness related to declining health and physical strength. Other participants described the impact of loneliness in terms of sorrowful feelings and great suffering. This finding is supported by Dong et al. (2012) who confirmed that loneliness is associated with adverse physical and mental health consequences in older people. In the current study, participants' declining health resulting from loneliness was attributed to high blood pressure, heart disease, diabetes, and decreased functional ability. This finding is corroborated by many authors proving that loneliness in older people causes health issues including diabetes, high blood pressure, heart disease and, poor functional ability (Dong et al., 2012; Graneheim & Lundman, 2010; Petitte et al., 2015; Valtorta et al., 2016). According to the loneliness model developed by Hawkley and Cacioppo (2010), psychological and physiological reactions in the human body triggered by loneliness cause adverse health outcomes. On these grounds, it can be understood how participants who perceived being physically unwell due to their loneliness reported health problems including diabetes, high blood pressure, and heart disease. One study participant also provided proof that loneliness triggers poor health behaviours in people, describing his addiction to alcohol. Dong et al. (2012) also found that the effects of loneliness induce poor health behaviours in older people, including smoking and drinking.

In addition to physical health problems, for some study participants, loneliness was an awful feeling that made them suffer, unearthing unpleasant life events from the past. Many participants described that when they felt lonely and had no one to 'occupy their mind', they connected with painful memories and reminisced on them. In contrast, Strydom (2005) believed that reminiscing is an effective strategy to work through negative experiences and many older people use their past memories to deal with painful loneliness. This claim can be true for those having pleasant past memories; however, for many participants in the current study, most of their memories were negative and related to significant people who were no longer part of their lives. For example, one woman reminisced on how her son died leaving her alone, and another stated that their children neglected her and never came to visit her for years. Therefore, they perceived loneliness as a persistent mental pain with great sorrow. The literature reports older people's perceptions of loneliness as a feeling of sadness, a painful inner experience, terrible, and a very painful feeling (Hauge & Kirkevold, 2010; Heravi-Karimooi et al., 2010; Morlett Paredes et al., 2021; Taube et al., 2016). For the participants of the current study, the mental and emotional pain related to their memories of significant people in the past may be exacerbated by the pain of separation experienced when their close relatives did not engage with them while they were residing in the aged care facilities.

Despite having dreadful mental pain and feelings of hopelessness, participants tried to cope with loneliness using their own strategies. Drawing on religion to make peace with themselves and blaming others were strategies employed to manage loneliness. While some participants demonstrated aggressive and angry feelings, others focused their minds in a positive direction. It is possible that the level of mental pain and the level of hopelessness participants experienced may be related to the specific strategies—cultural, positional, and personal—used to manage their loneliness.

Many Buddhist participants who tried to make peace with themselves drew on religion and engaged in religious activities such as listening to Buddhist priests' sermons, praying to Lord Buddha and to the gods, going to temples to follow Buddhist religious customs, practising meditation and observing "sil" on "poya days"(Buddhists' specific religious days); and believed that religious beliefs gave them strength to endure loneliness, and helped them focus their mind positively. This belief is consistent with

the claim that religion supports people to understanding the meaning and the purpose of life and influences people's emotions, thinking, and behaviours (Kharicha et al., 2021; Zhao, Zhang, & Ran, 2017). Some participants accepted loneliness, believing that it was their fault and, therefore, inevitable. They tried to reframe their feelings by accepting deservedness of loneliness in return for their previous actions. This finding is consistent with literature in which older people manage their loneliness with the help of religious beliefs and practices, and by fatalism (Kharicha et al., 2021; Roos & Klopper, 2010). Older people living in a rural area of the United Kingdom and in China described religious activities and religious beliefs as means of managing their loneliness (Kharicha et al., 2021; Zhao et al., 2017). These diverse views of participants' perspectives of loneliness stress the complex and multi-dimensional attributes of loneliness which are well documented in the existing literature (Hawkley et al., 2005; Heinrich & Gullone, 2006; Sullivan, Victor, & Thomas, 2016).

As outlined above the majority of the participants in this study were Buddhist and drew upon the Buddhist philosophy of "*karma*", wherein current experiences are considered to be a result of one's previous actions. Therefore, they accepted loneliness and tried to cope with it. Some participants helped others to keep themselves active, filling up their time to distract themselves from loneliness and to make peace with themselves. As outlined in the qualitative findings, many participants filled up their time by helping peers, and helping facility staff in activities such as cleaning, cooking, and gardening. This demonstrated older Sinhalese participants' inherent collectivism despite experiencing awful loneliness. Similarly Roos and Klopper (2010) claimed that some older people try to address their loneliness by seeking further interpersonal connections to find comfort. These authors contended that involvement in social practices, such as attending religious activities in churches outside the facilities, go some way to address their loneliness. Further, Dickens, Richards, Greaves, and Campbell (2011) and Cattan, White, Bond, and Learmouth (2005) noted that attending social activities and group activities have been found to be effective strategies in mitigating loneliness. In view of these arguments, study participants were in a disadvantageous situation in the aged care environment and were not able to maintain meaningful social contacts and, hence, found it difficult to manage loneliness.

Participants’ negative ways of coping with loneliness was demonstrated in their expressions of hatred and cruelty towards others whom they believed to be the reasons for their loneliness. Although this finding is not supported by existing empirical evidence, the negative reactions of these participants employed to deal with loneliness can be explained by the theoretical explanation presented by Bergin and Walsh (2005). Drawing on Erikson’s (1963) theory, these authors argued that older people try to deal with challenges and misery in life stages, and try to achieve mental integrity, by expressing despair, anger, disappointment, and regret. On these grounds, the angry and frustrated feelings of the study participants in these aged care facilities might be a result of their efforts to relieve the mental agony of their loneliness by blaming those whom they believed to be responsible for their loneliness.

Both objectively and subjectively, the current study found that loneliness is a significant issue among the Sinhalese residents surveyed in aged care facilities. A range of reasons for their loneliness was shared by participants, and the objective measures of the study illustrated that individual characteristics, different life events, and immediate and distant social environment contributed to their loneliness. Participants’ views revealed that despite having common features, loneliness was unique to each person and the interactive effects of all contributors to loneliness adversely affect their quality of life in varying degrees.

Finally, their subjective views revealed that some tended to blame others in widespread and complex attempts to release the painful tension of loneliness, while others leant on religious faith to manage loneliness. Importantly, study participants continuously explained that their present experiences of loneliness were related to their past life events and loss of previous meaningful relationships. However, the other significant and novel finding stemming from the current study is that despite experiencing many challenges of aging and a decreased pool of resources in the deprived and under-resourced environments in the aged care facilities within the context of a developing country and a weak health care delivery system (as described under “Provision of Services in Aged Care Facilities in Sri Lanka” in Chapter One), study participants emphasised a pressing need to initiate and maintain close relationships with family and a need for social integration and community participation to manage their loneliness. This highlights the urgent need for empirically informed interventions

with multisectoral approaches to address the dynamic experience of loneliness in older people living in aged care facilities in Sri Lanka.

10.3 Strengths and Limitations of the Study

This is the first time a study has been done that included national representation of aged care facilities to examine loneliness in older Sinhalese aged care residents. This study covered a significant geographical area of the country including aged care facilities from seven provinces across Sri Lanka. Therefore, this study provided an understanding of loneliness in the majority of aged care residents in the Sri Lankan context. Additionally, this study included aged care facilities that represented Sri Lanka's diverse aged care setting which comprises small and large, and urban and rural settings. The study was conducted using mixed methodology approach and, therefore, provided deeper understanding of loneliness in participants from multiple views. Another strength of this study is that participants were included from both genders.

Moreover, this study identified the cultural applicability of using the DJGL scale for Sinhalese older people, which could help expand aged care nursing in assessing and managing loneliness in the clinical context. Additionally, the study findings have paved a path for further research for the validation of the Sinhalese version of the WHOQOL-BREF scale for future use in aged care facilities in Sri Lanka. Another strength of this study was that it gave voice to Sinhalese residents in aged care facilities, an otherwise marginalized and voiceless group of people. Finally, study findings have added new insight to gain a broader understanding of loneliness in Sinhalese people living in aged care facilities and filled the existing gap in Sri Lankan literature on loneliness in older people.

Nevertheless, this study is not free of limitations. To begin with, the study sample was specific to the Sinhalese nationality and most participants were Buddhist. Sri Lanka is a multicultural and multi-ethnic country; therefore, participants from different ethnic groups and different religions could have been included. Doing so may have contributed to understanding various perceptions and experiences of loneliness that could be different depending on religious and ethnic backgrounds.
Another limitation was that older people with marked cognitive or sensory impairments were not included in the study. If they were included in the study, it

would require additional assistance, more resources and time to communicate with them in conducting interviews, which was not possible during the difficult time in which the study was conducted due, in addition to the limited time and resources available for the study, to restrictions imposed by the Sri Lankan government to approaching high-risk residents due to the COVID-19 crisis. Therefore, there is a possibility that the current study cohorts' perception and experience of loneliness may not reflect that of those who were not included in the current study. Further, significant findings of the current study that showed the relationship between loneliness and quality of life of participants were based on cross-sectional data. However, further longitudinal studies may provide detailed information required to make causal inferences. Further, it was not possible to undertake member checking strategy for verification of findings due to practical difficulties such as COVID-19 travel restrictions and financial limitations to traveling between countries, as the data were collected in Sri Lanka and data analysis was conducted in New Zealand. Thus, there would be a possibility that how participants themselves perceive their experience of loneliness may slightly differ from what the researcher has interpreted. However, this limitation was offset by triangulating multiple data sources to verify the findings (Candela, 2019) in this mixed methodology study. Participants' meanings of loneliness drawn from qualitative data were compared and contrasted with quantitative data hence, to add rigor to the findings. Moreover, while undertaking the interpretive description method to analysing data, as a preliminary requirement of the analysis method, the researcher engaged in the data analysis process with prior understanding of loneliness, the phenomenon being studied, and contextual understanding of the study setting and participants (S. Thorne, 2016). Hence, the researcher analysed and interpreted the data based on the researcher's prior knowledge on loneliness, the participants and the context of the study setting. Further, the semi-structured interview guide was not pre-tested before conducting interviews. However, continuous modifications to the interview guide were done as required according to participants' responses after each interview was concluded. Thus, counterbalancing the potential limitations. Finally, the literature search did not reveal any non-Western theoretical framework of loneliness. Therefore, this study was limited to one theory, Weiss's (1973) theory of relational loneliness, originated from Western culture. However, this is a seminal theory developed by an influential theorist and has been the

basis for many other subsequent theories of loneliness and has been applied cross culturally (Tiilikainen & Seppänen, 2017).

10.4 Recommendations

Findings of this study evidenced the need for improvements and changes in the aged care facility management system within the under-resourced environment in Sri Lanka in order to address loneliness in older adults in aged care facilities. In particular, health professional education and clinical practice in aged care, regulatory and management protocols in aged care facilities, and focus of future research are significant areas where these changes and improvements are needed to address residents' loneliness. In this section, recommendations are provided for necessary changes to improve the above specified significant areas.

10.4.1 Education and Practice in Aged Care

In order to enhance professional allied health care givers' and facility managers' knowledge on loneliness, a module on loneliness including antecedents, physical and mental health impacts of loneliness, and management of loneliness should be included in the existing one-year aged care course (Thennakoon, 2019) conducted by the Sri Lanka Foundation Institute (SLFI) for care givers. Moreover, developing a cross-curriculum of aged care with a module on loneliness in old age for the tertiary training of all health professionals in Sri Lanka, especially including nurses, is recommended. Also, educational interventions are needed for social workers affiliated to care facilities, such as on-the-job or on-lien refresher courses funded by the government, and to implement regular educational programmes for facility managers to make them aware of loneliness and enable them to conduct collaborative teamwork in planning and implementing appropriate interventions to manage residents' loneliness. Further, developing a postgraduate specialty in aged care for nurses with a specific focus on loneliness in old age is also recommended.

Early detection of any health risk is an important step to prevent or successfully manage any adverse health outcomes. Therefore, sensitive and regular screening of older people for loneliness and identifying people at risk of being lonely should be initiated in aged care facilities as a nursing intervention by aged care nurses and

developing strategies that address social companionship needs to mitigate loneliness should be an important step in nursing care plans Further, the NSE should make necessary arrangements at policy level with the assistance of the NCE, and should support aged care nurses to educate managers and caregivers working in aged care facilities to facilitate peer interactions amongst residents and encourage leisure activities in the facility to reduce their loneliness; for example, arranging pilgrimages to Buddhist temples and sacred places in other religions, pleasure trips to fascinating places in the country, organizing indoor activities such as quizzes, and organizing group discussions on religious topics.

Arrangements should be made at aged care facility level to encourage visits by family and friends by mutually communication, and to promote social activities such as grandparents' days for residents to reduce their loneliness. This is a very important strategy as both the quantitative and qualitative findings of this study indicated that lack of family visits and poor attendance in social activities were reasons for residents' loneliness. Therefore, more opportunities to engage in social activities, particularly outside the facility, should be given to aged care residents. For example, attending elderly committee meetings conducted in the community such as "*wedihiti samithi*", and meeting friends outside the facility. Facility managers can make arrangements and facilitate regular attendance of residents in religious activities in temples and churches. Drawing on the qualitative findings of this study, particularly the way participants described how they cope with loneliness, this would be an effective strategy for participants to cope with loneliness.

10.4.2 Aged Care Management Protocols and Policies

Addressing the issue of loneliness in aged care residents will require assistance at policy level and active involvement by the National Secretariat for Elders in Sri Lanka (NSE). The NSE needs to have a clearly articulated recruitment criterion on appointing skilled professionals with mandatory training, including in the management of loneliness, as facility managers and professional caregivers.

The lack of financial and other resources in aged care facilities needs to be addressed to reduce under-resourcing in these environments, as this could be a predictor of loneliness in people living in aged care facilities. Management protocols of aged care facilities in Sri Lanka should be revised by incorporating regular programmes for

addressing loneliness in residents. Rules and regulations in aged care facilities should be flexible and tailored, enabling residents to go about independently attending social activities and meeting friends.

For this purpose, the NSE in Sri Lanka needs to initiate a multisectoral approach with the assistance of cultural and religious organizations, such as Buddhist societies, cultural foundations, HelpAge Sri Lanka, and the Maintenance Board for Elders, to arrange social and cultural events on a regular basis for residents, enabling them to make social contacts and feel connected with others to reduce their loneliness. This would serve to go some way in addressing the social needs and reducing loneliness of the residents.

10.4.3 Future Research

Future research is recommended to validate the Sinhalese version of the WHOQOL-BREF scale for residents in aged care facilities in Sri Lanka with larger, multi-ethnic, representative cohorts. This will help in the accurate assessment of the quality of life of the older population in aged care in the country. Replicating the study to explore the experiences and perceptions of loneliness from the perspectives of participants in other ethnic groups such as Tamils and Muslims, and religions such as Christianity, Hinduism and Islam is also recommended. Further research is needed to understand loneliness in older people living in care facilities with cognitive impairments and other sensory disabilities as it could provide further insight to understanding the issue of loneliness. Understanding how older people living in the community experience and perceive loneliness is another important area to be researched. Also, more qualitative explorations are required to understand how family members and care givers perceive loneliness in older people.

Subsequent interventional studies need to be conducted to examine the effects of the interventions to reduce loneliness in older people in Sri Lanka given the predicted rise in numbers of older people in the country. Research from an interdisciplinary perspective from anthropology, public health and public policy is needed to widen the research scope in understanding the multidimensional nature of loneliness, particularly in old age.

10.5 Conclusion

This study aimed to understand loneliness in older Sinhalese people living in governmental aged care facilities in Sri Lanka. To achieve this aim, the first objective of the study was to examine the psychometric properties of the translated versions of the DJGL scale and the WHOQOL-BREF scale for the Sinhalese older population in the Sri Lankan context. The study results identified that the DJGL scale had acceptable psychometric properties and, therefore, it can be recommended for future use in screening older people for loneliness. However, the WHOQOL-BREF showed a different structural pattern for this study's participants, requiring further validation before it can be used with Sri Lankan people in aged care facilities.

The second objective of the study was to determine the levels of loneliness in participants. The quantitative results found that 75% of the study participants had a moderate or higher level of loneliness, while only 5% of them were not lonely; indicating that loneliness was a strongly prevailing issue among these participants.

The third study objective was to examine the relationship of levels of loneliness to health status and quality of life of participants. In terms of this objective, the study found that overall loneliness and emotional and social loneliness significantly negatively impacted on participants' health status and all aspects of their quality of life. Some novel observations were that very severely lonely participants demonstrated the lowest quality of life, while not lonely people showed the highest quality of life, highlighting the negative impact of loneliness on participants' lives. Further, both emotional and social loneliness significantly negatively impacted on participants' psychosocial health more than on the other aspects of health, emphasising how their psychological and social needs were affected by loneliness. Thus, this finding is of importance for authorities in the NSE in Sri Lanka in developing healthy policies and appropriate social interventions to reduce participants' loneliness and enhance their quality of life.

In terms of the last objective, the study explored participants' perception of loneliness and uncovered the reasons for their loneliness, their experiences of loneliness, and strategies used to cope with loneliness. Participants' in-depth interviews highlighted that they felt they became lonely when they lost previous important relationships with

family and society. They also stressed that they were not able to establish meaningful close relationships within the aged care facility. Further, many participants identified the aged care facility as a place with limited effective relationships, which served as an additional barrier to addressing their loneliness. This highlighted the perception that living in an aged care facility contributed to their loneliness.

In conclusion, the study findings have provided a greater timely, unique, and novel understanding of the significant impact of loneliness on Sri Lankan Sinhalese older participants' quality of life and how residing in aged care facilities influenced their experiences of loneliness. These understandings are put forward to develop appropriate targeted policy, and educational, social, and clinical interventions to reduce loneliness in Sinhalese residents in aged care facilities. By addressing the unique cultural, social, and economic contexts of Sri Lanka, we can develop more effective strategies to combat loneliness, enhance social connections, and ultimately elevate the quality of life for older individuals in aged care facilities.

As we move forward, it is crucial to recognize that this issue requires a multisectoral approach with collaborative efforts from healthcare professionals, policymakers, caregivers, and society at large. Only through a collective commitment to understanding and addressing loneliness can we hope to provide our older population with the dignified and fulfilling lives they rightfully deserve. This study serves as a foundation for future research and action in pursuit of a more compassionate and supportive environment for Sinhalese older adults in Sri Lanka's aged care facilities.

References

References

Aartsen, M., & Jylhä, M. (2011). Onset of loneliness in older adults: results of a 28 year prospective study. *European journal of ageing, 8*(1), 31-38.

Aftab, A., Abid, C., Muhammad, A., & Haris, F. (2015). Loneliness and disease prevalence; a gerontological prespective of elder's disease status.

Ahadi, B., & Hassani, B. (2021). Loneliness and Quality of Life in Older adults: the mediating role of depression. *Ageing international, 46*, 337-350.

Åkerlind, I., & Hörnquist, J. O. (1992). Loneliness and alcohol abuse: A review of evidences of an interplay. *Social Science and Medicine, 34*(4), 405-414.

Al-Ababneh, M. M. (2020). Linking ontology, epistemology and research methodology. *Science & Philosophy, 8*(1), 75-91.

Aldrich, R. M. (2008). From complexity theory to transactionalism: Moving occupational science forward in theorizing the complexities of behavior. *Journal of Occupational Science, 15*(3), 147-156.

Allen, R. L., & Oshagan, H. (1995). The UCLA loneliness scale: Invariance of social structural characteristics. *Personality and Individual Differences, 19*(2), 185-195.

Almeida, O. P., Draper, B., Snowdon, J., Lautenschlager, N. T., Pirkis, J., Byrne, G., . . . Pfaff, J. J. (2012). Factors associated with suicidal thoughts in a large community study of older adults. *The British Journal of Psychiatry, 201*(6), 466-472.

Alvesson, M., & Sköldberg, K. (2017). *Reflexive methodology: New vistas for qualitative research*: sage.

Anderson, E. (2005). Dewey's moral philosophy.

Andrew, & Halcomb. (2009). *Mixed methods research for nursing and the health sciences*: John Wiley & Sons.

Andrew, N., & Meeks, S. (2018). Fulfilled preferences, perceived control, life satisfaction, and loneliness in elderly long-term care residents. *Aging & mental health, 22*(2), 183-189.

Andrew, S., & Halcomb, E. J. (2009). Future challenges for mixed methods research in nursing and the health sciences. *Mixed methods research for nursing and the health sciences*, 217-224.

Anjum, W., & Batool, I. (2016). Translation and cross language validation of UCLA loneliness scale among adults. *Sci Int (Lahore), 28*(4), 517-521.

Arafat, S., Chowdhury, H. R., Qusar, M., & Hafez, M. (2016). Cross-cultural adaptation and psychometric validation of research instruments: A methodological review. *J Behav Health, 5*(3), 129-136.

Arslantaş, H., Adana, F., Ergin, F. A., Kayar, D., & Acar, G. (2015). Loneliness in elderly people, associated factors and its correlation with quality of life: A field study from Western Turkey. *Iranian Journal of Public Health, 44*(1), 43.

Arslantaş, H., Adana, F., Ergin, F. A., Kayar, D., & Gülçin, A. (2015). Loneliness in elderly people, associated factors and its correlation with quality of life: A field study from Western Turkey. *Iranian Journal of Public Health, 44*(1), 43.

Asher, S. R., & Paquette, J. A. (2003). Loneliness and peer relations in childhood. *Current Directions in Psychological Science, 12*(3), 75-78.

Aung, K., Nurumal, M. S., & Bukhari, W. (2017). Loneliness among elderly in nursing homes. *International Journal for Studies on Children, Women, Elderly And Disabled, 2*, 72-78.

Ayalon, L., Shiovitz-Ezra, S., & Palgi, Y. (2013). Associations of loneliness in older married men and women. *Aging & mental health, 17*(1), 33-39.

Aydın, M., & Kutlu, F. Y. (2021). The Effect of Group Art Therapy on Loneliness and Hopelessness Levels of Older Adults Living Alone: A Randomized Controlled Study. *Florence Nightingale Journal of Nursing, 29*(3), 271.

Aylaz, R., Aktürk, Ü., Erci, B., Öztürk, H., & Aslan, H. (2012). Relationship between depression and loneliness in elderly and examination of influential factors. *Archives of gerontology and geriatrics, 55*(3), 548-554.

Banks, M. R., & Banks, W. A. (2005). The effects of group and individual animal-assisted therapy on loneliness in residents of long-term care facilities. *Anthrozoös, 18*(4), 396-408.

Barnes, B. R. (2019). Transformative mixed methods research in South Africa: Contributions to social justice. *Transforming Research Methods in The Social Sciences: Case Studies from South Africa*, 303-316.

Barreto, M., Victor, C., Hammond, C., Eccles, A., Richins, M. T., & Qualter, P. (2021). Loneliness around the world: Age, gender, and cultural differences in loneliness. *Personality and Individual Differences, 169*, 110066.

Barroso, S. M., Andrade, V. S. d., Midgett, A. H., & Carvalho, R. G. N. d. (2016). Evidence of validity of Brazilian UCLA Loneliness Scale. *Jornal Brasileiro de Psiquiatria, 65*, 68-75.

Bates, J. S., & Taylor, A. C. (2012). Grandfather involvement and aging men’s mental health. *American journal of men's health, 6*(3), 229-239.

Batson, C. D., & Powell, A. A. (2003). Altruism and prosocial behavior. *Handbook of psychology*, 463-484.

Beal, C. (2006). Loneliness in older women: a review of the literature. *Issues in Mental Health Nursing, 27*(7), 795-813.

Bergin, L., & Walsh, S. (2005). The role of hope in psychotherapy with older adults. *Aging & mental health, 9*(1), 7-15.

Biddle, C., & Schafft, K. A. (2015). Axiology and anomaly in the practice of mixed methods work: Pragmatism, valuation, and the transformative paradigm. *Journal of mixed methods research, 9*(4), 320-334.

Biedenbach, T., & Jacobsson, M. (2016). The open secret of values: the roles of values and axiology in project research. *Project management journal, 47*(3), 139-155.

Biesta, G. (2007). Why “what works” won’t work: Evidence-based practice and the democratic deficit in educational research. *Educational theory, 57*(1), 1-22.

Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. *Sage handbook of mixed methods in social and behavioral research, 2*, 95-118.

Bishop, C. E., Weinberg, D. B., Leutz, W., Dossa, A., Pfefferle, S. G., & M. Zincavage, R. (2008). Nursing assistants' job commitment: Effect of nursing home organizational factors and impact on resident well-being. *The Gerontologist, 48*(suppl_1), 36-45.

Blow, F. C., & Barry, K. L. (2002). Use and misuse of alcohol among older women. *Alcohol Research & Health, 26*(4), 308.

Boehlen, F. H., Herzog, W., Schellberg, D., Maatouk, I., Schoettker, B., Brenner, H., & Wild, B. (2020). Gender-specific predictors of generalized anxiety disorder

symptoms in older adults: Results of a large population-based study. *Journal of Affective Disorders, 262*, 174-181.

Brinkmann, S., & Tanggaard, L. (2010). Toward an epistemology of the hand. *Studies in philosophy and education, 29*(3), 243-257.

Brown, K., Elliott, S., Leatherdale, S., & Robertson-Wilson, J. (2015). Searching for rigour in the reporting of mixed methods population health research: a methodological review. *Health Education Research, 30*(6), 811-839.

Brownie, S., & Horstmanshof, L. (2011). The management of loneliness in aged care residents: an important therapeutic target for gerontological nursing. *Geriatric Nursing, 32*(5), 318-325.

Bryant, C. (2010). Anxiety and depression in old age: challenges in recognition and diagnosis. *International Psychogeriatrics, 22*(4), 511-513.

Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? *Qualitative research, 6*(1), 97-113.

Buber, I., & Engelhardt, H. (2008). Children's impact on the mental health of their older mothers and fathers: findings from the Survey of Health, Ageing and Retirement in Europe. *European journal of ageing, 5*(1), 31-45.

Buchman, A. S., Boyle, P. A., Wilson, R. S., James, B. D., Leurgans, S. E., Arnold, S. E., & Bennett, D. A. (2010a). Loneliness and the rate of motor decline in old age: the rush memory and aging project, a community-based cohort study. *BMC Geriatrics, 10*(1), 77.

Buchman, A. S., Boyle, P. A., Wilson, R. S., James, B. D., Leurgans, S. E., Arnold, S. E., & Bennett, D. A. (2010b). Loneliness and the rate of motor decline in old age: the rush memory and aging project, a community-based cohort study. *BMC Geriatrics, 10*(1), 1-8.

Bunniss, S., & Kelly, D. R. (2010). Research paradigms in medical education research. *Medical Education, 44*(4), 358-366.

Burchardt, T., Le Grand, J., & Piachaud, D. (2002). *Degrees of exclusion: developing a dynamic, multidimensional measure*: Oxford University Press.

Burholt, V., & Scharf, T. (2014). Poor health and loneliness in later life: the role of depressive symptoms, social resources, and rural environments. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 69*(2), 311-324.

Burholt, V., Windle, G., Morgan, D. J., & Team, C. W. (2017). A social model of loneliness: The roles of disability, social resources, and cognitive impairment. *The Gerontologist, 57*(6), 1020-1030.

Burholt, V., Winter, B., Aartsen, M., Constantinou, C., Dahlberg, L., Feliciano, V., . . . Policy'. (2020). A critical review and development of a conceptual model of exclusion from social relations for older people. *European Journal of Ageing, 17*(1), 3-19.

Buz, J., Urchaga, D., & Polo, M. E. (2014). Factor structure of the de Jong Gierveld loneliness scale in Spanish elderly adults. *Anales de psicología*.

Cacioppo, Capitanio, J. P., & Cacioppo, J. T. (2014). Toward a neurology of loneliness. *Psychological Bulletin, 140*(6), 1464.

Cacioppo, Grippo, A. J., London, S., Goossens, L., & Cacioppo, J. T. (2015). Loneliness: clinical import and interventions. *Perspectives on psychological science : a journal of the Association for Psychological Science, 10*(2), 238-249. https://doi.org/10.1177/1745691615570616

Cacioppo, & Patrick, W. (2008). *Loneliness: Human nature and the need for social connection*: WW Norton & Company.

Cacioppo, J. T., & Cacioppo, S. (2014). Social relationships and health: The toxic effects of perceived social isolation. *Social and Personality Psychology Compass, 8*(2), 58-72.

Cacioppo, J. T., Cacioppo, S., Capitanio, J. P., & Cole, S. W. (2015). The neuroendocrinology of social isolation. *Annual Review of Psychology, 66*, 733.

Cacioppo, J. T., Ernst, J. M., Burleson, M. H., McClintock, M. K., Malarkey, W. B., Hawkley, L. C., . . . Hugdahl, K. (2000). Lonely traits and concomitant physiological processes: The MacArthur social neuroscience studies. *International Journal of Psychophysiology, 35*(2-3), 143-154.

Cacioppo, J. T., Hawkley, L. C., Berntson, G. G., Ernst, J. M., Gibbs, A. C., Stickgold, R., & Hobson, J. A. (2002). Do lonely days invade the nights? Potential social modulation of sleep efficiency. *Psychological Science, 13*(4), 384-387.

Cacioppo, J. T., Hawkley, L. C., & Thisted, R. A. (2010). Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago Health, Aging, and Social Relations Study. *Psychology and Aging, 25*(2), 453.

Candela, A. G. (2019). Exploring the function of member checking. *The qualitative report, 24*(3), 619-628.

Canham, S. L., Mauro, P. M., Kaufmann, C. N., & Sixsmith, A. (2016). Association of alcohol use and loneliness frequency among middle-aged and older adult drinkers. *Journal of Aging and Health, 28*(2), 267-284.

Canuto, A., Weber, K., Baertschi, M., Andreas, S., Volkert, J., Dehoust, M. C., . . . Ausín, B. (2018). Anxiety disorders in old age: psychiatric comorbidities, quality of life, and prevalence according to age, gender, and country. *The American Journal of Geriatric Psychiatry, 26*(2), 174-185.

Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and emotion, 27*(2), 103-123.

Castle, P., & Buckler, S. (2009). What Was I Saying? Concentration and Attention. *Castle, Paul & Buckler, Scott. How to be a successful teacher: Strategies for personal and professional development*, 12-32.

Cattan, M., White, M., Bond, J., & Learmouth, A. (2005). Preventing social isolation and loneliness among older people: a systematic review of health promotion interventions. *Ageing & Society, 25*(1), 41-67.

Caycho-Rodríguez, T., Tomás, J. M., Hontangas, P. M., Ventura-León, J., Burga-León, A., Barboza-Palomino, M., . . . White, M. (2021). Validation of the De Jong Gierveld Loneliness Scale in Peruvian old adults: a study based on SEM and IRT multidimensional models. *The Journal of General Psychology*, 1-25.

Chachamovich, E., Trentini, C., & Fleck, M. P. (2007). Assessment of the psychometric performance of the WHOQOL-BREF instrument in a sample of Brazilian older adults. *International Psychogeriatrics, 19*(4), 635-646.

Chalise, H. N. (2010). Social support and its correlation with loneliness and subjective well-being: A cross-cultural study of older Nepalese adults. *Asian Social Work and Policy Review, 4*(1), 1-25. https://doi.org/10.1111/j.1753-1411.2009.00034.x

Cherryholmes, C. H. (1992). Notes on pragmatism and scientific realism. *Educational researcher, 21*(6), 13-17.

Chiarotto, A., Ostelo, R. W., Boers, M., & Terwee, C. B. (2018). A systematic review highlights the need to investigate the content validity of patient-reported outcome measures for physical functioning in patients with low back pain. *Journal of clinical epidemiology, 95*, 73-93.

Choi, H., Irwin, M. R., & Cho, H. J. (2015). Impact of social isolation on behavioral health in elderly: Systematic review. *World journal of psychiatry, 5*(4), 432.

Choi, N. G., Ransom, S., & Wyllie, R. J. (2008). Depression in older nursing home residents: The influence of nursing home environmental stressors, coping, and acceptance of group and individual therapy. *Aging and Mental health, 12*(5), 536-547.

Chou, & Chi, I. (2005). Prevalence and correlates of depression in Chinese oldest-old. *International Journal of Geriatric Psychiatry: A journal of the psychiatry of late life and allied sciences, 20*(1), 41-50.

Chou, Jun, L., & Chi, I. (2005). Assessing Chinese older adults' suicidal ideation: Chinese version of the Geriatric Suicide Ideation Scale. *Aging & mental health, 9*(2), 167-171.

Chou, K.-L., Cacioppo, J. T., Kumari, M., & Song, Y. (2014). Influence of social environment on loneliness in older adults: Moderation by polymorphism in the CRHR1. *The American Journal of Geriatric Psychiatry, 22*(5), 510-518.

Christiansen, J., Larsen, F. B., & Lasgaard, M. (2016). Do stress, health behavior, and sleep mediate the association between loneliness and adverse health conditions among older people? *Social Science and Medicine, 152*, 80-86.

Cohen-Mansfield, J., Hazan, H., Lerman, Y., & Shalom, V. (2016). Correlates and predictors of loneliness in older-adults: a review of quantitative results informed by qualitative insights. *International psychogeriatrics, 28*(4), 557-576.

Cohen-Mansfield, J., & Parpura-Gill, A. (2007). Loneliness in older persons: a theoretical model and empirical findings. *International Psychogeriatrics, 19*(2), 279-294.

Colbourn, T., Masache, G., & Skordis-Worrall, J. (2012). Development, reliability and validity of the Chichewa WHOQOL-BREF in adults in Lilongwe, Malawi. *BMC research notes*, *5*(1), 1-11.

Covey, S. R. (1991). *The seven habits of highly effective people*: Covey Leadership Center Provo, UT.

Cox, E. O., Green, K. E., Seo, H., Inaba, M., & Quillen, A. A. (2006). Coping with late-life challenges: Development and validation of the care-receiver efficacy scale. *The Gerontologist, 46*(5), 640-649.

Cramer, K. M., & Barry, J. E. (1999). Conceptualizations and measures of loneliness: A comparison of subscales. *Personality and Individual Differences, 27*(3), 491-502.

Craswell, A., Wallis, M., Coates, K., Marsden, E., Taylor, A., Broadbent, M., . . . Crilly, J. (2020). Enhanced primary care provided by a nurse practitioner candidate to aged care facility residents: A mixed methods study. *Collegian, 27*(3), 281-287.

Cresswell, J. W., & Plano Clark, V. L. (2011). Designing and conducting mixed methods research.

Creswell, & Clark. (2011). Choosing a mixed methods design. *Designing and conducting mixed methods research, 2*, 53-106.

Creswell, & Clark. (2018a). *Designing and conducting mixed method research*: SAGE.

Creswell, & Clark. (2018b). *Designing and conducting mixed methods research*: Sage publications.

Creswell, Gutmann, M. L., & Hanson, W. E. (2003). Advanced mixed methods research designs. *Handbook of mixed methods in social and behavioral research, 209*, 240.

Creswell, J. W. (2014). *Qualitative, quantitative and mixed methods approaches*: Sage.

Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research*: Sage publications.

Creswell, J. W., Fetters, M. D., & Ivankova, N. V. (2004). Designing a mixed methods study in primary care. *The Annals of Family Medicine, 2*(1), 7-12.

Crewdson, J. A. (2016). The effect of loneliness in the elderly population: a review. *Healthy Aging & Clinical Care in the Elderly, 8*, 1.

Crotty. (1998a). *The foundations of social research: Meaning and perspective in the research process*: Routledge.

Crotty. (1998b). *FOUNDATIONS OF SOCIAL RESEARCH: Meaning and Perspective in the Research Process*: ROUTLEDGE.

Crotty. (2020). *The foundations of social research: Meaning and perspective in the research process*: Routledge.

Cukrowicz, K. C., Cheavens, J. S., Van Orden, K. A., Ragain, R. M., & Cook, R. L. (2011). Perceived burdensomeness and suicide ideation in older adults. *Psychology and Aging, 26*(2), 331.

Cuschieri, S. (2019). The STROBE guidelines. *Saudi journal of anaesthesia, 13*(Suppl 1), S31.

Dahlan, A., Nicol, M., & Maciver, D. (2010). Elements of life satisfaction amongst elderly people living in institutions in Malaysia: A mixed methodology approach. *Hong Kong Journal of Occupational Therapy, 20*(2), 71-79.

Dahlberg, Agahi, N., & Lennartsson, C. (2018). Lonelier than ever? Loneliness of older people over two decades. *Archives of Gerontology and Geriatrics, 75*, 96-103. https://doi.org/10.1016/j.archger.2017.11.004

Dahlberg, Andersson, McKee, & Lennartsson. (2015a). Predictors of loneliness among older women and men in Sweden: A national longitudinal study. *Aging & mental health, 19*(5), 409-417.

Dahlberg, Andersson, L., McKee, K. J., & Lennartsson, C. (2015b). Predictors of loneliness among older women and men in Sweden: A national longitudinal study. *Aging & mental health, 19*(5), 409-417.

Dahlberg, & McKee, K. J. (2014). Correlates of social and emotional loneliness in older people: evidence from an English community study. *Aging & mental health, 18*(4), 504-514.

Dahlberg, L., Agahi, N., & Lennartsson, C. (2018). Lonelier than ever? Loneliness of older people over two decades. *Archives of gerontology and geriatrics, 75*, 96-103.

Dahlberg, L., Andersson, L., & Lennartsson, C. (2018). Long-term predictors of loneliness in old age: results of a 20-year national study. *Aging & mental health, 22*(2), 190-196.

Dahlberg, L., McKee, K. J., Lennartsson, C., & Rehnberg, J. (2022). A social exclusion perspective on loneliness in older adults in the Nordic countries. *European Journal of Ageing, 19*(2), 175-188.

Daie, S., Mahmoodi-Shan, G. R., & Mehrbakhsh, Z. (2022). The Correlation between Spiritual Health and Loneliness in the Elderly. *Journal of Research Development in Nursing and Midwifery, 19*(1), 9-12.

Dalsgaard, P. (2014). Pragmatism and Design Thinking. *International Journal of design, 8*(1).

Davies, N., Crowe, M., & Whitehead, L. (2016). Establishing routines to cope with the loneliness associated with widowhood: a narrative analysis. *Journal of Psychiatric and Mental Health Nursing, 23*(8), 532-539.

Davison, T. E. (2012). Body image in social contexts. In *Encyclopedia of body image and human appearance* (pp. 243-249): Elsevier.

de Jong-Gierveld, J. (1987). Developing and testing a model of loneliness. *Journal of Personality and Social Psychology, 53*(1), 119.

De Jong-Gierveld, J., & Kamphuls, F. (1985). The development of a Rasch-type loneliness scale. *Applied psychological measurement, 9*(3), 289-299.

de Jong Gierveld, J., & Tesch-Römer, C. (2012). Loneliness in old age in Eastern and Western European societies: Theoretical perspectives. *European Journal of Ageing, 9*(4), 285-295.

de Jong Gierveld, J., Van der Pas, S., & Keating, N. (2015). Loneliness of older immigrant groups in Canada: effects of ethnic-cultural background. *Journal of Cross-Cultural Gerontology, 30*, 251-268.

De Jong Gierveld, J., & Van Tilburg, T. (1999). Manual of the loneliness scale 1999. *Department of Social Research Methodology, Vrije Universiteit Amsterdam, Amsterdam (updated version 1801 02)*.

De Jong Gierveld, J., & Van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys. *European journal of ageing, 7*(2), 121-130.

de Jong Gierveld, J., Van Tilburg, T., & Dykstra, P. A. (2006). Loneliness and social isolation. *Cambridge handbook of personal relationships*, 485-500.

De Jong, G. J., & Van Tilburg, T. (1999). Manual of the loneliness scale. *Amsterdam: VU University Amsterdam*, 66.

De Koning, J. L., Stathi, A., & Richards, S. (2017). Predictors of loneliness and different types of social isolation of rural-living older adults in the United Kingdom. *Ageing & Society, 37*(10), 2012-2043.

De Silva, & Welgama, W. (2014). Modernization, aging and Coresidence of older persons: The Sri Lankan experience. *Anthropology & Aging, 35*(1), 1-26.

de Silva, S. H. P., Jayasuriya, A. R., Rajapaksa, L. C., de Silva, A. P., & Barraclough, S. (2016). Development and validation of a measure of quality of life for the young elderly in Sri Lanka. *Asia Pacific Journal of Public Health, 28*(1_suppl), 115S-125S.

DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: a balance of relationship and rigour. *Family Medicine and Community Health, 7*(2).

Demirel, O., Yılmaz, Y., & Üngüren, E. (2015). A research of burnout levels on vocational school students. *Ekev Akademi Dergisi, 19*(62), 173-184.

Dewey, J. (1929). *Experience and Philosophical method*. W W Norton & Co; 1a-39. https://doi.org/10.1037/13377-001

Dewey, J. (1930). The quest for certainty: A study of the relation of knowledge and action. *The Journal of Philosophy, 27*(1), 14-25.

Dickens, A. P., Richards, S. H., Greaves, C. J., & Campbell, J. L. (2011). Interventions targeting social isolation in older people: a systematic review. *BMC Public Health, 11*(1), 1-22.

Doman, L., & Le Roux, A. (2010). The causes of loneliness and the factors that contribute towards it: a literature review. *Tydskrif Vir Geesteswetenskappe, 50*(2), 216-228.

Domènech-Abella, J., Lara, E., Rubio-Valera, M., Olaya, B., Moneta, M. V., Rico-Uribe, L. A., . . . Haro, J. M. (2017). Loneliness and depression in the elderly: the role of social network. *Social psychiatry and psychiatric epidemiology, 52*, 381-390.

Dommaraju, P., & Tan, J. (2014). Households in Contemporary Southeast Asia. *Journal of Comparative Family Studies, 45*(4), 559-580.

Dong, X., Chang, E.-S., Wong, E., & Simon, M. (2012). Perception and negative effect of loneliness in a Chicago Chinese population of older adults. *Archives of Gerontology and Geriatrics, 54*(1), 151-159.

Dong, X., & Chen, R. (2017). Gender differences in the experience of loneliness in US Chinese older adults. *Journal of women & aging, 29*(2), 115-125.

Doorenbos, A. Z. (2014). Mixed methods in nursing research: an overview and practical examples. *Kango kenkyu. The Japanese journal of nursing research, 47*(3), 207.

Drageset, J., Kirkevold, M., & Espehaug, B. (2011). Loneliness and social support among nursing home residents without cognitive impairment: A questionnaire survey. *International journal of nursing studies, 48*(5), 611-619.

Dykstra, P. A., & de Jong Gierveld, J. (2004). Gender and marital-history differences in emotional and social loneliness among Dutch older adults. *Canadian Journal on Aging/La Revue canadienne du vieillissement, 23*(2), 141-155.

Dykstra, P. A., & Fokkema, T. (2007). Social and emotional loneliness among divorced and married men and women: Comparing the deficit and cognitive perspectives. *Basic and Applied Social Psychology, 29*(1), 1-12.

Elliott, R., & Timulak, L. (2021). *Essentials of descriptive-interpretive qualitative research: A generic approach*: American Psychological Association.

Eloranta, S., Arve, S., Isoaho, H., Lehtonen, A., & Viitanen, M. (2015). Loneliness of older people aged 70: A comparison of two Finnish cohorts born 20 years apart. *Archives of Gerontology and Geriatrics, 61*(2), 254-260.

Erlich, H. S. (1998). On loneliness, narcissism, and intimacy. *The American journal of psychoanalysis, 58*(2), 135-162.

Esmaeilzadeh, S., & Oz, F. (2020). Effect of psychosocial care model applied in an “elderly day care center” on loneliness, depression, quality of life, and elderly attitude. *Nigerian journal of clinical practice, 23*(2), 189-197.

Espinoza, I., Parraguez, P. O., Torrejon, M.-J., & Lucas-Carrasco, R. (2011). Validation of the WHOQOL-BREF quality of life questionnaire among Chilean older. *Rev Med Chile, 139*, 579-586.

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics, 5*(1), 1-4.

Fagerström, L., Gustafson, Y., Jakobsson, G., Johansson, S., & Vartiainen, P. (2011). Sense of security among people aged 65 and 75: external and inner sources of security. *Journal of Advanced Nursing, 67*(6), 1305-1316.

Ferreira-Alves, J., Magalhães, P., Viola, L., & Simoes, R. (2014). Loneliness in middle and old age: Demographics, perceived health, and social satisfaction as predictors. *Archives of gerontology and geriatrics, 59*(3), 613-623.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health services research, 48*(6pt2), 2134-2156.

Fetters, M. D., & Molina-Azorin, J. F. (2017). The Journal of Mixed Methods Research starts a new decade: The mixed methods research integration trilogy and its dimensions (Vol. 11, pp. 291-307): SAGE Publications Sage CA: Los Angeles, CA.

Finlay, J. M., & Kobayashi, L. C. (2018). Social isolation and loneliness in later life: A parallel convergent mixed-methods case study of older adults and their residential contexts in the Minneapolis metropolitan area, USA. *Social science & medicine, 208*, 25-33.

Fleck, M., Chachamovich, E., & Trentini, C. M. (2003). WHOQOL-OLD Project: method and focus group results in Brazil. *Revista de Saúde Publica, 37*, 793-799.

Foti, S. A., Khambaty, T., Birnbaum-Weitzman, O., Arguelles, W., Penedo, F., Espinoza Giacinto, R. A., . . . Schneiderman, N. (2020). Loneliness, cardiovascular disease, and diabetes prevalence in the hispanic community health study/study of latinos sociocultural ancillary study. *Journal of immigrant and minority health, 22*(2), 345-352.

Gale, C. R., Westbury, L., & Cooper, C. (2018). Social isolation and loneliness as risk factors for the progression of frailty: the English Longitudinal Study of Ageing. *Age and Ageing, 47*(3), 392-397.

Gallegos, M. L., & Segrin, C. (2019). Exploring the mediating role of loneliness in the relationship between spirituality and health: Implications for the Latino health paradox. *Psychology of Religion and Spirituality, 11*(3), 308.

Gardiner, C., Laud, P., Heaton, T., & Gott, M. (2020). What is the prevalence of loneliness amongst older people living in residential and nursing care homes? A systematic review and meta-analysis. *Age and Ageing, 49*(5), 748-757.

Garrison, J. (1994). Realism, Deweyan pragmatism, and educational research. *Educational researcher, 23*(1), 5-14.

George, D., & Mallery, P. (2019). *IBM SPSS statistics 26 step by step: A simple guide and reference*: Routledge.

Gerst-Emerson, K., & Jayawardhana, J. (2015). Loneliness as a public health issue: the impact of loneliness on health care utilization among older adults. *American Journal of Public Health, 105*(5), 1013-1019.

Gierveld, J. D. J., & Tilburg, T. V. (2006). A 6-item scale for overall, emotional, and social loneliness: Confirmatory tests on survey data. *Research on Aging, 28*(5), 582-598.

Gierveld, J. D. J., Van der Pas, S., & Keating, N. (2015). Loneliness of older immigrant groups in Canada: Effects of ethnic-cultural background. *Journal of Cross-Cultural Gerontology, 30*(3), 251-268.

Gierveld, J. D. J., & Van Tilburg, T. (1999). Manual of the loneliness scale. *Amsterdam: Department of Social Research Methodology*.

Gierveld, J. D. J., & Van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: tested on data from 7 countries in the UN generations and gender surveys. *European journal of ageing, 7*(2), 121-130.

Ginty, A. T. (2020). Psychometric properties. In *Encyclopedia of behavioral medicine* (pp. 1770-1771): Springer.

Giraldo-Rodríguez, L., Álvarez-Cisneros, T., & Agudelo-Botero, M. (2023). Psychometric Properties of the 11-Item De Jong Gierveld Loneliness Scale in a Representative

Sample of Mexican Older Adults*MDPI.* Symposium conducted at the meeting of the Healthcare

Gjersing, L., Caplehorn, J. R., & Clausen, T. (2010). Cross-cultural adaptation of research instruments: language, setting, time and statistical considerations. *BMC medical research methodology, 10*, 1-10.

Glogowska, M. (2015). Paradigms, pragmatism and possibilities: mixed-methods research in speech and language therapy. *International journal of language & communication disorders*, 1-10.

Goes, M., Lopes, M., Marôco, J., Oliveira, H., & Fonseca, C. (2021). Psychometric properties of the WHOQOL-BREF (PT) in a sample of elderly citizens. *Health and Quality of Life Outcomes*, *19*(1), 1-12.

Gomboc, V., Krohne, N., Lavrič, M., Podlogar, T., Poštuvan, V., Zadravec Šedivy, N., & De Leo, D. (2022). Emotional and social loneliness as predictors of suicidal ideation in different age groups. *Community Mental Health Journal, 58*(2), 311-320.

Gonyea, J. G., Curley, A., Melekis, K., Levine, N., & Lee, Y. (2018). Loneliness and depression among older adults in urban subsidized housing. *Journal of Aging and Health, 30*(3), 458-474.

Gow, A. J., Pattie, A., Whiteman, M. C., Whalley, L. J., & Deary, I. J. (2007). Social support and successful aging: Investigating the relationships between lifetime cognitive change and life satisfaction. *Journal of Individual Differences, 28*(3), 103-115.

Graneheim, U. H., & Lundman, B. (2010). Experiences of loneliness among the very old: the Umeå 85+ project. *Aging & mental health, 14*(4), 433-438.

Greene, J. C. (2006). Toward a methodology of mixed methods social inquiry. *Research in the Schools, 13*(1), 93-98.

Greene, J. C. (2007). *Mixed methods in social inquiry* (Vol. 9): John Wiley & Sons.

Greer, D. B., & Abel, W. M. (2022). Exploring Feasibility of mHealth to Manage Hypertension in Rural Black Older Adults: A Convergent Parallel Mixed Method Study. *Patient preference and adherence*, 2135-2148.

Group, W. (1995). The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. *Social Science and Medicine, 41*(10), 1403-1409.

Group, W. (1996). *WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: field trial version, December 1996*: Geneva: World Health Organization.

Grover, S., Shah, R., & Kulhara, P. (2013). Validation of Hindi translation of SRPB facets of WHOQOL-SRPB scale. *Indian Journal of Psychological Medicine, 35*(4), 358-363.

Grygiel, P., Humenny, G., Rebisz, S., Świtaj, P., & Sikorska, J. (2013a). Validating the Polish adaptation of the 11-item De Jong Gierveld Loneliness Scale. *European Journal of Psychological Assessment, 29*(2), 129.

Grygiel, P., Humenny, G., Rebisz, S., Świtaj, P., & Sikorska, J. (2013b). Validating the polish adaptation of the 11-item De Jong Gierveld loneliness scale. *European Journal of Psychological Assessment*.

Guarino, N., Oberle, D., & Staab, S. (2009). What is an ontology? In *Handbook on ontologies* (pp. 1-17): Springer.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods, 18*(1), 59-82.

Gutkind, S., Gorfinkel, L. R., & Hasin, D. S. (2022). Prospective effects of loneliness on frequency of alcohol and marijuana use. *Addictive Behaviors, 124*, 107115.

Hackett, R. A., Hudson, J. L., & Chilcot, J. (2020). Loneliness and type 2 diabetes incidence: findings from the English Longitudinal Study of Ageing. *Diabetologia, 63*(11), 2329-2338.

Hajek, A., & König, H.-H. (2020). Which factors contribute to loneliness among older Europeans? Findings from the survey of health, ageing and retirement in Europe: determinants of loneliness. *Archives of Gerontology and Geriatrics, 89*, 104080.

Hall. (2013). Pragmatism, evidence, and mixed methods evaluation. *New directions for evaluation, 2013*(138), 15-26.

Hall, N. C., Chipperfield, J. G., Heckhausen, J., & Perry, R. P. (2010). Control striving in older adults with serious health problems: A 9-year longitudinal study of survival, health, and well-being. *Psychology and Aging, 25*(2), 432.

Hammar, L. M., Holmström, I. K., Skoglund, K., Meranius, M. S., & Sundler, A. J. (2017). The care of and communication with older people from the perspective of student nurses. A mixed method study. *Nurse Education Today, 52*, 1-6.

Han, J., & Richardson, V. E. (2010). The relationship between depression and loneliness among homebound older persons: Does spirituality moderate this relationship? *Journal of Religion & Spirituality in Social Work: Social Thought, 29*(3), 218-236.

Happ, M. B. (2009). Mixed methods in gerontological research: Do the qualitative and quantitative data "touch"? *Research in Gerontological Nursing, 2*(2), 122-127.

Harrison, R. L., Reilly, T. M., & Creswell, J. W. (2020). Methodological rigor in mixed methods: An application in management studies. *Journal of mixed methods research, 14*(4), 473-495.

Harwell, M. R. (1988). Choosing between parametric and nonparametric tests. *Journal of Counseling & Development, 67*(1), 35-38.

Hauge, S., & Kirkevold, M. (2010). Older Norwegians' understanding of loneliness. *International journal of qualitative studies on health and well-being, 5*(1), 4654.

Hauge, S., & Kirkevold, M. (2012). Variations in older persons' descriptions of the burden of loneliness. *Scandinavian Journal of Caring Sciences, 26*(3), 553-560.

Hawkley, L. C., Browne, M. W., & Cacioppo, J. T. (2005). How can I connect with thee? Let me count the ways. *Psychological Science, 16*(10), 798-804.

Hawkley, L. C., & Cacioppo, J. T. (2007). Aging and loneliness: Downhill quickly? *Current Directions in Psychological Science, 16*(4), 187-191.

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of behavioral medicine, 40*(2), 218-227.

Hawkley, L. C., Masi, C. M., Berry, J. D., & Cacioppo, J. T. (2006). Loneliness is a unique predictor of age-related differences in systolic blood pressure. *Psychology and Aging, 21*(1), 152.

Hawkley, L. C., Preacher, K. J., & Cacioppo, J. T. (2010). Loneliness impairs daytime functioning but not sleep duration. *Health Psychology, 29*(2), 124.

Hawkley, L. C., Thisted, R. A., & Cacioppo, J. T. (2009). Loneliness predicts reduced physical activity: cross-sectional & longitudinal analyses. *Health Psychology, 28*(3), 354.

Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence-based nursing, 18*(3), 66-67.

Heikkinen, R.-L., & Kauppinen, M. (2004). Depressive symptoms in late life: a 10-year follow-up. *Archives of Gerontology and Geriatrics, 38*(3), 239-250.

Heinrich, L. M., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical psychology review, 26*(6), 695-718.

Hellström, Y., Persson, G., & Hallberg, I. R. (2004). Quality of life and symptoms among older people living at home. *Journal of Advanced Nursing, 48*(6), 584-593.

Hendricks, V. F. (2006). *Mainstream and formal epistemology*: Cambridge University Press.

Henni, S. H. (2020). Integration of advanced geriatric nurses: A mixed methods study of role and scope of practice.

Hennink, M. M., & Kaiser, B. N. (2020). *Saturation in qualitative research*: SAGE Publications Limited.

Henriksen, J., Larsen, E., Mattisson, C., & Andersson, N. (2019). Loneliness, health and mortality. *Epidemiology and psychiatric sciences, 28*(2), 234-239.

Heravi-Karimooi, M., Anoosheh, M., Foroughan, M., Sheykhi, M. T., & Hajizadeh, E. (2010). Understanding loneliness in the lived experiences of Iranian elders. *Scandinavian Journal of Caring Sciences, 24*(2), 274-280.

Hickman, L. A., Neubert, S., & Reich, K. (2009). *John Dewey between pragmatism and constructivism*: Fordham Univ Press.

Hofstede, G. (2016). Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations. *Collegiate Aviation Review, 34*(2), 108.

Holt-Lunstad, J., Robles, T. F., & Sbarra, D. A. (2017). Advancing social connection as a public health priority in the United States. *American psychologist, 72*(6), 517.

Holt-Lunstad, J., & Smith, T. B. (2016). Loneliness and social isolation as risk factors for CVD: implications for evidence-based patient care and scientific inquiry (Vol. 102, pp. 987-989): BMJ Publishing Group Ltd and British Cardiovascular Society.

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspectives on Psychological Science, 10*(2), 227-237.

Hosseini, L., Froelicher, E. S., Sharif Nia, H., & Ashghali Farahani, M. (2021). Psychometrics of Persian version of the 11 items De Jong Gierveld loneliness scale among an Iranian older adults population. *BMC Public Health, 21*(1), 1-11.

Howes, C. (2008). Love, money, or flexibility: what motivates people to work in consumer-directed home care? *The Gerontologist, 48*(suppl_1), 46-60.

Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging, 26*(6), 655-672.

Hunt, M. R. (2009). Strengths and challenges in the use of interpretive description: reflections arising from a study of the moral experience of health professionals in humanitarian work. *Qualitative Health Research, 19*(9), 1284-1292.

Hwalek, M., Straub, V., & Kosniewski, K. (2008). Older workers: an opportunity to expand the long-term care/direct care labor force. *The Gerontologist, 48*(suppl_1), 90-103.

Hwang, H.-F., Liang, W.-M., Chiu, Y.-N., & Lin, M.-R. (2003). Suitability of the WHOQOL-BREF for community-dwelling older people in Taiwan. *Age and ageing, 32*(6), 593-600.

Hwang, J., Wang, L., Siever, J., Medico, T. D., & Jones, C. A. (2019). Loneliness and social isolation among older adults in a community exercise program: a qualitative study. *Aging & mental health, 23*(6), 736-742.

Ice, G. H. (2002). Daily life in a nursing home: Has it changed in 25 years? *Journal of aging studies, 16*(4), 345-359.

Iecovich, E. (2013). Psychometric properties of the Hebrew version of the de Jong Gierveld loneliness scale. *Educational Gerontology, 39*(1), 12-27.

Islam, M. S., & Ahmed, S. Z. (2012). The information needs and information-seeking behaviour of rural dwellers: A review of research. *IFLA journal, 38*(2), 137-147.

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field methods, 18*(1), 3-20.

Jaafar, M. H., Villiers-Tuthill, A., Lim, M. A., Ragunathan, D., & Morgan, K. (2020). Validation of the Malay version of the De Jong Gierveld loneliness scale. *Australasian Journal on Ageing, 39*(1), e9-e15.

Jacobs, J. M., Cohen, A., Hammerman-Rozenberg, R., & Stessman, J. (2006). Global sleep satisfaction of older people: the Jerusalem Cohort Study. *Journal of the American Geriatrics Society, 54*(2), 325-329.

Jakobsson, U., & Hallberg, I. R. (2005). Loneliness, fear, and quality of life among elderly in Sweden: a gender perspective. *Aging clinical and experimental research, 17*, 494-501.

Jessen, M. A. B., Pallesen, A. V. J., Kriegbaum, M., & Kristiansen, M. (2018). The association between loneliness and health–a survey-based study among middle-aged and older adults in Denmark. *Aging & mental health, 22*(10), 1338-1343.

Jia, W. (2005). The Deweyan pragmatism: Its implications for the study of intercultural communication. *Intercultural Communication Studies, 14*(1), 100-106.

Johnson, & Onwuegbuzie. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher, 33*(7), 14-26.

Johnson, Onwuegbuzie, & Turner. (2007). Toward a definition of mixed methods research. *Journal of mixed methods research, 1*(2), 112-133.

Johnson, D. P., & Mullins, L. C. (1987). Growing old and lonely in different societies: Toward a comparative perspective. *Journal of Cross-Cultural Gerontology, 2*(3), 257-275.

Jong-Gierveld, J. d., & van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: Tested on data from seven countries in the UN Generations and Gender Surveys.

Jong-Gierveld, J. d., van Tilburg, T. G., & Dykstra, P. A. (2006). Loneliness and social isolation.

Jordan, G., Malla, A., & Iyer, S. N. (2016). Posttraumatic growth following a first episode of psychosis: a mixed methods research protocol using a convergent design. *BMC psychiatry, 16*, 1-10.

Jylhä, M. (2004). Old age and loneliness: cross-sectional and longitudinal analyses in the Tampere Longitudinal Study on Aging. *Canadian Journal on Aging/La revue canadienne du vieillissement, 23*(2), 157-168.

Kalfoss, M. H., Low, G., & Molzahn, A. E. (2008). The suitability of the WHOQOL–BREF for Canadian and Norwegian older adults. *European journal of ageing, 5*(1), 77-89.

Kavoosian, N., Hosseinzadeh, K., Jaliseh, H. K., & Karboro, A. (2018). The relationship between spiritual health and loneliness among the elderly in Karaj-2016. *J Res Relig Health, 4*(2), 7-15.

Kearns, A., Whitley, E., Tannahill, C., & Ellaway, A. (2015). Loneliness, social relations and health and well-being in deprived communities. *Psychology, Health & Medicine, 20*(3), 332-344.

Kelle, U., & Erzberger, C. (2003a). *Making inferences in mixed methods: The rules of integration*: Sage: Thousand Oaks, CA, USA.

Kelle, U., & Erzberger, C. (2003b). Making inferences in mixed methods: The rules of integration. *Handbook of mixed methods in social & behavioral research. Thousand Oaks: Sage*, 457-488.

Khademi, M. J., Rashedi, V., Sajadi, S., & Gheshlaghi, S. M. (2015). Anxiety and loneliness in the Iranian older adults. *International Journal of Psychology and Behavioral Sciences, 5*(2), 49-52.

Kharicha, K., Manthorpe, J., Iliffe, S., Chew-Graham, C., Cattan, M., Goodman, C., . . . Walters, K. (2021). Managing loneliness: A qualitative study of older people's views. *Aging & mental health, 25*(7), 1206-1213.

Kim, B., Ghasemi, P., Stolee, P., & Lee, J. (2021). Clinicians and Older Adults' Perceptions of the Utility of Patient-Generated Health Data in Caring for Older Adults: Exploratory Mixed Methods Study. *JMIR aging, 4*(4), e29788.

Kitzmüller, G., Clancy, A., Vaismoradi, M., Wegener, C., & Bondas, T. (2018). "Trapped in an empty waiting room"—the existential human core of loneliness in old age: a meta-synthesis. *Qualitative Health Research, 28*(2), 213-230.

Knekta, E., Runyon, C., & Eddy, S. (2019). One size doesn't fit all: Using factor analysis to gather validity evidence when using surveys in your research. *CBE—Life Sciences Education, 18*(1), rm1.

Korporaal, M., Broese van Groenou, M. I., & Van Tilburg, T. G. (2008). Effects of own and spousal disability on loneliness among older adults. *Journal of Aging and Health, 20*(3), 306-325.

Kusaslan Avci, D. (2018). Evaluation of the relationship between loneliness and medication adherence in patients with diabetes mellitus: a cross-sectional study. *Journal of International Medical Research, 46*(8), 3149-3161.

Kvaal, K., Halding, A. G., & Kvigne, K. (2014). Social provision and loneliness among older people suffering from chronic physical illness. A mixed-methods approach. *Scandinavian Journal of Caring Sciences, 28*(1), 104-111.

Kwegyir Tsiboe, A. (2021). Exploring the nature of loneliness among older people in rural Ghana. *The American Journal of Family Therapy, 49*(5), 480-498.

Lasgaard, M. (2007). Reliability and validity of the Danish version of the UCLA Loneliness Scale. *Personality and Individual Differences, 42*(7), 1359-1366.

Lavelle, E., Vuk, J., & Barber, C. (2013). Twelve tips for getting started using mixed methods in medical education research. *Medical Teacher, 35*(4), 272-276.

Leech, N. L., & Onwuegbuzie, A. J. (2009). A typology of mixed methods research designs. *Quality & quantity, 43*(2), 265-275.

Leigh-Hunt, N., Bagguley, D., Bash, K., Turner, V., Turnbull, S., Valtorta, N., & Caan, W. (2017). An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health, 152*, 157-171.

Lewin, S., Glenton, C., & Oxman, A. D. (2009). Use of qualitative methods alongside randomised controlled trials of complex healthcare interventions: methodological study. *BMJ, 339*.

Li, H., Xu, L., & Chi, I. (2016). Factors related to Chinese older adults' suicidal thoughts and attempts. *Aging & mental health, 20*(7), 752-761.

Liang, W.-M., Chang, C.-H., Yeh, Y.-C., Shy, H.-Y., Chen, H.-W., & Lin, M.-R. (2009). Psychometric evaluation of the WHOQOL-BREF in community-dwelling older people in Taiwan using Rasch analysis. *Quality of Life Research, 18*(5), 605-618.

Lim, M. H., Allen, K.-A., Furlong, M. J., Craig, H., & Smith, D. C. (2021). Introducing a dual continuum model of belonging and loneliness. *Australian Journal of Psychology, 73*(1), 81-86.

Lin, C.-Y., Tsai, C.-S., Fan, C.-W., Griffiths, M. D., Chang, C.-C., Yen, C.-F., & Pakpour, A. H. (2022). Psychometric evaluation of three versions of the UCLA Loneliness Scale (full, eight-item, and three-item versions) among sexual minority men in Taiwan. *International journal of environmental research and public health, 19*(13), 8095.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences, revisited. *The Sage handbook of qualitative research, 4*(2), 97-128.

Ling, L., & Ling, P. (2016). *Methods and paradigms in education research*: IGI Global.

Lipscomb, M. (2008). Mixed method nursing studies: a critical realist critique. *Nursing Philosophy, 9*(1), 32-45.

Lopez, G. I., Figueroa, M., Connor, S. E., & Maliski, S. L. (2008). Translation barriers in conducting qualitative research with Spanish speakers. *Qualitative health research, 18*(12), 1729-1737.

Lou, V. W., & Ng, J. W. (2012). Chinese older adults' resilience to the loneliness of living alone: A qualitative study. *Aging & mental health, 16*(8), 1039-1046.

Luanaigh, C. Ó., & Lawlor, B. A. (2008). Loneliness and the health of older people. *International Journal of Geriatric Psychiatry: A journal of the psychiatry of late life and allied sciences, 23*(12), 1213-1221.

Lucas-Carrasco, R., Laidlaw, K., & Power, M. J. (2011). Suitability of the WHOQOL-BREF and WHOQOL-OLD for Spanish older adults. *Aging & mental health, 15*(5), 595-604.

Lutzman, M., Sommerfeld, E., & Ben-David, S. (2021). Loneliness and social integration as mediators between physical pain and suicidal ideation among elderly men. *International Psychogeriatrics, 33*(5), 453-459.

Lykes, V. A., & Kemmelmeier, M. (2014). What predicts loneliness? Cultural difference between individualistic and collectivistic societies in Europe. *Journal of Cross-Cultural Psychology, 45*(3), 468-490.

Maarouf, H. (2019). Pragmatism as a supportive paradigm for the mixed research approach: Conceptualizing the ontological, epistemological, and axiological stances of pragmatism. *International Business Research, 12*(9), 1-12.

Madhavi, A. P. (2014). Exploring the experience of loneliness among older Sinhalese immigrant women in Canada. *Perspectives, 37*(1), 6.

Maharani, A., Pendleton, N., & Leroi, I. (2019). Hearing impairment, loneliness, social isolation, and cognitive function: longitudinal analysis using English longitudinal study on ageing. *The American Journal of Geriatric Psychiatry, 27*(12), 1348-1356.

Mahon, N. E., Yarcheski, A., & Yarcheski, T. J. (1998). Social support and positive health practices in young adults: Loneliness as a mediating variable. *Clinical Nursing Research, 7*(3), 292-308.

Martín-María, N., Caballero, F. F., Lara, E., Domènech-Abella, J., Haro, J. M., Olaya, B., . . . Miret, M. (2021). Effects of transient and chronic loneliness on major depression in older adults: a longitudinal study. *International Journal of Geriatric Psychiatry, 36*(1), 76-85.

Masi, C. M., Chen, H.-Y., Hawkley, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review, 15*(3), 219-266.

Maxcy, S. J. (2003). Pragmatic threads in mixed methods research in the social sciences: The search for multiple modes of inquiry and the end of the philosophy of formalism. *Handbook of mixed methods in social and behavioral research*(51-89).

Maynard, M. (1994). Methods, practice and epistemology: The debate about feminism and research. *Researching women's lives from a feminist perspective, 10*(26), 10-26.

Mazur, B. (2000). Revisiting plain language. *Technical communication, 47*(2), 205-205.

McCaffery, J. M., Anderson, A., Coday, M., Espeland, M. A., Gorin, A. A., Johnson, K. C., . . . Steinberg, H. O. (2020). Loneliness relates to functional mobility in older adults with type 2 diabetes: the Look AHEAD Study. *Journal of aging research, 2020*.

McHugh Power, J. E., Hannigan, C., Carney, S., & Lawlor, B. A. (2017). Exploring the meaning of loneliness among socially isolated older adults in rural Ireland: a qualitative investigation. *Qualitative Research in Psychology, 14*(4), 394-414.

McInnis, G. J., & White, J. H. (2001). A phenomenological exploration of loneliness in the older adult. *Archives of Psychiatric Nursing, 15*(3), 128-139.

McIntosh, M. J., & Morse, J. M. (2015). Situating and constructing diversity in semi-structured interviews. *Global qualitative nursing research, 2*, 2333393615597674.

Mellor, D., Stokes, M., Firth, L., Hayashi, Y., & Cummins, R. (2008). Need for belonging, relationship satisfaction, loneliness, and life satisfaction. *Personality and Individual Differences, 45*(3), 213-218.

Menike, H. A. (2015). Social Support and Social Security of Elderly Population in Sri Lanka. *International Journal of Business and Social Science, 6*(11), 1.

Messick, S. (1986). The once and future issues of validity: Assessing the meaning and consequences of measurement 1. *ETS Research Report Series, 1986*(2), i-24.

Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning. *American psychologist, 50*(9), 741.

Mijuskovic, B. L. (2012). *Loneliness in philosophy, psychology, and literature*: iUniverse.

Miller, G. (2011). Why loneliness is hazardous to your health: American Association for the Advancement of Science.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, P. (2010). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *International Journal of Surgery (London, England), 8*(5), 336-341.

Mokkink, L. B., Terwee, C. B., Patrick, D. L., Alonso, J., Stratford, P. W., Knol, D. L., . . . de Vet, H. C. (2010). The COSMIN study reached international consensus on taxonomy, terminology, and definitions of measurement properties for health-related patient-reported outcomes. *Journal of clinical epidemiology, 63*(7), 737-745.

Molina-Azorin, J. F. (2016). Mixed methods research: An opportunity to improve our studies and our research skills.

Molzahn, A. E., & Pagé, G. (2006). Field testing the WHOQOL-100 in Canada. *Canadian Journal of Nursing Research Archive*, 106-123.

Molzahn, A. E., Kalfoss, M., Schick Makaroff, K., & Skevington, S. M. (2011). Comparing the importance of different aspects of quality of life to older adults across diverse cultures. *Age and ageing*, *40*(2), 192-199.

Momtaz, Y. A., Hamid, T. A., Yusoff, S., Ibrahim, R., Chai, S. T., Yahaya, N., & Abdullah, S. S. (2012). Loneliness as a risk factor for hypertension in later life. *Journal of Aging and Health, 24*(4), 696-710.

Montano, A.-R., Shellman, J., Malcolm, M., McDonald, D., Rees, C., Fortinsky, R., & Reagan, L. (2020). A mixed methods evaluation of got care! *Geriatric Nursing, 41*(6), 822-831.

Monticone, M., Galeoto, G., Berardi, A., & Tofani, M. (2021). Psychometric properties of assessment tools. *Measuring Spinal Cord Injury: A Practical Guide of Outcome Measures*, 7-15.

Moon, K., & Blackman, D. (2017). A guide to ontology, epistemology, and philosophical perspectives for interdisciplinary researchers. *Integration and Implementation Insights, 2*.

Moorer, P., & Suurmeijer, T. P. (2001). The effects of neighbourhoods on size of social network of the elderly and loneliness: A multilevel approach. *Urban Studies, 38*(1), 105-118.

Morgan, D. L. (2014a). *Integrating qualitative and quantitative methods: A pragmatic approach*: Sage publications.

Morgan, D. L. (2014b). Pragmatism as a paradigm for mixed methods research. *Integrating qualitative and quantitative methods: SAGE Publications, Inc*, 25-44.

Morgan, D. L. (2014c). Pragmatism as a paradigm for social research. *Qualitative Inquiry, 20*(8), 1045-1053.

Moriña, A. (2021). When people matter: The ethics of qualitative research in the health and social sciences. *Health & Social Care in the Community, 29*(5), 1559-1565.

Morlett Paredes, A., Lee, E. E., Chik, L., Gupta, S., Palmer, B. W., Palinkas, L. A., . . . Jeste, D. V. (2021). Qualitative study of loneliness in a senior housing community: the importance of wisdom and other coping strategies. *Aging & mental health, 25*(3), 559-566.

Morse, J. M. (1994). Emerging from the data: The cognitive processes of analysis in qualitative inquiry. *Critical issues in qualitative research methods, 346*(23-43).

Morse, J. M. (2009). Mixing qualitative methods (Vol. 19, pp. 1523-1524): SAGE Publications Sage CA: Los Angeles, CA.

Morse, J. M. (2016). *Mixed method design: Principles and procedures* (Vol. 4): Routledge.

Musich, S., Wang, S. S., Hawkins, K., & Yeh, C. S. (2015). The impact of loneliness on quality of life and patient satisfaction among older, sicker adults. *Gerontology and Geriatric Medicine, 1*, 2333721415582119.

Muswazi, M., & Nhamo, E. (2013). Note taking: A lesson for novice qualitative researchers. *Journal of Research & Method in Education, 2*(3), 13-17.

Neto, F. (2014a). Psychometric analysis of the short-form UCLA Loneliness Scale (ULS-6) in older adults. *European Journal of Ageing, 11*, 313-319.

Neto, F. (2014b). Socio-demographic predictors of loneliness across the adult life span in Portugal. *Interpersona: An International Journal on Personal Relationships, 8*(2), 222-230.

Neves, B. B., Sanders, A., & Kokanović, R. (2019). “It's the worst bloody feeling in the world”: Experiences of loneliness and social isolation among older people living in care homes. *Journal of aging studies, 49*, 74-84.

Neville, S., Adams, J., Montayre, J., Larmer, P., Garrett, N., Stephens, C., & Alpass, F. (2018). Loneliness in Men 60 Years and Over: The Association With Purpose in Life. *American journal of men's health, 12*(4), 730-739.

Nicolaisen, M., & Thorsen, K. (2014). Loneliness among men and women–a five-year follow-up study. *Aging & mental health, 18*(2), 194-206.

Nyqvist, F., Cattan, M., Conradsson, M., Näsman, M., & Gustafsson, Y. (2017). Prevalence of loneliness over ten years among the oldest old. *Scandinavian Journal of Public Health, 45*(4), 411-418.

O'cathain, A., Murphy, E., & Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of health services research & policy, 13*(2), 92-98.

O’Cathain, A., Murphy, E., & Nicholl, J. (2010). Three techniques for integrating data in mixed methods studies. *BMJ, 341*.

Ogrin, R., Cyarto, E. V., Harrington, K. D., Haslam, C., Lim, M. H., Golenko, X., . . . Lowthian, J. A. (2021). Loneliness in older age: What is it, why is it happening and what should we do about it in Australia? *Australasian Journal on Ageing, 40*(2), 202-207.

Osto, D. (2015). Merit. In *The Buddhist World* (pp. 373-388): Routledge.

Otsuka, S., Hamahata, A., Komatsu, M., Suishu, C., & Osuka, K. (2010). Prospects for Introducing the Eden Alternative® to Japan. *Journal of Gerontological Nursing, 36*(3), 47-55.

Paque, K., Bastiaens, H., Van Bogaert, P., & Dilles, T. (2018). Living in a nursing home: A phenomenological study exploring residents’ loneliness and other feelings. *Scandinavian Journal of Caring Sciences, 32*(4), 1477-1484.

Park, J., Kitayama, S., Karasawa, M., Curhan, K., Markus, H. R., Kawakami, N., . . . Ryff, C. D. (2013). Clarifying the links between social support and health: Culture, stress, and neuroticism matter. *Journal of Health Psychology, 18*(2), 226-235.

Peat, J., & Barton, B. (2008). *Medical statistics: A guide to data analysis and critical appraisal*: John Wiley & Sons.

Penning, M. J., Liu, G., & Chou, P. H. B. (2014). Measuring loneliness among middle-aged and older adults: the UCLA and de Jong Gierveld Loneliness Scales. *Social Indicators Research, 118*(3), 1147-1166.

Perera, E. (2017). Ageing Population of Sri Lanka Emerging issues, needs and policy implications.

Perissinotto, C., Holt-Lunstad, J., Periyakoil, V. S., & Covinsky, K. (2019). A practical approach to assessing and mitigating loneliness and isolation in older adults. *Journal of the American Geriatrics Society, 67*(4), 657-662.

Perissinotto, C. M., Cenzer, I. S., & Covinsky, K. E. (2012). Loneliness in older persons: a predictor of functional decline and death. *Archives of Internal Medicine, 172*(14), 1078-1084.

Perlman, D., & Peplau, L. A. (1982). Theoretical approaches to loneliness. *Loneliness: A sourcebook of current theory, research and therapy*, 123-134.

Perlman, D., & Peplau, L. A. (2008). Theoretical Approaches.

Peter, K. A., Helfer, T., Golz, C., Halfens, R. J., & Hahn, S. (2022). Development of an Interrelated Definition of Psychosocial Health for the Health Sciences Using Concept Analysis. *Journal of Psychosocial Nursing and Mental Health Services, 60*(6), 19-26.

Petitte, T., Mallow, J., Barnes, E., Petrone, A., Barr, T., & Theeke, L. (2015). A systematic review of loneliness and common chronic physical conditions in adults. *The open psychology journal, 8*(Suppl 2), 113.

Phelan, A., & McCormack, B. (2016). Exploring nursing expertise in residential care for older people: a mixed method study. *Journal of Advanced Nursing, 72*(10), 2524-2535.

Philip, K. E., Polkey, M. I., Hopkinson, N. S., Steptoe, A., & Fancourt, D. (2020). Social isolation, loneliness and physical performance in older-adults: fixed effects analyses of a cohort study. *Scientific reports, 10*(1), 13908.

Phillippi, J., & Lauderdale, J. (2018). A guide to field notes for qualitative research: Context and conversation. *Qualitative health research, 28*(3), 381-388.

Pinker, S. (2004). The Blank Slate: The modern denial of human nature. *New York: Viking*.

Pinquart, M., & Sorensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and applied social psychology, 23*(4), 245-266.

Pinquart, M., & Sörensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and Applied Social Psychology, 23*(4), 245-266. https://doi.org/10.1207/153248301753225702

Pluye, P., & Hong, Q. N. (2014). Combining the power of stories and the power of numbers: mixed methods research and mixed studies reviews. *Annual review of public health, 35*, 29-45.

Ponzetti Jr, J. J. (1990). Loneliness among college students. *Family relations*, 336-340.

Porensky, E. K., Dew, M. A., Karp, J. F., Skidmore, E., Rollman, B. L., Shear, M. K., & Lenze, E. J. (2009). The burden of late-life generalized anxiety disorder: effects on disability, health-related quality of life, and healthcare utilization. *The American Journal of Geriatric Psychiatry, 17*(6), 473-482.

Post, W. J., van Duijn, M. A., & Baarsen, B. v. (2001). Single-peaked or monotone tracelines? On the choice of an IRT model for scaling data. In *Essays on item response theory* (pp. 391-414): Springer.

Power, M., Quinn, K., & Schmidt, S. (2005). Development of the WHOQOL-old module. *Quality of Life Research, 14*(10), 2197-2214.

Power, M., Quinn, K., Schmidt, S., & Group, W.-O. (2005). Development of the WHOQOL-old module. *Quality of life research, 14*, 2197-2214.

Prieto-Flores, M.-E., Fernandez-Mayoralas, G., Forjaz, M. J., Rojo-Perez, F., & Martinez-Martin, P. (2011). Residential satisfaction, sense of belonging and loneliness among older adults living in the community and in care facilities. *Health & Place, 17*(6), 1183-1190.

Prieto-Flores, M.-E., Forjaz, M. J., Fernandez-Mayoralas, G., Rojo-Perez, F., & Martinez-Martin, P. (2011). Factors associated with loneliness of noninstitutionalized and institutionalized older adults. *Journal of aging and health, 23*(1), 177-194.

Purser, G. L. (2022). The combined effect of functional independence, loneliness, and social engagement on older adult drinking levels. *Journal of Social Work Practice in the Addictions, 22*(3), 233-244.

Ribeiro, O., Teixeira, L., Araújo, L., Afonso, R. M., & Pachana, N. (2015). Predictors of anxiety in centenarians: health, economic factors, and loneliness. *International Psychogeriatrics, 27*(7), 1167-1176.

Risseeuw, C. (2012a). Institutional care provisions for the aged in Sri Lanka and some reflections on issues of “care” and “company”. *International Journal of Sociology and Social Policy, 32*(11/12), 695-707.

Risseeuw, C. (2012b). Institutional care provisions for the aged in Sri Lanka and some reflections on issues of “care” and “company”. *International journal of sociology and social policy*.

Rokach, A. (2018). The effect of gender and culture on loneliness: A mini review. *Emerging Science Journal, 2*(2), 59-64.

Rokach, A., Orzeck, T., & Neto, F. (2004). Coping with loneliness in old age: A cross-cultural comparison. *Current Psychology, 23*(2), 124-137.

Roos, V., & Klopper, H. (2010). Older persons' experiences of loneliness: a South African perspective. *Journal of Psychology in Africa, 20*(2), 281-289.

Roos, V., & Malan, L. (2012). The role of context and the interpersonal experience of loneliness among older people in a residential care facility. *Global health action, 5*(1), 18861.

Rosenkoetter, U., & Tate, R. L. (2018). Assessing features of psychometric assessment instruments: a comparison of the COSMIN checklist with other critical appraisal tools. *Brain Impairment, 19*(1), 103-118.

Rossman, G. B., & Wilson, B. L. (1985). Numbers and words: Combining quantitative and qualitative methods in a single large-scale evaluation study. *Evaluation review, 9*(5), 627-643.

Roulston, K. (2014). *Analysing interviews*: The SAGE handbook of qualitative data analysis.

Routasalo, P., & Pitkala, K. H. (2003). Loneliness among older people. *Reviews in Clinical Gerontology, 13*(4), 303-311.

Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of personality assessment, 66*(1), 20-40.

Salimi, A. (2011). Social-emotional loneliness and life satisfaction. *Procedia-Social and Behavioral Sciences, 29*, 292-295.

Samaraweera, D., & Maduwage, S. (2016). Meeting the current and future health-care needs of Sri Lanka’s ageing population. *WHO South-East Asia Journal of Public Health, 6*(2), 96-101.

Savikko, N., Routasalo, P., Tilvis, R. S., Strandberg, T. E., & Pitkälä, K. H. (2005). Predictors and subjective causes of loneliness in an aged population. *Archives of Gerontology and Geriatrics, 41*(3), 223-233.

Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of studies in international education, 12*(2), 148-180.

Scammon, D. L., Tomoaia-Cotisel, A., Day, R. L., Day, J., Kim, J., Waitzman, N. J., . . . Magill, M. K. (2013). Connecting the dots and merging meaning: using mixed methods to study primary care delivery transformation. *Health services research, 48*(6 Pt 2), 2181.

Sevil, Ü., Ertem, G., Kavlak, O., & Coban, A. (2006). The loneliness level of patients with gynecological cancer. *International Journal of Gynecologic Cancer, 16*(Suppl 1), 472-477.

Shankar, A., Hamer, M., McMunn, A., & Steptoe, A. (2013). Social isolation and loneliness: relationships with cognitive function during 4 years of follow-up in the English Longitudinal Study of Ageing. *Psychosomatic Medicine, 75*(2), 161-170.

Shankar, A., McMunn, A., Banks, J., & Steptoe, A. (2011). Loneliness, social isolation, and behavioral and biological health indicators in older adults. *Health psychology, 30*(4), 377.

Shannon-Baker, P. (2016). Making paradigms meaningful in mixed methods research. *Journal of mixed methods research, 10*(4), 319-334.

Shaw, R., Gullifer, J., & Wood, K. (2016). Religion and spirituality: A qualitative study of older adults. *Ageing International, 41*(3), 311-330.

Shiovitz-Ezra, S., & Ayalon, L. (2010). Situational versus chronic loneliness as risk factors for all-cause mortality. *International Psychogeriatrics, 22*(3), 455-462.

Siddhisena, K. (2005). Socio-economic implications of ageing in Sri Lanka: an overview. *Oxford Institute of Ageing Working Papers. Oxford: Oxford Institute of Ageing*.

Siddhisena, K., & DeGraff, D. S. (2009). A pace of its own: the demography of ageing in Sri Lanka. *Journal of Population Ageing, 2*(3), 77-99.

Siette, J., Jorgensen, M., Nguyen, A., Knaggs, G., Miller, S., & Westbrook, J. I. (2021). A mixed-methods study evaluating the impact of an excursion-based social group on quality of life of older adults. *BMC Geriatrics, 21*(1), 1-12.

Silva, S. N. M., & De Thabrew, K. C. K. (2018). SOCIAL WORK INTERVENTIONS ON AGING AND CHANGING ROLE OF THE FAMILY IN ELDER CARE.

Singh, & Walwyn. (2017). Influence of personal epistemology on research design: Implications for research education.

Singh, A., & Misra, N. (2009). Loneliness, depression and sociability in old age. *Industrial psychiatry journal, 18*(1), 51.

Skevington, Lotfy, & O'Connell. (2004). The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Quality of life research, 13*, 299-310.

Skevington, S. M., Lotfy, M., & O'Connell, K. (2004). The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Quality of Life Research, 13*(2), 299-310.

Smith, B. (2012). Ontology. In *The furniture of the world* (pp. 47-68): Brill.

Smith, D., Leonis, T., & Anandavalli, S. (2021). Belonging and loneliness in cyberspace: impacts of social media on adolescents' well-being. *Australian Journal of Psychology, 73*(1), 12-23.

Smith, J. M. (2012). Toward a better understanding of loneliness in community-dwelling older adults. *The Journal of psychology, 146*(3), 293-311.

Sofroniou, N., & Hutcheson, G. D. (1999). The multivariate social scientist. *The Multivariate Social Scientist*, 1-288.

Sokolov, A. (2009). The epistemology of documents (A methodological essay). *Automatic documentation and mathematical linguistics, 43*(2), 57-68.

Sorkin, D., Rook, K. S., & Lu, J. L. (2002). Loneliness, lack of emotional support, lack of companionship, and the likelihood of having a heart condition in an elderly sample. *Annals of Behavioral Medicine, 24*(4), 290-298.

Souza, A. C. d., Alexandre, N. M. C., & Guirardello, E. d. B. (2017). Psychometric properties in instruments evaluation of reliability and validity. *Epidemiologia e servicos de saude, 26*, 649-659.

Speziale, H. S., Streubert, H. J., & Carpenter, D. R. (2011). *Qualitative research in nursing: Advancing the humanistic imperative*: Lippincott Williams & Wilkins.

Stanley, M., Moyle, W., Ballantyne, A., Jaworski, K., Corlis, M., Oxlade, D., . . . Young, B. (2010). 'Nowadays you don't even see your neighbours': loneliness in the everyday lives of older Australians. *Health & social care in the community, 18*(4), 407-414.

Steptoe, A., Shankar, A., Demakakos, P., & Wardle, J. (2013). Social isolation, loneliness, and all-cause mortality in older men and women. *Proceedings of the National Academy of Sciences, 110*(15), 5797-5801.

Stockemer, D., Stockemer, & Glaeser. (2019). *Quantitative methods for the social sciences* (Vol. 50): Springer.

Stravynski, A., & Boyer, R. (2001). Loneliness in relation to suicide ideation and parasuicide: A population-wide study. *Suicide and Life-Threatening Behavior, 31*(1), 32-40.

Strydom, H. (2005). Perceptions and attitudes towards aging in two culturally diverse groups of aged males: a South African experience. *The aging male, 8*(2), 81-89.

Stuckey, H. L. (2014). The first step in data analysis: Transcribing and managing qualitative research data. *Journal of Social Health and Diabetes, 2*(01), 006-008.

Suhr, D. D. (2006). Exploratory or confirmatory factor analysis?

Sullivan, M. P., Victor, C. R., & Thomas, M. (2016). Understanding and alleviating loneliness in later life: perspectives of older people. *Quality in Ageing and Older Adults*.

Taber, K. S. (2018a). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education, 48*, 1273-1296.

Taber, K. S. (2018b). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education, 48*(6), 1273-1296.

Taherdoost, H. (2016). Validity and reliability of the research instrument; how to test the validation of a questionnaire/survey in a research. *How to test the validation of a questionnaire/survey in a research (August 10, 2016)*.

Tan, J. Y., Tam, W. S. W., Goh, H. S., Ow, C. C., & Wu, X. V. (2021). Impact of sense of coherence, resilience and loneliness on quality of life amongst older adults in long-term care: A correlational study using the salutogenic model. *Journal of advanced Nursing, 77*(11), 4471-4489.

Tashakkori, A., Johnson, R. B., & Teddlie, C. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*: Sage publications.

Tashakkori, A., & Teddlie, C. (2009). Integrating qualitative and quantitative approaches to research. *The SAGE handbook of applied social research methods, 2*, 283-317.

Tashakkori, A., Teddlie, C., & Teddlie, C. B. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46): sage.

Taube, E., Jakobsson, U., Midlöv, P., & Kristensson, J. (2016). Being in a Bubble: the experience of loneliness among frail older people. *Journal of advanced Nursing, 72*(3), 631-640.

Taube, E., Kristensson, J., Sandberg, M., Midlöv, P., & Jakobsson, U. (2015). Loneliness and health care consumption among older people. *Scandinavian Journal of Caring Sciences, 29*(3), 435-443.

Teodoro, I. P. P., Rebouças, V. d. C. F., Thorne, S. E., Souza, N. K. M. d., Brito, L. S. A. d., & Alencar, A. M. P. G. (2018). Interpretive description: a viable methodological approach for nursing research. *Escola Anna Nery, 22*.

Theeke, L. A., & Mallow, J. (2013). Loneliness and quality of life in chronically Ill rural older adults: Findings from a pilot study. *The American journal of nursing, 113*(9), 28.

Thorne. (2008). *Interpretive description*: Left Coast Press.

Thorne, Kirkham, S. R., & MacDonald-Emes, J. (1997). Interpretive description: a noncategorical qualitative alternative for developing nursing knowledge. *Research in Nursing and Health, 20*(2), 169-177.

Thorne, Kirkham, S. R., & O'Flynn-Magee, K. (2004). The analytic challenge in interpretive description. *International journal of qualitative methods, 3*(1), 1-11.

Thorne, S. (2016). *Interpretive description: Qualitative research for applied practice*: Routledge.

Thurston, R. C., & Kubzansky, L. D. (2009). Women, loneliness, and incident coronary heart disease. *Psychosomatic Medicine, 71*(8), 836.

Tiilikainen, E., & Seppänen, M. (2017). Lost and unfulfilled relationships behind emotional loneliness in old age. *Ageing & Society, 37*(5), 1068-1088.

Tilakaratna, G., Sooriyamudali, C., & Perera, A. (2019). Working Beyond the Age of Retirement: Patterns and Determinants of Elderly Labour Force Participation in Sri Lanka.

Tilvis, R. S., Laitala, V., Routasalo, P. E., & Pitkälä, K. H. (2011). Suffering from loneliness indicates significant mortality risk of older people. *Journal of aging research, 2011*.

Tomás, J. M., Pinazo-Hernandis, S., Donio-Bellegarde, M., & Hontangas, P. M. (2017). Validity of the de Jong Gierveld Loneliness Scale in Spanish older population: Competitive structural models and item response theory. *European journal of ageing, 14*(4), 429-437.

Towsley, G. L., Beck, S. L., Dudley, W. N., & Pepper, G. A. (2011). Staffing levels in rural nursing homes: A mixed methods approach. *Research in Gerontological Nursing, 4*(3), 207-220.

Treas, J., & Mazumdar, S. (2002). Older people in America's immigrant families: Dilemmas of dependence, integration, and isolation. *Journal of Aging Studies, 16*(3), 243-258.

Tremolada, M., Taverna, L., & Bonichini, S. (2019). Which factors influence attentional functions? Attention assessed by KITAP in 105 6-to-10-year-old children. *Behavioral Sciences, 9*(1), 7.

Trybusińska, D., & Saracen, A. (2019). Loneliness in the context of quality of life of nursing home residents. *Open medicine, 14*(1), 354-361.

Tsai, F. F., & Reis, H. T. (2009). Perceptions by and of lonely people in social networks. *Personal Relationships, 16*(2), 221-238.

Tuckett, A. G. (2007). The meaning of nursing-home:'Waiting to go up to St. Peter, OK! Waiting house, sad but true'—An Australian perspective. *Journal of aging studies, 21*(2), 119-133.

Uchino, B. N., Cacioppo, J. T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: a review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin, 119*(3), 488.

Uhlenberg, P. (2012). Intergenerational support in Sri Lanka: the elderly and their children. In *Aging and Generational Relations over the Life Course* (pp. 462-482): De Gruyter.

Usefy, A., Ghassemi, G. R., Sarrafzadegan, N., Mallik, S., Baghaei, A., & Rabiei, K. (2010). Psychometric properties of the WHOQOL-BREF in an Iranian adult sample. *Community Mental Health Journal, 46*(2), 139-147.

Uysal-Bozkir, Ö., Fokkema, T., MacNeil-Vroomen, J. L., van Tilburg, T. G., & de Rooij, S. E. (2017). Translation and validation of the De Jong Gierveld Loneliness Scale among older migrants living in the Netherlands. *The Journals of Gerontology: Series B, 72*(1), 109-119.

Valtorta, N. K., Kanaan, M., Gilbody, S., & Hanratty, B. (2018). Loneliness, social isolation and risk of cardiovascular disease in the English Longitudinal Study of Ageing. *European journal of preventive cardiology, 25*(13), 1387-1396.

Valtorta, N. K., Kanaan, M., Gilbody, S., Ronzi, S., & Hanratty, B. (2016). Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. *Heart, 102*(13), 1009-1016.

Van Baarsen, B., Smit, J. H., Snijders, T. A., & Knipscheer, K. P. (1999). Do personal conditions and circumstances surrounding partner loss explain loneliness in newly bereaved older adults? *Ageing & Society, 19*(4), 441-469.

Van Baarsen, B., Snijders, T. A., Smit, J. H., & Van Duijn, M. A. (2001). Lonely but not alone: Emotional isolation and social isolation as two distinct dimensions of loneliness in older people. *Educational and Psychological Measurement, 61*(1), 119-135.

van den Broek, T. (2017). Gender differences in the correlates of loneliness among Japanese persons aged 50–70. *Australasian Journal on Ageing, 36*(3), 234-237.

Van Tilburg, T., Havens, B., & de Jong Gierveld, J. (2004). Loneliness among older adults in the Netherlands, Italy, and Canada: A multifaceted comparison. *Canadian Journal on Aging/La Revue canadienne du vieillissement, 23*(2), 169-180.

Verhagen, I., Ros, W. J., Steunenberg, B., & de Wit, N. J. (2014). Ethnicity does not account for differences in the health-related quality of life of Turkish, Moroccan, and Moluccan elderly in the Netherlands. *Health and Quality of Life Outcomes, 12*(1), 1-8.

Victor, Grenade, & Boldy. (2005). Measuring loneliness in later life: a comparison of differing measures. *Reviews in Clinical Gerontology, 15*(1), 63-70.

Victor, Scambler, Bowling, & Bond. (2005). The prevalence of, and risk factors for, loneliness in later life: a survey of older people in Great Britain. *Ageing & Society, 25*(6), 357-375.

Victor, C., Grenade, L., & Boldy, D. (2005). Measuring loneliness in later life: A comparison of differing measures. *Reviews in Clinical Gerontology, 15*(1), 63-70.

Vodopivec, M. (2008). Sri Lanka: Addressing the Needs of an Aging Population.

Wang, G., Zhang, X., Wang, K., Li, Y., Shen, Q., Ge, X., & Hang, W. (2011). Loneliness among the rural older people in Anhui, China: prevalence and associated factors. *International Journal of Geriatric Psychiatry, 26*(11), 1162-1168.

Wang, H., Lee, C., Hunter, S., Fleming, J., Brayne, C., & Collaboration, C. C. S. (2020). Longitudinal analysis of the impact of loneliness on cognitive function over a 20-year follow-up. *Aging & mental health, 24*(11), 1815-1821.

Watson, J. C. (2017). Establishing evidence for internal structure using exploratory factor analysis. *Measurement and Evaluation in Counseling and Development, 50*(4), 232-238.

Weeraratne, B. (2016). Re-defining urban areas in Sri Lanka. *ResearchGate*.

Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation*. Cambridge: MIT Press.

Whiting, L. S. (2008). Semi-structured interviews: guidance for novice researchers. *Nursing Standard (through 2013), 22*(23), 35.

WHO. (1996). *WHOQOL-BREF: introduction, administration, scoring and generic version of the assessment: field trial version, December 1996*: World Health Organization.

WHO. (2010). A conceptual framework for action on the social determinants of health.

WHO. (2021). *Health and Aging*. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health: Policy Insights.

Wigfield, A., & Eccles, J. S. (1992). The development of achievement task values: A theoretical analysis. *Developmental review, 12*(3), 265-310.

Wijesiri, H. M. S., Samarasinghe, K., & Edberg, A. K. (2019). Loneliness among older people living in care homes in Sri Lanka. *International Journal of Older People Nursing, 14*(4), e12253.

Wiktorsson, S., Runeson, B., Skoog, I., Östling, S., & Waern, M. (2010). Attempted suicide in the elderly: characteristics of suicide attempters 70 years and older and a general population comparison group. *The American Journal of Geriatric Psychiatry, 18*(1), 57-67.

Wild, D., Grove, A., Martin, M., Eremenco, S., McElroy, S., Verjee-Lorenz, A., & Erikson, P. (2005). Principles of good practice for the translation and cultural adaptation process for patient-reported outcomes (PRO) measures: report of the ISPOR task force for translation and cultural adaptation. *Value in health, 8*(2), 94-104.

Wild, D., Grove, A., Martin, M., Eremenco, S., McElroy, S., Verjee-Lorenz, A., & Erikson, P. (2005). Principles of good practice for the translation and cultural adaptation process for patient-reported outcomes (PRO) measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value in Health, 8*(2), 94-104.

Willis, J. W. (2007). World views, paradigms, and the practice of social science research. *Foundations of qualitative research: Interpretive and critical approaches*, 1-26.

Willmore, L., & Kidd, S. (2008). Tackling poverty in old age: a universal pension for Sri Lanka. *Available at SSRN 1312344*.

Wisdom, J. P., Cavaleri, M. A., Onwuegbuzie, A. J., & Green, C. A. (2012). Methodological reporting in qualitative, quantitative, and mixed methods health services research articles. *Health services research, 47*(2), 721-745.

Wong, A., Chau, A. K., Fang, Y., & Woo, J. (2017). Illuminating the psychological experience of elderly loneliness from a societal perspective: A qualitative study of alienation between older people and society. *International journal of environmental research and public health, 14*(7), 824.

World Health Organization. (1998). WHOQOL user manual. Geneva: World Health Organization.

Xing, G. (2016). The teaching and practice of filial piety in Buddhism. *Journal of Law and Religion, 31*(2), 212-226.

Xu, S., Qiu, D., Hahne, J., Zhao, M., & Hu, M. (2018). Psychometric properties of the short-form UCLA Loneliness Scale (ULS-8) among Chinese adolescents. *Medicine, 97*(38).

Yang, F., Zhang, J., & Wang, J. (2018). Correlates of loneliness in older adults in Shanghai, China: does age matter? *BMC Geriatrics, 18*(1), 1-10.

Yang, K., & Victor, C. (2011). Age and loneliness in 25 European nations. *Ageing & Society, 31*(8), 1368-1388.

Yang, K., & Victor, C. R. (2008). The prevalence of and risk factors for loneliness among older people in China. *Ageing & Society, 28*(3), 305-327.

Yao, G., Chung, C.-W., Yu, C.-F., & Wang, J.-D. (2002). Development and verification of validity and reliability of the WHOQOL-BREF Taiwan version. *Journal of the Formosan Medical Association, 101*(5), 342-351.

Yu, K., Wu, S., Jang, Y., Chou, C.-P., Wilber, K. H., Aranda, M. P., & Chi, I. (2021). Longitudinal assessment of the relationships between geriatric conditions and loneliness. *Journal of the American Medical Directors Association, 22*(5), 1107-1113. e1101.

Yusoff, M. S. B. (2019). ABC of content validation and content validity index calculation. *Education in Medicine Journal, 11*(2), 49-54.

Zarei, S., Memari, A. H., Moshayedi, P., & Shayestehfar, M. (2016). Validity and reliability of the UCLA loneliness scale version 3 in Farsi. *Educational Gerontology, 42*(1), 49-57.

Zhang, D., Wang, R., Zhao, X., Zhang, J., Jia, J., Su, Y., & Wang, K. (2021). Role of resilience and social support in the relationship between loneliness and suicidal ideation among Chinese nursing home residents. *Aging & mental health, 25*(7), 1262-1272.

Zhang, W., & Creswell, J. (2013). The use of “mixing” procedure of mixed methods in health services research. *Medical Care, 51*(8), e51-e57.

Zhao, L., Zhang, X., & Ran, G. (2017). Positive coping style as a mediator between older adults' self-esteem and loneliness. *Social Behavior and Personality: an international journal, 45*(10), 1619-1628.

Zhong, B.-L., Chen, S.-L., & Conwell, Y. (2016). Effects of transient versus chronic loneliness on cognitive function in older adults: Findings from the Chinese Longitudinal Healthy Longevity Survey. *The American Journal of Geriatric Psychiatry, 24*(5), 389-398.

Zhong, B.-L., Chen, S.-L., Tu, X., & Conwell, Y. (2017). Loneliness and cognitive function in older adults: Findings from the Chinese longitudinal healthy longevity survey. *The Journals of Gerontology: Series B, 72*(1), 120-128.

Zhou, Z., Mao, F., Zhang, W., Towne Jr, S. D., Wang, P., & Fang, Y. (2019). The association between loneliness and cognitive impairment among older men and women in China: a nationwide longitudinal study. *International Journal of Environmental Research and Public Health, 16*(16), 2877.

Zhu, Y., Liu, J., Qu, B., & Yi, Z. (2018). Quality of life, loneliness and health-related characteristics among older people in Liaoning province, China: a cross-sectional study. *BMJ open, 8*(11), e021822.

Glossary

AUTEC – Auckland University of Technology Ethics Committee

ERC – Ethics Review Committee

LAC – Legal Aid Commission

NCE – National Council for Elders

NSE – National Secretariat for Elders

WASP - White Anglo-Saxon Protestant

Appendices

Appendix A *Letter of Ethics Approval (AUTEC)*

Auckland University of Technology Ethics Committee (AUTEC)

Auckland University of Technology
D-88, Private Bag 92006, Auckland 1142, NZ
T: +64 9 921 9999 ext. 8316
E: ethics@aut.ac.nz
www.aut.ac.nz/researchethics

4 March 2020

Stephen Neville
Faculty of Health and Environmental Sciences

Dear Stephen

Re Ethics Application: **20/20 Understanding loneliness in older Sinhalese men and women living in in governmental aged care facilities in Sri Lanka**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC).

Your ethics application has been approved for three years until 4 March 2023.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEC in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEC prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEC Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEC Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard.

AUTEC grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted. When the research is undertaken outside New Zealand, you need to meet all ethical, legal, and locality obligations or requirements for those jurisdictions.

Please quote the application number and title on all future correspondence related to this project.

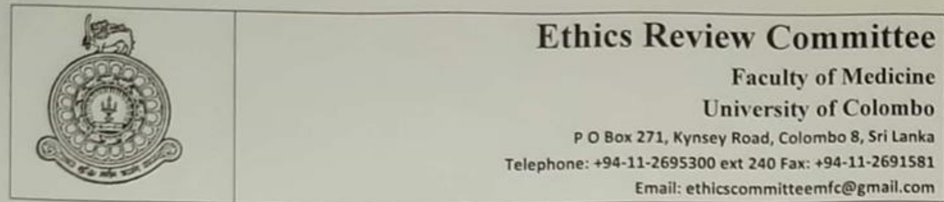
For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through http://www.aut.ac.nz/research/researchethics

(This is a computer-generated letter for which no signature is required)

The AUTEC Secretariat
Auckland University of Technology Ethics Committee

Cc: avpma@ou.ac.lk; Margaret Sandham

Appendix B *Letter of Ethics Approval (Faculty of Medicine, University of Colombo, Sri Lanka)*



Ethics Review Committee

Faculty of Medicine

University of Colombo

P O Box 271, Kynsey Road, Colombo 8, Sri Lanka

Telephone: +94-11-2695300 ext 240 Fax: +94-11-2691581

Email: ethicscommitteemfc@gmail.com

REFERENCE: EC-20-031

20th August 2020

Ms.A.V.Pramuditha Madavi,
Senior Lecturer in Nursing,
The Open University of Sri Lanka

Dear. Ms. Madavi,

RE	:	**Protocol EC-20-031**
Title	:	**Understanding loneliness in older Sinhalese Men and Women living in Governmental Aged Care facilities in Sri Lanka**
Investigators	:	**Ms.A.V.Pramuditha Madavi** **Prof.Stephen Neville** **Dr.Margaret Sandham** **Prof.Wasantha Gunathunga**

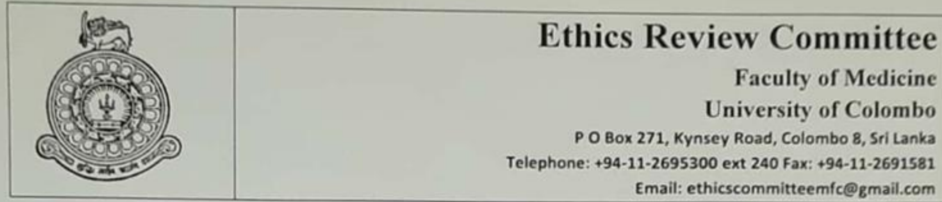
Thank you for submitting the above research proposal, which was considered by the Ethics Review Committee, at its meeting on 20.08.2020. Approval is granted to proceed.

This approval relates to the following:

- **Research Proposal** **(Version 2.1)**
- **Information Sheet** **(Version 1.0)**
- **Consent form** **(Version 1.0)**
- **Questionnaire** **(Version 1.0)**

The following members of the ERC were present at the meeting:

Dr Enoka Corea, Dr. Panduka Karunanayake, Dr Gayani Ranaweera, Dr. Nilakshi Samaranayake , Dr.Sriyakanthi Beneragama, Prof.Ariaranee Gnanathasan, Dr.Nazima Kumardeen, Prof. Kantha Lankathilake , Dr. Nishani Lucas, Dr. Kamal Perera, Dulani Samaranayake, Dr.S.Sivaganesh, Dr. Tharanga Thoradeniya, Mrs. Nirmali Wickramasinghe, Dr.Sameera Gunawardhane, Dr.R.Haniffa, Dr.Suhashini Ratnatunga, Ms. Cinthuja Padmanathan.



Ethics Review Committee

Faculty of Medicine
University of Colombo
P O Box 271, Kynsey Road, Colombo 8, Sri Lanka
Telephone: +94-11-2695300 ext 240 Fax: +94-11-2691581
Email: ethicscommitteemfc@gmail.com

You are asked to note the following,

- This approval is valid for one year from the date of issue of this letter, and the committee requires that you furnish a final report once the study is concluded.
- If the study is continued for a period beyond one year, you are required to furnish an annual progress report for the year and an application for the extension of approval by a further year. The ERC will issue such extension after consideration of the progress report and any other information it may require from you for this purpose.
- Progress reports and final reports should be submitted in the recommended template, which can be downloaded from the ERC web page of the Faculty of Medicine, University of Colombo website.
- In similar manner, you are required to furnish a progress report and an application for the extension of approval for each subsequent year as long as the study is continued. If no such application is made or extension of approval given, the ethics clearance lapses automatically once the current year of approval is finished.
- If the progress report and/or the final report is/are delayed more than one month beyond the due date (which is the final date of ethics approval in force), approval for the study will lapse and you will be required to furnish a new application should you wish to resume or continue the study.
- If a PI has three or more research proposals in which the progress reports and/or final reports have lapsed in this manner, no further applications for ethics review shall be entertained from such PI.

This approval relates to the ethical content of this study only, and you are responsible for the following:

- Negotiating individual arrangements with the heads of service departments in those situations where the use of their resources is involved.
- If appropriate, informing the study sponsor that the membership and procedures of the Faculty of Medicine, University of Colombo Ethics Review Committee comply with appropriate guidelines of the Forum of Ethics Review Committees in Sri Lanka (FERCSL).

Yours sincerely,

Ethics Review Committee
Faculty of Medicine
University of Colombo
Kynsey Road
Colombo 8

Dr. Enoka Corea
Chairperson
Ethics Review Committee
Faculty of Medicine
University of Colombo

Appendix C *Letter of Granting Study Permission (NSE, Sri Lanka)*

ජාතික වැඩිහිටි මහලේකම් කාර්යාලය
முதியோர்களுக்கான தேசிய செயலகம்
National Secretariat for Elders
කාන්තා, ළමා කටයුතු සහ සමාජ ආරක්ෂණ අමාත්‍යාංශය
மகளிர், சிறுவர் விவகார மற்றும் சமூகப் பாதுகாப்பு அமைச்சு
Ministry of Women, Child Affairs and Social Security

සක්‍රිය වැඩිහිටි වියක් උදෙසා - செயலூக்கமான முதுமையை நோக்கி - *Towards an active ageing*

මගේ අංකය / எனது இல. / My No. } NSE/DEV/15/01/01
ඔබේ අංකය / உமது இல. / Your No. }
දිනය / திகதி / Date } 2020.08. 12

A.V. Pramuditha Madhavi
Senior Lecture in Nursing.
Department Of Nursing.
The Open University of Sri Lanka.

<u>Request the permission to approach residents in Elderly care Homes to obtain information for a purpose of PHD study.</u>

This has reference to your letter dated 28th July 2020 on the above caption.

According to your request I grant permission subject to quarantine rules and the health guide lines imposed by Department of Health for the data collection from eighty six elderly care homes which are located seven selected provinces as specified in the attached list given by you.

This permission is given to you in terms of the current health situation of the country. In case of this situation (covid-19) become adverse, your permission will be temporary restricted accordingly.

Your corporation in this noble endeavor is highly appreciated.

Chandana Ranavera Arachchi
Director,
Social Service Department and
Acting Director of National Secretariat for Elders

ලිපිනය : 2 වන මහල, D කොටස, සෙත්සිරිපාය - දෙවන අදියර, බත්තරමුල්ල.
முகவரி : 2ஆம் மாடி,தொகுதி D,செத்சிறிபாய-கட்டம் II,பத்தரமுல்லை
Address : 2nd Floor,Block D, Sethsiripaya- II Stage, Baththaramulla.
ඊ-මේල්/ மின்னஞ்சல்/ E-mail : nsemss@gmail.com
ෆැක්ස්/ பெக்ஸ் / Fax : 0112187015

දුරකථන / தொலைபேசி/ Telephone:
අධ්‍යක්ෂ / பணிப்பாளர் / Director : 0112187045
කාර්යාලය / அலுவலகம் / Office
සංවර්ධන අංශය : 0112054164
ආයතන අංශය : 0112054136
මිණුම් අංශය : 0112054138

Appendix D *Participant Information Sheets for Conducting Interviews and Questionnaires*

Understanding Loneliness in Older Sinhalese Men and Women Living in Governmental Aged Care Facilities in Sri Lanka

Participant Information Sheet

Participants for whom conducting a semi-structured interview

Date Information Sheet Produced:

....

Project Title

Understanding Loneliness in Older Sinhalese Men and Women Living in Governmental Aged Care Facilities in Sri Lanka

Invitation for the interview

You are invited to participate in this study, which will focus on understanding your perception of loneliness when living in an aged care facility and what is the relationship between your loneliness and quality of life and your health condition. Your participation in this research project is voluntary, and you may withdraw from the study up until one week after answering the questionnaires. The researchers have no involvement in any aged care facilities; therefore, whether you choose to participate or not will neither advantage nor disadvantage you.

What is the purpose of this interview?

I want to understand how you think and what you think about your loneliness when living in this aged care facility.

Why am I being invited to participate in this interview?

When you answer the questionnaires, you have given the "yes" answer to the question, "do you feel lonely?" Therefore, I want to talk with you a bit more details about your loneliness to understand how you think about your lonely feelings. However, it is up to you to decide whether you participate in the interview with me or not.

What will my role be during the interview?

If you decide to participate in the interview, you will have to spend about an hour at the most to talk with me about your loneliness. While talk with you, I will ask you some questions about your loneliness, such as; how is your life in the aged care facility? Why do you think that you feel loneliness? What do you think about your lonely feelings? Are there any specific events/incidents in your life that you believe to be the reasons for your loneliness?, Are there any particular time in a day, or days in a week that your lonely feelings become intense? Are you feeling lonely when you recall your past life? If so, what event or events in your life make you feel lonely? And what strategies do you use to mitigate your lonely feelings? In addition to answering these questions, you can tell me anything you feel and think about your loneliness, and I would like to listen to you.

What are the discomforts and risks?

It is not anticipated that you will experience any significant discomfort or embarrassment, and it is not my intention to ask questions that may cause you any discomfort. It is possible, however, that

you may experience minor emotional distress during the interview when recalling your pass memories relating to your loneliness, leaving your own home, and talking about some life changes you experienced.

How will these discomforts and risks be alleviated?

I will be watching for any signs of your discomfort or embarrassment. If you become uncomfortable at any point, you can choose not to continue the interview and stop. However, if you experience any significant embarrassment that psychologically affects, I can provide you with psychological support with the assistance of professional psychologists affiliated into the Department of Psychology in the Faculty of Health Sciences in the Open University of Sri Lanka, where I am attached to. If you need these services, I will make the necessary arrangements for you to get them.

How will my privacy be protected during the interview?

I will interview you in a secure place in the aged care facility where anyone cannot invade your privacy. This place will be selected upon your convenience and desire. Only if you wish, you can choose to have someone to support you during the interview. If you wish to have a support person with you when you face the interview, she/he will be asked to sign a confidentiality agreement. The interview will be audio-recorded and typed to analyze so that I can better understand your loneliness experience.

How do I agree to participate in this interview?

If you agree to face an interview, you will be given a separate informed consent form to sign to obtain your consent for interview. A copy of the signed informed consent form will be given to keep with you.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Prof. Stephen Neville, email: sneville@aut.ac.nz, 09) 921 9379 ext 9379, mobile 021 995689

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Carina Meares, *ethics@aut.ac.nz*, +649 921 9999 ext 6038.

Whom do I contact for further information about this research?

Researcher Contact Details:

A.V.Pramuditha Madhavi, avpma@ou.ac.lk, mobile +94711936341

Project Supervisor Contact Details:

Prof. Stephen Neville, sneville@aut.ac.nz, 09) 921 9379 ext 9379, mobile 021 995689.

Field Supervisor Contact Details (in Sri Lanka):

Prof. Wasantha Gunathunga, wasantg@commed.cmb.ac.lk, 677 765, +94 112 695 300 Ext:142/143

Approved by the Auckland University of Technology Ethics Committee on ____________, AUTEC Reference number ________________

This project has been approved by the Ethics Review Committee, Faculty of Medicine, University of Colombo. You may contact the committee if you wish to seek clarifications, record any concerns or make complaints about the study by calling 0112695300 extension 240 (between 9 am and 4 pm) or by sending an email to ethics@med.cmb.ac.lk"

Understanding Loneliness in Older Sinhalese Men and Women Living in Governmental Aged Care Facilities in Sri Lanka

Participant Information Sheet

Participants for whom conducting the questionnaire

(for all potential participants)

Date Information Sheet Produced:

………………………………

Project Title

Understanding Loneliness in Older Sinhalese Men and Women Living in Governmental Aged Care Facilities in Sri Lanka

An Invitation

My name is A.V.Pramuditha Madhavi. I am a Nursing Lecturer in the Open University of Sri Lanka and post-grad student at AUT University in New Zealand with a particular interest in loneliness experience among older Sinhalese people. My supervisors Prof. Stephen Neville, Dr. Margaret Sandhm, and prof. Wasantha Gunathunga(field supervisor in Sri Lanka) have a particular interest in the perception of loneliness in older Sinhalese men and women living in the governmental aged care facilities in Sri Lanka and the relationship between levels of loneliness and the quality of life of older Sinhalese men and women. This study will contribute to gain my doctoral qualification.

You are invited to participate in this study, which will focus on understanding your perception of loneliness when living in an aged care facility and what is the relationship between your loneliness and quality of life and your health condition. Your participation in this research project is voluntary, and you may withdraw from the study up until one week after answering the questionnaires. The researchers have no involvement in any aged care facilities; therefore, whether you choose to participate or not will neither advantage nor disadvantage you.

What is the purpose of this research?

I want to understand loneliness among older Sinhalese men and women living in governmental aged care facilities in Sri Lanka and how their loneliness affects their quality of life and health condition. This understanding will help make suggestions for authoritative officers who manage your facilities to make necessary changes in institutional regulations in your aged care facilities. This changes will be beneficial to create a conducive environment in your facilities that helps you to mitigate your loneliness. Further, the findings of this research may be used for academic publications and presentations, and this study will contribute to gain the doctoral qualification for the primary researcher.

How was I identified, and why am I being invited to participate in this research?

First, I, as the researcher will send an advertisement about the study to your manager and he/she will display it on a notice board in your aged care facility. Then, you will get the initial information about the study from the advertisement. Then, you will have the chance to get more information from the session, which I will conduct at your aged care facility. You are eligible to volunteer if you;

- are over 60 years of age and Sinhalese,
- have the capacity to give informed consent to participate,
- can communicate verbally,

- do not have any hearing defects or any marked cognitive or sensory impairment or discomfort that disturb your participation like headache or any persistent pain in your body that may affect the ability to respond to the questionnaires at the time of data collection.

❖ If you are affiliated with the researchers or any data collectors, we will not be able to accept you into the study.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible. If you choose to participate in this research, you can inform me one week after our face-to-face meeting and information session conduct at the aged care facility. I will give you my contact number so that you can call me to inform me of your participation. You would be asked to sign the consent form (attached) if you decided to participate after the information session. I will invite some of you who feel loneliness to face an interview with me to discuss your loneliness. If you agree to face an interview, you will be given a separate information sheet to inform about the interview and informed consent form to sign to obtain your consent for interview. If you wish to have a support person with you when you face the interview, they will be asked to sign a confidentiality agreement.

What will happen in this research?

After your aged care facility manager displayed the advertisement in your facility notice board, as the primary researcher, I will come to your aged care facility to meet and discuss with you on a scheduled date convenient for you. Then I will talk to you about the study, give you the information sheet (this paper) and will give you the time to ask any questions if you need more clarifications. Then I will give you a one-week time to read the information, understand, and decide about your participation. At this point, I will provide you with my contact number. If you wish to participate, please inform me. Then I will come to meet you and check if you are eligible for this study. If you are eligible and if you are ready to participate in the study, I will obtain your written informed consent to participate in the study and will introduce to you the research assistants who involve in administering questionnaires. Then, one of my research assistants will administer the questionnaires in a convenient place in the aged care facility where your privacy can be assured. You will have to spend about one and a half hour time at the most to answer the questionnaire. After answering the questionnaire, if you feel lonely, you may sometime be invited to face an interview. Participating in the interview will take one more hour of your time. If you agree to participate in the interview, I will give you a separate information sheet to read and understand about being interviewed. Then, I will talk you into knowing about your loneliness story in a secure place in the aged care facility where anyone cannot invade your privacy. Only if you wish, you can choose to have someone to support you during the interview. The interview will be audio-recorded and typed to analyze so that I can better understand your loneliness experience.

What are the discomforts and risks?

It is not anticipated that you will experience any significant discomfort or embarrassment, and it is not our intention to ask questions that may cause you any discomfort. It is possible, however, that you may experience minor emotional distress during the interview or answering questionnaires when recalling your memories relating to your loneliness, leaving your own home, and talking about some life changes you experienced.

How will these discomforts and risks be alleviated?

I will be watching for any signs of your discomfort or embarrassment. You may choose at any time to not answer a question, or if you become uncomfortable at any point, you can choose not to continue the interview and stop. However, if you experience any significant embarrassment that psychologically affects,

I can provide you with psychological support with the assistance of professional psychologists affiliated into the Department of Psychology in the Faculty of Health Sciences in the Open University of Sri Lanka, where I am attached to. If you need these services, I will make the necessary arrangements for you to access these services.

You can find out more information about this service on http://www.ou.ac.lk/home/index.php/ousl/faculties-institutes/health-sciences/psychology-counselling or +9412881000 Ext 702

What are the benefits?

Though there is no immediate benefit from the study, the researcher will be able to use the findings for your future benefits. As this study is the first of its type in Sri Lanka, findings of the study can use to make health care authorities, and National Secretariat for Elders in Sri Lanka informed so that they can make healthy public policies to mitigate your lonely feelings when living in aged care facilities. Further, this study will help the researcher to gain the doctoral qualification and achieve career development.

How will my privacy be protected?

Maintaining your confidentiality is of utmost importance to me. You will be invited to choose a pseudonym (fictitious name) to use in the interview transcripts and questionnaires when referring to any information from the study in research reports or published articles. No material which could personally identify you will be used in any reports on this study. Confidentiality will be maintained by changing any identifying details in the transcripts and any reports, presentations, or publications arising from the research.

All materials about the study, including your contact details and the interview transcripts will be stored in a locked filing cabinet at the university for six years, then destroyed. During the study, only the researcher and the supervisors will have access to the information.

What are the costs of participating in this research?

There will be no financial cost to you for participating in this study. Participating will take up to 21/2 hours of your time: approximately one and half hours to answer two questionnaires and one hour for the semi-structured interview.

What opportunity do I have to consider this invitation?

You have time up to one week to consider volunteering for the study after I discussed with you about the study. You can ask any questions when I meet you in your aged care facility and by contacting me to the number I give you

Will I receive feedback on the results of this research?

Yes, you will get a summary of the results of this research through your aged care facility manager.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Prof. Stephen Neville, email: sneville@aut.ac.nz, 09) 921 9379 ext 9379, mobile 021 995689

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEC, Carina Meares, *ethics@aut.ac.nz* , (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

A.V.Pramuditha Madhavi, avpma@ou.ac.lk, mobile +94711936341

Appendix E *Informed Consent Forms for Conducting Interviews and Questionnaires*

Understanding Loneliness in Older Sinhalese Men and Women Living in Aged Care Facilities in Sri Lanka.

Consent Form

For use when interviews are involved.

Project title: ***Understanding Loneliness in Older Sinhalese Men and Women Living in Aged Care Facilities in Sri Lanka.***

Project Supervisor: ***Prof. Stephen Neville, Dr. Margaret Sandham, and Prof. Wasantha Gunathunga***

Researcher: ***A.V.Pramuditha Madhavi***

○ I have read and understood the information provided about this research project in the Information Sheet dated ……………………………………..

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study, then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, the removal of my data may not be possible.

○ I agree to take part in this research.

○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature: ………………………………………………………………………………………………………

Participant's name: ………………………………………………………………………………………………………

Participant's Contact Details (if appropriate):

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

Date:

***Approved by the Auckland University of Technology Ethics Committee on** type the date on which the final approval was granted **AUTEC Reference number** type the AUTEC reference number*

This project has been approved by the Ethics Review Committee, Faculty of Medicine, University of Colombo. You may contact the committee if you wish to seek clarifications, record any concerns or make complaints about the study by calling 0112695300 extension 240 (between 9 am and 4 pm) or by sending an email to ethics@med.cmb.ac.lk"

Note: The Participant should retain a copy of this form.

Understanding Loneliness in Older Sinhalese Men and Women Living in Governmental Aged Care Facilities in Sri Lanka

Consent Form

For use when questionnaires are used

Project title: ***Understanding Loneliness in Older Sinhalese Men and Women Living in Aged Care Facilities in Sri Lanka.***

Project Supervisor: ***Prof. Stephen Neville, Dr. Margaret Sandham, and Prof. Wasantha Gunathunga***

Researcher: ***A.V.Pramuditha Madhavi***

○ I have read and understood the information provided about this research project in the Information Sheet dated ______________ .

○ I have had an opportunity to ask questions and to have them answered.

○ I understand that my answers to the questionnaires will be used to assist with recording and to analyze the results.

○ I understand that my identity in answering to the questionnaires is confidential to the others and I agree to keep this information confidential

○ I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.

○ I understand that if I withdraw from the study then I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, the removal of my data may not be possible.

○ I agree to take part in this research.

○ I wish to receive a summary of the research findings (please tick one): Yes○ No○

Participant's signature: ....

Participant's name: ....

Participant's Contact Details (if appropriate):

....

Date:

Approved by the Auckland University of Technology Ethics Committee on .... ***AUTEC Reference number*** ....

Note: The Participant should retain a copy of this form.

This project has been approved by the Ethics Review Committee, Faculty of Medicine, University of Colombo. You may contact the committee if you wish to seek clarifications, record any concerns or make complaints about the study by calling 0112695300 extension 240 (between 9 am and 4 pm) or by sending an email to ethics@med.cmb.ac.lk"

Appendix F *Advertisement Displayed in Aged Care facilities for Participants' Information*

පර්යේෂණ අධ්‍යනයක් සඳහා සහභාගී කරවාගැනීමට සිංහල කාන්තාවන් හා පිරිමින් අවශ්‍යකර තිබේ

වැඩිහිටිනිවාසවල ජිවත් වීමේදී දැනෙන හුදකලාබව අධ්‍යනය කිරීමේ මෙම පරීක්ෂණය සඳහා සිංහල පිරිමින් සහ කාන්තාවන් අවශ්‍ය වී ඇත.

- ඔබ වයස අවුරුදු 60ට වැඩි අයෙක් නම්
- සිංහල ජනවර්ගයට අයත් නම්
- වාචික සන්නිවේදනයේ කිසිදු අපහසුතාවයක් හෝ කිසිඳු සන්වේදනික හෝ බුද්ධිමය ඌනතාවයක් ඔබට නොමැති නම්
- පර්යේෂණ සඳහා ඔබගෙන් තොරතුරු විමසන අවස්ථාව වනවිට ඔබට කිසිඳු අපහසුතාවයක් හෝ වේදනාවක් වැනි ඔබගේ සහභාගිත්වයට බාධා පැමිණෙන කිසිඳු ගැටළුවක් ඔබට නොමැති නම්, මෙම අධ්‍යනය සඳහා සහභාගී වීම උදෙසා ඔබ පිළිබඳව සලකා බලනු ලැබෙයි.

මෙම අධ්‍යනයට සහභාගී වන්නකු ලෙස ඔබ තෝරාගතහොත්, ඔබගේ සහභාගී වීම සඳහා පැය 2 ½ පමණ කාලයක් ඒ සඳහා වෙන් කිරීමට ඔබට සිදුවෙයි.ප්‍රශ්නාවලියකට පිළිතුරු සැපයීම සඳහා පැය 1 ½ පමණ කාලයක්ද, මා සමඟ සම්මුඛ පරීක්ෂණයට සහභාගී වීම සඳහා පැය 1 ක කාලයක් ද ලෙස මෙම පැය 2 ½ ගතකිරීමට ඔබට සිදුවනු ඇත. නමුත් සියලුම සහභාගීවන්නන් සම්මුඛ පරීක්ෂණය සඳහා සහභාගිවීම අනිවාර්ය නොවේ. ඔබ අතුරෙන් යම්අයකු " ඔබට හුදකලාබවක් දැනේද?" යන ප්‍රශ්නයට ඔව් යනුවෙන් පිළිතුරුදුන්නේ නම්, එවැනි අයට පමණක් සම්මුඛ පරීක්ෂණය සඳහා ආරාධනා කරනු ලැබෙයි.

ඔබගේ පහසුව අනුව යොදාගත් දිනයක ඔබගේ වැඩිහිටිනිවහනේදී මෙම අධ්‍යන කටයුත්ත පිළිබඳව වැඩිදුරටත් ඔබ සමඟ සාකච්ඡා කිරීමට ඔබ මුණගැසීමට මම බලාපොරොත්තු වෙමි.මේ පිලිබඳ ඔබට යම් ප්‍රශ්නයක් ඇසීමට හෝ වැඩිදුර තොරතුරු දැනගැනීමට අවශ්‍යනම් මම ඔබ මුණගැසුණුවිට ඒ සඳහා ඔබට අවස්ථාව ලබාදීමට බලාපොරොත්තු වෙමි.

ස්තුතියි

ඒ.වී . ප්‍රමුදිතා මාධවී
Auckland University of Technology විශ්වවිද්‍යාලයේ ආචාර්ය උපාධි අපේක්ෂිකා
දු.අ: 0711936341
විද්‍යුත් තැපෑල : avpma@ou.ac.lk

Appendix G *WHOQOL-BREF Mean Scores Across Four Categories of Loneliness*

Variable	N Obs.	Mean	95% confidence interval for mean		Median	Variance	Std.D.	Min	Max	Quartile range	Skewness	Percentiles			
			Lower bound	Upper bound								5	25	75	95
Physical Health Domain															
No Loneliness	211	15.50	14.71	16.30	16.00	12.01	3.46	6	20	5	-.577	9.14	13.14	17.71	20.00
Moderate loneliness	76	13.61	13.13	14.08	13.14	12.20	3.49	5	20	5	.003	8.00	11.43	16.57	19.43
Severe loneliness	125	11.64	11.10	12.18	11.43	9.39	3.06	4	18	5	.125	8.86	9.14	12.67	17.14
Very severe loneliness	105	11.31	10.75	11.86	11.43	8.20	2.86	6	19	4	.390	6.86	9.14	12.00	16.57
Psychological Health Domain															
No Loneliness	211	16.22	15.67	16.77	16.67	5.80	2.40	9	20	3	-.365	12.00	14.67	18.00	20.00
Moderate loneliness	76	14.13	13.77	14,49	14.00	7.15	2.67	5	20	3	-.346	10.00	12.67	16.00	18.27
Severe loneliness	125	10.98	10.51	11.45	10.67	7.15	2.67	5	17	3	.051	6.67	9.33	12.67	15.60
Very severe loneliness	105	10.24	9.76	10.72	10.67	6.23	2.49	5	16	4	.087	6.00	8.00	12.00	14.47
Social Health Domain															
No Loneliness	211	15.61	14.94	16.29	16.00	8.75	2.95	4	20	4	-.871	10.00	14.00	18.00	20.00
Moderate loneliness	76	12.94	12.44	13.44	14.00	13.41	3.66	4	20	6	-.441	6.00	10.00	16.00	18.00
Severe loneliness	125	9.93	9.41	10.44	10.00	8.53	2.92	4	18	4	.187	4.60	8.00	12.00	15.60
Very severe loneliness	105	**9.56**	9.06	10,06	10.00	6.69	2.58	4	18	4	.093	4.60	8.00	12.00	14.00
Environmental Health Domain															
No Loneliness	211	**16.68**	16.18	17.18	17.00	4.75	2.18	12	20	4	-.420	12.93	15.00	18.00	20.00
Moderate loneliness	76	15.23	14.92	15.53	15.50	4.91	2.21	10	20	4	-.224	11.50	13.50	17.00	18.50

Variable	N Obs.	Mean	95% confidence interval for mean		Median	Variance	Std.D.	Min	Max	Quartile range	Skewness	Percentiles			
			Lower bound	Upper bound								5	25	75	95
Severe loneliness	125	12.94	12.53	13.34	13.00	5.14	2.26	6	18	3	-.439	9.00	12.00	14.50	16.50
Very severe loneliness	105	12.56	12.22	12.89	12.50	3.03	1.74	6	19	2	-.201	10.15	11.50	13.50	15.35
Spiritual Health Domain															
No Loneliness	211	16.36	15.49	17.22	16.50	14.25	3.77	7	20	5	-.852	9.00	15.00	20.00	20.00
Moderate loneliness	76	15.03	14.53	15.53	16.00	13.39	3.66	4	20	6	-.580	8.00	12.00	18.00	20.00
Severe loneliness	125	13.74	13.13	13.34	14.00	11.63	3.41	4	20	4	-.898	7.30	12.00	16.00	18.00
Very severe loneliness	105	13.12	13.12	12.53	14.00	9.28	3.04	4	20	4	-.492	7.30	11.00	15.00	17.70

Appendix H *WHOQOL-BREF Total Score Across Demographic Variables of Participants*

Variable	N Obs.	Mean	95% confidence interval for mean		Median	Variance	Std.D.	Min	Max	Quartile range	Skewness	Percentiles			
			Lower bound	Upper bound								5	25	75	95
Gender															
Male (n=170)	179	66.17	64.25	68.09	66	169.33	13.01	35	98	19	.019	45	57	76	89
Female (n=338)	338	66.89	65.49	68.29	66	170.97	13.07	27	99	19	.146	46	57	76	90
Age groups (in years)															
60-70	160	67.21	65.22	69.20	67	162.38	12.74	40	99	19.5	0.256	47.5	57	76.5	89
71-80	255	66.41	64.74	68.08	65	183.81	13.55	27	98	20	0.037	45	57	77	90
81-90	91	66.02	63.45	68.59	67	152.26	12.33	37	97	19	0.015	45	57	76	85
91-100	11	68.72	60.61	76.83	66	145.81	12.07	54	94	19	0.865	54	58	77	94
Education															
No schooling	58	62	58.79	65.20	62.5	148.52	12.18	37	87	16	0.011	41	54	70	85
Primary (Grade 1-10)	308	66.91	65.42	68.40	66	176.18	13.27	27	99	20	0.131	47	57	77	89
Secondary (Up to A/L)	137	67.21	65.15	69.27	67	148.77	12.19	35	99	16	0.003	45	60	76	88
Tertiary (University level)	14	74.35	65.76	82.95	74.5	221.63	14.88	46	97	24	-0.150	46	61	85	97
Marital status															
Single (Never married)	231	65.80	64.21	67.39	65	150.05	12.24	35	99	17	0.208	46	57	74	87
Married	179	68.20	66.32	70.08	67	162.58	12.75	39	99	19	0.229	48	59	78	91
Separated	9	74.22	68.22	80.22	73	60.94	7.80	63	87	11	0.273	63	70	81	87
Divorced	24	61.95	55.64	68.27	60.5	223.86	14.96	27	94	13.5	0.136	42	53.5	67	85
Widowed	74	66.09	62.55	69.63	67	233.81	15.29	30	94	21	-0.098	44	56	77	91
Employment status															
Employed	338	66.63	65.28	67.99	66	160.22	12.65	30	99	18	0.094	46	58	76	88

Variable	N Obs.	Mean	95% confidence interval for mean		Median	Variance	Std.D.	Min	Max	Quartile range	Skewness	Percentiles			
			Lower bound	Upper bound								5	25	75	95
Not employed	179	66.65	64.62	68.69	66	190.03	13.78	27	99	20	0.116	46	57	77	91
Employment category															
Heavy work	127	65.60	63.45	67.75	65	150.17	12.25	42	98	17	0.286	46	56	73	87
Moderate work	115	66.66	64.10	69.21	67	191.38	13.8	30	99	19	-0.152	43	57	76	89
Sedentary work	98	68.06	65.74	70.38	66	133.95	11.57	44	97	17	0.307	48	60	77	88
Having children															
Yes (n=215)	215	66.64	64.83	68.45	66	180.92	13.45	27	96	18	-0.063	45	58	76	90
No(n=302)	302	66.64	65.19	68.09	66	163.13	12.77	35	99	19	0.241	48	57	76	88
Having Disease															
Yes	401	65.89	64.38	67.40	65.36	159.75	12.63	30	98		.120	45.49	56.93	74.48	87.63
No	116	69.52	66.57	72.46	68.48	150.26	12.25	40	99		-.028	45.75	61.81	76.96	91.64
Location of the Facility															
Rural (n=261)	261	66.72	65.18	68.26	67	159.26	12.61	27	99	17	-0.021	46	58	75	87
Urban (n=256)	256	66.55	64.89	68.21	65	181.99	13.49	35	98	20	0.210	46	56.5	76.5	90
Size of the facility															
Large (n=240)	240	68.56	66.83	70.29	68	185.55	13.62	27	99	18	-0.134	45.5	60	78	91.5
Small (n=277)	277	64.98	63.52	66.43	64	151.53	12.31	37	97	18	0.296	46	56	74	87

Appendix I *Province and District Wise Distribution Of WHOQOL-BREF Total Score*

Province/Districts	N Obs.	Mean	95% confidence interval for Mean		Median	Variance	Std Deviation	Min.	Max.	Quartile range	Skewness	percentile			
			Lower bound	Upper bound								5	25	75	95
WHOQOL-BREF score in provincial level															
Southern	95	64.83	62.40	67.25	64	141.84	11.90	39	94	20	0.225	45	56	76	83
Western	93	63.12	60.78	65.46	61	129.02	11.35	43	91	17	0.426	46	55	72	85
Central	82	72.21	68.80	75.62	72	240.91	15.52	44	99	27	0.064	49	58	85	96
Northwestern	86	63.38	60.53	66.22	64	175.98	13.26	27	91	11	-0.464	37	59	70	85
Sabaragamuwa	92	70.21	68.03	72.39	70	110.89	10.53	43	94	16	-0.107	53	62.5	78.5	89
Uwa	47	67.40	64.02	70.78	69	132.33	11.50	42	87	19	-0.303	46	58	77	86
Northcentral	22	64.72	57.38	72.06	60	274.20	16.55	44	92	27	0.541	47	51	78	91
WHOQOL-BREF score in district level															
Galle	60	60.18	57.47	62.88	59	109.77	10.47	39	94	12.5	0.704	44.5	53.5	66	79.5
Mathara	30	74.76	71.44	78.08	77	79.15	8.89	56	90	15	-0.501	57	67	82	87
Hambanthota	5	61	51.58	70.41	61	57.5	7.58	52	69	13	-0.086	52	55	68	69
Colombo	56	68.01	65.04	70.98	70	122.99	11.09	46	91	16.5	-0.004	49	59.5	76	87
Gampaha	7	58.14	52.23	64.05	57	40.80	6.38	49	68	11	0.229	49	53	64	68
Kaluthara	30	55.16	52.52	57.80	56	49.86	7.06	43	76	8	0.504	43	51	59	64
Kandy	61	74.57	70.95	78.18	74	199.14	14.11	49	99	21	-0.013	54	64	85	96
Mathale	17	69.47	60.65	78.28	64	293.88	17.14	44	98	31	0.500	44	56	87	98
Nuwaraeliya	4	48	41.50	54.49	46.5	16.66	4.08	45	54	5	1.763	45	45.5	50.5	54

Kurunegala	66	63.43	59.86	67.01	64	211.88	14.55	27	91	13	-0.436	35	59	72	87
Puttlum	19	63.21	59.29	67.12	66	65.84	8.11	45	75	13	-0.792	45	56	69	75
Rathnapura	51	73.78	70.96	76.60	74	100.61	10.03	46	94	15	-0.285	57	67	82	89
Kegalle	41	65.78	62.78	68.77	66	90.12	9.49	43	84	13	-0.059	53	59	72	80
Badulla	33	69.81	65.88	73.74	70	122.90	11.08	42	87	14	-0.502	48	64	78	86
Monaragala	14	61.71	55.49	67.93	60.5	116.06	10.77	45	80	16	-0.029	45	54	70	80
Anuradhapura	12	74.75	64.70	84.79	78	250.02	15.81	48	92	29.5	-0.519	48	60	89.5	92
Plonnaruwa	10	52.7	48.20	57.19	52	39.56	6.29	44	63	6	0.679	44	48	54	63

Appendix J *Correlation Between Total Score of Loneliness and Individual Domains of Health in WHOQOL-BREF Original Scale*

Correlations

			Total Score of loneliness	Score of Physical Domain	Score of Psychological Domain	Score of Social Domain	Score of Environmental Domain	Score of Spiritual Domain
Spearman's rho	Total Score of loneliness	Correlation Coefficient	1.000	-.422**	**-.665****	-.606**	-.601**	**-.306****
		Sig. (2-tailed)	.	<.001	<.001	<.001	<.001	<.001
		N	517	517	517	517	517	517
	Score of Physical Domain	Correlation Coefficient		1.000	.682**	.406**	.526**	.339**
		Sig. (2-tailed)		.	<.001	<.001	<.001	<.001
		N			517	517	517	517
	Score of Psychological Domain	Correlation Coefficient			1.000	.568**	.693**	.471**
		Sig. (2-tailed)			.	<.001	<.001	<.001
		N				517	517	517
	Score of Social Domain	Correlation Coefficient				1.000	.560**	.251**
		Sig. (2-tailed)				.	<.001	<.001
		N					517	517
	Score of Environmental Domain	Correlation Coefficient					1.000	.453**
		Sig. (2-tailed)					.	<.001
		N						517
	Score of Spiritual Domain	Correlation Coefficient						1.000
		Sig. (2-tailed)						.
		N						517

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix K *Correlation Between Emotional and Social Loneliness and Individual Health Domains in WHOQOL-BREF Original Scale*

Correlations									
			Physical domain Score	Psychological domain Score	Social domain Score	Environmental domain Score	Spiritual domain Score	Social Loneliness	Emotional Loneliness
Spearman's rho	Score of Physical Domain	Correlation Coefficient	1.000	.682**	.406**	.526**	.339**	-.392**	-.399**
		Sig. (2-tailed)	.	<.001	<.001	<.001	<.001	<.001	<.001
		N	517	517	517	517	517	517	517
	Score of Psychological Domain	Correlation Coefficient		1.000	.568**	.693**	.471**	**-.581****	**-.646****
		Sig. (2-tailed)		.	<.001	<.001	<.001	<.001	<.001
		N			517	517	517	517	517
	Score of Social Domain	Correlation Coefficient			1.000	.560**	.251**	**-.604****	**-.537****
		Sig. (2-tailed)			.	<.001	<.001	<.001	<.001
		N				517	517	517	517
	Score of Environmental Domain	Correlation Coefficient				1.000	.453**	**-.564****	**-.553****
		Sig. (2-tailed)				.	<.001	<.001	<.001
		N					517	517	517
	Score of Spiritual Domain	Correlation Coefficient					1.000	**-.245****	**-.314****
		Sig. (2-tailed)					.	<.001	<.001
		N						517	517
	Social Loneliness	Correlation Coefficient						1.000	.688**
		Sig. (2-tailed)						.	<.001
		N							517
	Emotional Loneliness	Correlation Coefficient							1.000
		Sig. (2-tailed)							.
		N							
**. Correlation is significant at the 0.01 level (2-tailed).									