

**The Mediating Role of Boundary Flexibility in the Workload and Work Fatigue
Relationship among New Zealand-Based Midwives**

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Abstract

This dissertation adopts an organisational behavioural (OB) and management approach to explore the effects of boundary flexibility on role demands and personal wellbeing among New Zealand (NZ) midwives. The paper reviews how research on fatigue has largely cited workload as a cause—reinforcing consequences of role flexibility and transitioning between family and work domains. The study aims to investigate the mediating role of ‘family flexibility ability’ on the workload and work fatigue relationship of Lead Maternity Carer (LMC) midwives. An LMC is responsible for organising and developing maternity care and birth plans. Family flexibility ability is defined as the ability of workers to leave the roles of the family domain for the roles of the work domain (Edwards & Rothbard, 1999; Kossek et al., 2006). The causes of work fatigue are numerous and range from time spent awake to family and work domain responsibilities (Caldwell et al., 2019; Dorrian et al., 2011). In the NZ maternity health system, LMC midwives are contracted by the Ministry of Health (MoH) to provide maternity care for women under a continuity of care (COC) model. COC case-loading model indicate that women register with one LMC for their entire maternity care experience (Ministry of Health, 2019). LMC midwives are self-employed therefore, their work domain roles include diverse components such as 24/7 on-call clinical, psychological, and business management roles. LMC midwives are often females who further need to juggle between the responsibilities of their family and work domain roles. Study data (N = 301) was drawn from the responses of LMC midwives in Phase One of the 2019 New Zealand Midwifery Work and Wellbeing (NZ MidWoW) study. The boundary theory, job demands-resources (JD-R) model, and motivational control theory provide the theoretical framework to explore this data. Consistent with the literature, the study finds that quantity of workload is positively correlated to physical, mental, and emotional work fatigue. Using PROCESS analysis, the research confirms

the mediating role of ‘family flexibility ability’ in the relationship between quantitative workload and work fatigue in this study’s population. Quantitative workload refers to an excessive amount of work that workers cannot complete within the prescribed period (Van Sell et al., 1981). This dissertation provides new knowledge regarding the relationship between workload and work fatigue among LMC midwives that requires them to regularly address work concerns while in their family domain. It is argued that the mediated pathway approach sheds light on supporting LMC midwives to be more sustainable in their vital role as healthcare providers. Both theoretical and practical implications of findings are discussed.

Keywords: workload, work fatigue, family flexibility ability, home domain, family domain

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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.

12 October 2020

Signature

Date

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1 Introduction

“Our fatigue is often caused not by work, but by worry, frustration and resentment.”
(Carnegie, 1970, p. 39).

Carnegie (1970) highlights that work (in a contemporary context) is not the only factor leading to individual work fatigue induced by role demands. Although he refers to a different work setting 50 years ago, the general principle is applicable that other factors than workload are likely to contribute to fatigue. The causes of work fatigue are numerous and may include a combination of factors such as time spent awake, workload, health concerns, and family and work domain responsibilities (Caldwell et al., 2019; Dorrian et al., 2011). Studies have particularly focussed on workload as the main cause for fatigue (Fan & Smith, 2017; Moore, 2000). The focus on workload is prominent due to its multi-dimensionality, the amount of time involved, the load of mental and physical tasks or demands, the performance level required (Hancock & Caird, 1993; Wickens et al., 2015), and worker effort put in (Edwards et al., 2017; Smith & Smith, 2017). An added component to workload may include the demands of transitioning between the roles of family and work domains (Ashforth et al., 2000) that consequently lead to work fatigue (Gonnelli & Raffagnino, 2017). Relatively, only a few studies have looked at other factors that contribute to fatigue because of the weight given to workload as its main cause (Fan & Smith, 2017; Moore, 2000). This research is very significant to understand what contributes to fatigue for essential safety-sensitive operations in industries like transportation, health care, and energy (Lerman et al., 2012; Zeidner et al., 2013). Any organisation can benefit from addressing fatigue in the workplace due to the potential consequences on an employee’s health, wellbeing, safety, and job performance (Caldwell et al., 2019; Lerman et al., 2012). For midwives, this includes ensuring the health and safety of women and babies to decrease maternal and child mortality (Ministry of Health, 2020). The present study investigates role demands

and personal wellbeing by exploring family flexibility ability, or the ability of workers to leave the roles of the family domain for the roles of the work domain (Edwards & Rothbard, 1999; Kossek et al., 2006), that may affect the relationship between workload and work fatigue.

The pervasiveness of technology has intensified the relationship between work demands and personal wellbeing. The result can be a constant stream of work-related interruptions and disruptions in the family domains that are difficult to sustain (Donald, 2012; Young, 2011). Multi-disciplinary studies have explored the consequences and relationships of workload to other aspects of wellbeing such as work-life balance, work-family conflict, and health (Fan & Smith, 2017; Gonnelli & Raffagnino, 2017; Sonnentag & Bayer, 2005). The literature further relates workload and work fatigue to strategies and personal practices when conflict arises among roles of the home and work domains, the need for flexibility, and the role of control and boundary management (Greenhaus & Powell, 2006; Milliken & Dunn-Jensen, 2005). The ability of workers to leave the roles of the family domain for the roles of the work domain is termed as ‘family flexibility ability’ (Edwards & Rothbard, 1999; Kossek et al., 2006). This dissertation leverages literature in the family-work interface, specifically highlighting (a) family flexibility ability identified from the boundary theory (Matthews et al., 2014); (b) workload and work fatigue as job demands and strains from the job demands-resources (JD-R) model (Bakker & Demerouti, 2014); (c) the link of family flexibility ability to control and control to fatigue, as described by the motivation control theory (Hockey & Hockey, 2013).

1.1 Research context

In New Zealand (NZ), midwives, obstetrics, and general practitioners who work in self-employment in the continuity of care (COC) model, are known as Lead Maternity Carers (LMCs). LMCs provide one-to-one care to a mother and her baby (or

babies) from conception through labour to six weeks post-childbirth (Midwifery Council of New Zealand, 2019). This study adopts an organisational behavioural (OB) and management perspective and focusses on LMC midwives working under the COC model for whom workload and work fatigue concerns are especially relevant (Donald, 2012; Midwifery Council of New Zealand, 2019). The worry, frustration and resentment that Carnegie (1970) refers to are daily experiences when working as a midwife under the COC model (Homer et al., 2019; Teate, 2018). Working according to the COC model is unique because midwives must contend with the unpredictable and unsociable timing of labour and birth, the heightened alert needed to respond to emergencies and, with this responsibility, also the possible blame from mothers and their families in case of unexpected outcomes (Cummins et al., 2020). Furthermore, LMC midwives need to be flexible with being on-call 24/7, maintaining a sustainable work-life balance, and be willing to visit a mother's chosen place for childbirth because payment for their services is weighted towards midwives' attendance (Midwifery Council of New Zealand, 2019).

For midwives, workload does not only include caring for the mother and the baby 24 hours a day, but also business acumen and a high level of organisational skill. With self-employment comes the demands of managing a healthcare business. For example, timely population of healthcare data to ensure regular payments of services, procurement and maintenance of supplies and equipment, acquiring indemnity insurance, filing goods and services and income tax returns, and safeguarding confidential health information. The unpaid work attributed to the LMC role involves responding to regular colleague and consumer feedback, competence assessments, professional development activities, and meeting annual practising certificate requirements (Ministry of Health, 2019). The COC model is uniquely designed to provide optimal care for mother and baby (Sandall et al., 2016), but this model is

accompanied by concerns regarding workload, wellbeing, and fatigue. This is not only supported by this study's population but also confirmed by previous findings (Cox & Smythe, 2011; Donald et al., 2014).

Studies have confirmed that the unpredictable nature of birth was accompanied by increased role transitions, which led to fatigue and burnout (Davis et al., 2011; Dixon et al., 2017; Young, 2011). The transition of roles is directly associated with increased fatigue levels (Duchscher, 2009). The burden of being on-call with a constant need for role transitions has a direct influence on fatigue regardless of the profession (Ziebertz et al., 2015). The 24/7 availability required under the COC model demands a high level of flexibility to sustain constant transitioning between the family and work domains. Despite the demands of COC as a service delivery model, the midwives reported that the work gave them role satisfaction, the ability to build trusting relationships, an autonomous profession, and increased flexibility which contributed to their work-life balance (Dahlen & Caplice, 2014; Dawson et al., 2018; Fenwick, Lubomski, et al., 2018). Researchers have discovered that midwives who work by caseload (working according the COC model with a specific amount of women responsible for) have lower burnout rates than non-caseload midwives (Dawson et al., 2018). However, the working conditions are notably different, challenging, and non-comparable (Haggerty et al., 2003; Midwifery Council of New Zealand, 2019; Taylor et al., 2019). Studies have suggested further exploration of how midwives balance their family and work life to enable more successful management strategies (Donald et al., 2014; Donald, 2012; Engel, 2003 ; Welfare, 2020). The practical problem is that LMC midwives often get caught up in the constant demand for transitioning between domain roles and associated cognitive dissonance as a result of which they struggle to maintain their work-life balance (Donald, 2012; Ollier-Malaterre & Rothbard, 2015; Welfare, 2020) leading to work fatigue. Therefore, factors like worry, frustration, and resentment mentioned by

Carnegie (1970), even though 50 years ago, are likely to be the reasons for work fatigue within the unique profession of LMC midwives working under the COC model.

1.2 The influence of family flexibility ability

The third variable that contributes toward work fatigue is identified as family flexibility ability for the purpose of this study. Identifiable gaps in the literature justified this choice because it confirms that despite increased workload, limited flexibility leads to domain conflict, which is a fundamental contributor to work fatigue (Davis et al., 2011; Dixon et al., 2017). However, there is limited research available on family flexibility ability.

Increased workload leads to a decrease in work-life balance (Holland et al., 2019). A work-life imbalance is caused by the complexity of transitioning between the role demands of family and work (Clark, 2000; Fenwick, Lubomski, et al., 2018). The result is increased work fatigue because of a conflict between the roles of family and work domains (Fan & Smith, 2017; Ross & Vasantha, 2014). The boundary theory adds that an individual functions in a family domain and a work domain with a different set of roles and boundaries, and transitions according to varying levels of flexibility and permeability (Ashforth et al., 2000). The boundary theory further defines family flexibility ability as a personal evaluation or perception of the amount of time, within their control, that one is able to spend outside the family domain for the work domain (Edwards & Rothbard, 1999; Kossek et al., 2006). A US-based study, representing a wide variety of industries, has found that family flexibility ability is a significant predictor for transitioning out of family roles (Winkel & Clayton, 2010b). Family flexibility ability is further identified as a variable that can predict conflict between

domains (Ashforth et al., 2000; Thomas & Ganster, 1995) and consequently, as an antecedent of burnout (Fenwick, Lubomski, et al., 2018).

LMC midwives' work is unpredictable and constant, so they need to continually be prepared for unexpected changes and, subsequently, be flexible between roles (Gilkison et al., 2015). The transition of roles is directly associated with increased levels of fatigue when role adaptation is explored for newly-graduated registered nurses (Duchscher, 2009). The decision on family flexibility ability as the third variable is, therefore, very specific as it is linked to fatigue and identified as the only construct that is modifiable and over which an individual has perceptual control (Foucreault et al., 2018; Kossek et al., 2006). However, LMC midwives do not have control over the timing or the time involved in different work situations. Decreased levels of family flexibility ability relate to interferences in work-life balance that are likely to occur when an LMC midwife cannot transition from the family domain identity (e.g., parent, partner) to the work domain identity (e.g., client-centred, constant availability), which may contribute to frustration, domain role conflict, and increased fatigue. This dissertation refers to 'family' first in the family-work domain because the specific focus of the research is on role transition from the family domain to the work domain.

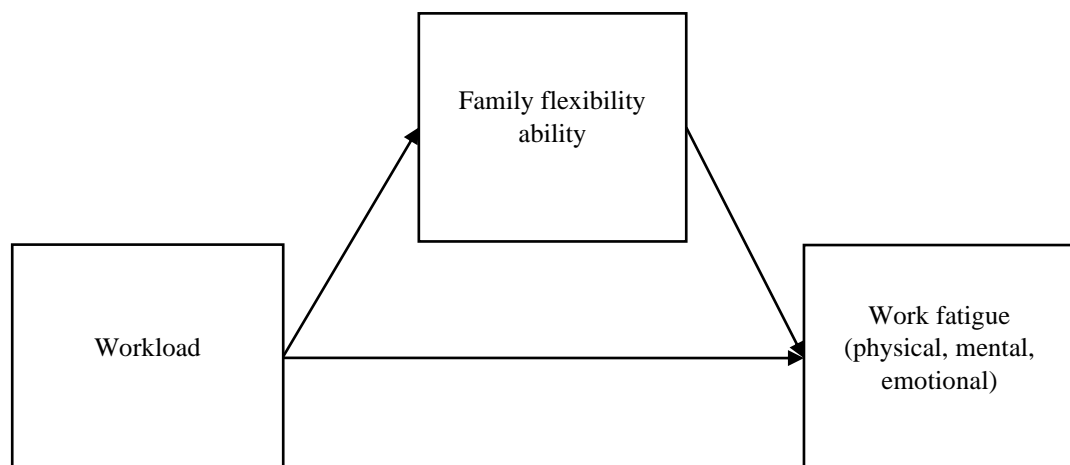
1.3 Outcomes of the present study

Outcomes of the study include reasoning to support the COC model and how an OB and management approach could impact the sustainability of LMC midwives in an NZ practice (Sandall et al., 2016; Wakelin & Skinner, 2007). The aim is to reduce fatigue levels as research indicated a strong relationship between reported high levels of fatigue and the intention to leave the essential services of nursing and midwifery (Harvie et al., 2019; Stoll & Gallagher, 2019; Taylor et al., 2019). This study seeks to identify the role of family flexibility ability in the relationship between workload and work fatigue among LMC midwives.

To the best of my knowledge, OB, management, and midwifery researchers have not investigated the role of family flexibility ability in the relationship between workload and work fatigue among LMC midwives or any other profession. An investigation into the role of family flexibility ability may explain the variance in LMCs' experience of fatigue in NZ midwifery. Although workload has been identified as a common cause of work fatigue (Bakker & Demerouti, 2007; Fan & Smith, 2017; Knezevic et al., 2011), this study investigates whether family flexibility ability mediates that relationship and what that means for LMC midwives to be able to work sustainably under the COC model. The variance in the relationship between workload and work fatigue among LMC midwives may be attributed to individuals who have the ability to address work concerns while they are in the family domain (Ashforth et al., 2000; Fenwick, Lubomski, et al., 2018; Foucreault et al., 2018). Figure 1 is a conceptual model of the current study.

Figure 1

Conceptual model



The study raises the following research question: What is the role of family flexibility ability in the relationship between quantitative workload and physical, emotional, and mental work fatigue in NZ-based LMC midwives?

Hypotheses to be tested:

H1. Quantity of workload has a positive correlation with a) physical work fatigue, b) mental work fatigue and c) emotional work fatigue in LMC midwives in NZ.

H2. Family flexibility ability has a mediating role in the relationship between workload and a) physical work fatigue, b) mental work fatigue and c) emotional work fatigue in LMC midwives in NZ.

Following the Introduction, the second chapter, Literature Review, provides supportive background and justification of the work context of an LMC, the importance of the wellbeing of LMC midwives, and work fatigue and workload in general as well as specific to LMC midwives. It also explains the conceptualisation of boundary flexibility and family flexibility ability as the third variable. The literature review discusses the boundary, JD-R, and motivational control theories, providing theoretical evidence for the interpretation of variables that have a role in fatigue management for LMC midwives. The second chapter concludes with the two hypotheses to be tested and followed by the third chapter, Methodology, that briefly explains the theoretical paradigm. Methodology includes demographics of the sample, sampling method, details of measurements used, discussion of the procedures to prepare and sanitise the data, and control variables for statistical analysis. The concepts of direct and mediation analysis are discussed to conclude this chapter. The fourth chapter, Results, follows the correlation and mediation analysis done in the SPSS PROCESS, presented in tables with brief explanations of the statistical significance. The final chapter, Discussion, concludes with theoretical and practical implications, limitations of the study, future research directions, recommendations for the midwifery profession, and a brief review of the study.

2 Literature Review

This chapter begins with a more detailed account of the LMC work context to establish how midwifery is perfectly suited to explore family flexibility ability as a mediating factor of workload and work fatigue. In the following section, I will discuss previous research on work fatigue and quantitative workload in general and specifically for LMC midwives. The section includes conceptualisation of family flexibility ability as a third variable before briefly explaining the underlying framework of the study including the boundary, JD-R, and motivational control theories. As a result, two hypotheses supported by theoretical and extant empirical research are advanced.

2.1 Work context of an LMC

Working as an LMC in NZ is a complex process with periods of high workload and long hours (Davis et al., 2011; Dixon et al., 2017). The unpredictability of their workload influences their work-life balance, resulting in constant transitioning and conflict between roles that are not always sustainable (Donald et al., 2014; Park & Jex, 2011). Midwives consequently need to plan their days carefully to maintain a healthy balance in this essential line of work (Dixon et al., 2017; Gilkison et al., 2015). Hence, the need for research to identify factors affecting the constant role transitions to sustain midwifery is warranted (McAra-Couper et al., 2014).

According to an ‘Organisation for Economic Co-operation and Development’ report, midwives in most of the member countries work in a fragmented care model (Alderdice et al., 2013). Fragmented care can be provided by different midwives or the same midwife, but only for routine antenatal and postnatal appointments, while emergencies and labour and birth are attended by midwives rostered on shifts at the local hospital (Page, 2003). In NZ however, LMCs are self-employed and work in a COC case-loading model where women register with one LMC for their entire

maternity care experience (Ministry of Health, 2019). LMC midwives do not design their work in rostered shifts, but instead provide an on-call service in addition to their regular clinical pregnancy assessments, attendance at labour and birth, and postnatal home visits until the baby is 6 weeks old after which care is handed over to the mother's primary care physician. According to the 2019 Ministry of Health New Zealand (MoHNZ) report, most women (> 92%) receive maternity care from an LMC midwife under the COC model (Ministry of Health, 2019). LMC midwives represent 36% of the midwives working in NZ and on average, LMCs manage a caseload of approximately 42 women per year (Midwifery Council of New Zealand, 2019). However, caseloads can range from 1 to 90+ (Midwifery Council of New Zealand, 2019). The COC model provides each woman in an LMC caseload with 24 hours a day, seven days a week on-call service that can include brief phone advice, urgent clinical assessment, and long hours for attending to labour (Midwifery Council of New Zealand, 2019). LMCs plan their regular consultation appointments with clients around urgent maternity care. It is important to note that LMC midwifery care is fully-funded publicly, accessible to all NZ residents, and is the most cost-effective way (NZIER, 2020) of providing optimal healthcare for mothers and babies (Sandall et al., 2016). LMCs consistently enjoy more than 80% client-satisfaction rating (Ministry of Health, 2019).

Many NZ-based (Gilkison et al., 2015; McAra-Couper et al., 2014) and international studies (Fenwick, Sidebotham, et al., 2018; Jepsen et al., 2016; Kirkham, 2011) investigated the impact of the COC model outcomes for midwives. Favourable results for midwives included increased job satisfaction, autonomy in their profession, deeper relationships with women, and reduced intervention of other healthcare providers (Homer et al., 2017; Sandall et al., 2016). It was further identified that the advantages of the nature of caseload midwifery outweighed the disadvantages if the midwife could maintain a work-life balance and was prepared to cope with this work-

form (Donald et al., 2014; Kirkham, 2011). A recent study even reported that COC models not only increased LMCs' role satisfaction, but it could lead to an improved work-life balance and reduced burnout when compared to models of standard, fragmented care (Moncrieff, 2018). As a result, the midwives would feel satisfied that the care they provided benefitted the mother and baby through enhanced physiological and psychological outcomes, which would enable them to experience a positive journey of pregnancy, birth, and related care (Fenwick, Lubomski, et al., 2018; Page, 2003; Sandall et al., 2016). In NZ, the midwife-mother relationship is described as a 'partnership', identified by trust and mutual benefit (Guilliland & Pairman, 1994). The positive experience is linked with enhanced confidence in parenting and emotional wellbeing following childbirth (Hunter et al., 2008).

However, research also showed that the COC model involves periods of high workload and long hours (Davis et al., 2011; Dixon et al., 2017). Although LMC midwifery work provides a strong sense of purpose, the dedication and commitment come at a cost that includes high workload and fatigue (Donald et al., 2014; Henriksen & Lukasse, 2016b). Owing to decades of research, it is known that workload is a critical factor leading to work fatigue (Åkerstedt et al., 2004; Maslach & Jackson, 1984). A recent Canadian study on COC midwifery identified the negative effect of workload on work fatigue and sustainability (Stoll & Gallagher, 2019). Evidence from a narrative review revealed that not enough attention was given to the prevalence of work-related distress and fatigue among midwives in other countries (Pezaro et al., 2016). Furthermore, the on-call nature of the COC role in today's 'always connected' society interferes with LMC midwives' work-life balance which continually requires a transition between their roles. (Donald, 2012; Park & Jex, 2011). It was found that stressors, which are unique realities of the COC model, led to conflict between domains that disrupted work-life balance and associated work fatigue (Edmondson & Walker,

2014; Stoll & Gallagher, 2019). LMCs, therefore, need to plan their days meticulously to expect the unexpected and maintain a healthy balance to continue in this vital line of work (Dixon et al., 2017; Donald et al., 2014). Calvert et al. (2017) further described that midwives were “continuously working towards being ready for whatever and wherever the moment may be” (p. 14). Research explicitly confirmed the need for COC midwives to be flexible between various roles of the family and work domains (Gilkison et al., 2015). Two Australian studies confirmed that midwives who worked according to the COC model had to organise their personal lives for this unpredictable work configuration (Newton et al., 2016; Newton et al., 2014). This leads to the belief that there is a need for further investigation of other variables that may play a role in the relationship between workload and work fatigue in LMCs in NZ.

The LMCs function under continuous preparedness to switch roles between the family and work domains due to the unpredictable nature of labour and birth (Gilkison et al., 2015). As self-employed midwives, LMCs must be skilled at business management in order to achieve a regular income, pay for any locum services, and manage time off (Midwifery Council of New Zealand, 2019). An additional concern is that a majority of midwives are sole carers for children, elderly, and disabled people in their family domain, which is another vital role they have to fulfil (Midwifery Council of New Zealand, 2019). Working conditions of these LMCs are indeed unique and challenging when compared to any other industry (Community Midwifery Pricing Model, 2017; Gilkison et al., 2016). Thus, this explains the relevance of this study’s approach from an OB and management perspective to identify what sustains those who provide this essential service (Fenwick, Lubomski, et al., 2018; Geraghty et al., 2019; Hunter et al., 2016; McAra-Couper et al., 2014). The following sections focus on the first variable, work fatigue, which consists of physical, mental, and emotional constructs (Frone & Tidwell, 2015).

2.2 Work fatigue

Work fatigue is defined as an intense weariness and inability to be functional during and towards the end of a workday and includes physical, mental, and emotional work fatigue (Frone & Tidwell, 2015; Walker & Clendon, 2018). There is a meaningful relationship between feeling tired, juggling multiple roles, and workload (Herdianti & Maryana, 2019). The various causes and effects of fatigue are complex; this is an intriguing topic due to its relevance and application to multidisciplinary studies (Caldwell et al., 2019; Fan & Smith, 2017). Combined studies support the notion that fatigue reflects an unpleasant symptom and a social problem, which does not only have a negative impact on the healthcare provider but also the quality of care for their clients/patients (Sagherian et al., 2019; Uchmanowicz et al., 2019).

In this study, the initial focus is on quantitative workload as the antecedent to work fatigue. Although there was an abundance of research available on fatigue, defining the term ‘fatigue’ proved to be complicated and challenging (Desmond et al., 2012; Nail & King, 1987). Frone and Tidwell defined work fatigue effectively in 2015 as a combination of depleted energy resources that included costs of physical work fatigue (muscular movement), mental work fatigue (cognitive processing), and emotional work fatigue (expression and regulation of emotions). The terms fatigue, weary, exhaustion, weariness, and tiredness have been used interchangeably in the literature therefore, they will be referred to as fatigue in this study to avoid confusion (Hockey & Hockey, 2013). The terms fatigue and sleepiness are two different (although related) states. Fatigue is the body’s response to physical or mental exertion whereas, sleepiness is the tendency to fall asleep (Åkerstedt et al., 2004; Lerman et al., 2012). Consequently, this research includes the measurement of work fatigue as (a) physical work fatigue that represents extreme physical tiredness and reduced capacity to engage in physical activity; (b) mental work fatigue that includes excessive mental exhaustion

and a diminished ability to engage in cognitive activities; (c) emotional work fatigue that signifies extreme emotional weariness and an inability to participate in an emotional event during and at the end of the workday (Frone & Tidwell, 2015).

An integrative systematic review justified that reasons for work fatigue could range from bad habits, poor diet, high stress, and conflict levels to health-related issues, including psychological and physical problems (Caldwell et al., 2019; Perry et al., 2017). Investigation of the causes and outcomes of work fatigue connect working conditions to worker health, performance, work attitudes, and sustainability (Frone & Tidwell, 2015). Research outlined that contributing factors for work fatigue could further include work overload (Dorrian et al., 2011; Moore, 2000), long working hours (Folkard, 2008), fewer breaks during work hours (Tucker et al., 2003), rotating schedules of work (Pilcher et al., 2000), and high intensity of work tasks (Akerstedt et al., 2002). Work fatigue affects workability, quality of life, organisational performance, mental health, and decreased job satisfaction across all industries (Cohen et al., 2017; Hakanen & Schaufeli, 2012).

For healthcare providers, especially midwives, additional potential contributors to fatigue include work overload, worrying, stress, and working at odd hours which can disturb their natural circadian rhythms (Gander et al., 2019; Querstret et al., 2020). The evidence that fatigue ends in burnout for midwives is also well-published (Dixon et al., 2017; Fenwick, Lubomski, et al., 2018; Sagherian et al., 2019). As a self-employed LMC, income is undeniably dependant on their workload (Section 88 New Zealand College of Midwives, 2020) . This study focusses on the quantity of workload, identified by the LMC midwifery population in NZ as a key contributing factor to work fatigue.

2.3 Workload

Toker and Biron (2012) defined workload as a persistent cause of work pressure to which an individual devoted a considerable amount of internal energy and external resources to complete their work. Research confirmed that workload required physical, emotional, and mental effort (Cox & Smythe, 2011; Walker & Clendon, 2018). Van Sell et al. (1981) classified workload as either qualitative or quantitative.

Qualitative workload refers to the workers' personal belief that they cannot complete their tasks. In contrast, quantitative workload refers to an excessive amount of work that workers cannot complete within the prescribed period (Van Sell et al., 1981). Studies conducted in the past 20 years on workload, including Moore (2000), acknowledged that workload was a crucial factor for work-related fatigue. An empirical study revealed that workload was a key determinant of stress and fatigue among workers performing repetitive manufacturing work tasks (MacDonald, 2003). Dorrian et al. (2011) further stated that workload significantly influenced fatigue and excessive workload leading to unusually extreme tiredness. More recent studies confirmed the positive relationship between work overload and fatigue (Banovcinova & Baskova, 2014; Stoll & Gallagher, 2019). Decades of research concurrently determined that workload was the critical factor leading to work fatigue (Åkerstedt et al., 2004; Bakker & Demerouti, 2007; Knezevic et al., 2011; Maslach & Jackson, 1984; Stoll & Gallagher, 2019). However, research also suggested that a large amount of workload and long hours did not automatically bring about distressing situations resulting in fatigue (Henriksen & Lukasse, 2016a). Some workers preferred a high workload that kept them busy (Spector & Jex, 1998). It also followed that different workers perceived different degrees of fatigue when doing the same amount of work in the same working environment (Åkerstedt et al., 2004).

Studies confirmed concerns about midwifery's high workload (demands) and increased levels of fatigue (Cramer & Hunter, 2019; Henriksen & Lukasse, 2016a; Yoshida & Sandall, 2013). This study specifically focusses on the quantitative workload of LMC midwives (Spector & Jex, 1998). Geraghty et al. (2019) revealed that midwifery in its fundamental form was not stressful, but it was the contextual and other environmental factors that led to work fatigue. Fenwick, Lubomski, et al. (2018) investigated the association of work-life balance to fatigue and burnout in midwives working in both the COC model and fragmented care in Australia. Results from both groups of midwives revealed that workload was associated with a reduced work-life balance, which further led to increased fatigue (Fenwick, Lubomski, et al., 2018). However, another recent study revealed that even though case-loading in NZ involved a high workload, other aspects like the autonomy of the profession in the COC model affected the work positively (Dixon et al., 2017). The current study advances to work-life literature relating to flexibility between roles to explore family flexibility ability as a possible variable that may play a role in the relationship between workload and work fatigue. The approach takes into consideration that an LMC midwife meticulously needs to plan for multiple situations simultaneously and keep up with constant transitioning between roles.

2.4 Theoretical framework

2.4.1 Boundary theory

The boundary theory was developed from role theories (Biddle, 1986; Kahn et al., 1964). Based on a cognitive, sociological perspective, the boundary theory aids in a holistic understanding of the world (Zerubavel, 1991). The boundary theory has been applied to family-work interactions to explain the meanings that individuals assign to roles associated with the family and work domains (Nippert-Eng, 1996). Researchers proposed that workers develop boundaries around both the family and work domains

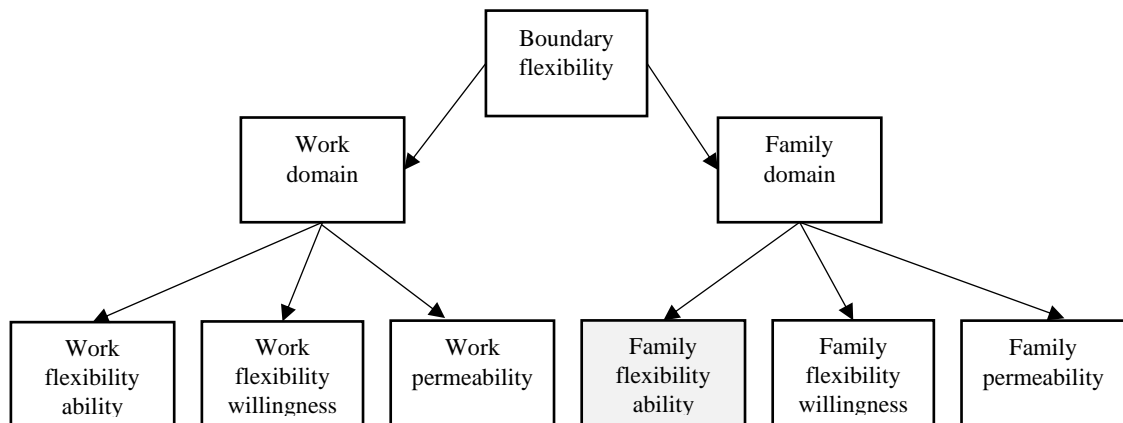
(Ashforth et al., 2000; Desrochers & Sargent, 2004). Boundaries vary in strength that influence the consequences of the interactions between personal life and work (e.g., family-work conflict). Boundary theory proposes that individuals manage the boundaries between family and work life through their ability to transition between roles in the work and family domains (Bulger et al., 2007). The theory further explains the ease and frequency of individuals transitioning between the boundaries of family and work roles (Ashforth et al., 2000; Desrochers & Sargent, 2004). Transitioning refers to the psychological or physical movement between roles and boundaries of the family domain and the work domain. Subsequently, transitioning enables individuals to simplify their interactions between roles and avoid conflict in their work-life balance (Hall & Richter, 1988; Nippert-Eng, 1996; Zerubavel, 1991). Hall and Richter (1988) discussed that individuals could steer boundaries between family and work domains in various ways, for example, to foster boundaries that are flexible or permeable in order to maintain their work-life balance. Lyness and Judiesch (2008) emphasised that the relationship between roles and boundaries is very complex. The boundary theory explained that a more significant dissimilarity between role identities resulted in greater difficulty for an individual to make a role transition (Nippert-Eng, 1996).

A daily recurring role transition between the family domain and the work domain is referred to as a micro role transition. In contrast, a once-off role transition that does not happen daily, like a promotion to another department, is referred to as a macro role transition (Winkel & Clayton, 2010a). In this research, the focus is on micro role transitions, for example, accepting a call from your client while at home having dinner with your family. Transitioning between boundaries and roles is further explained in terms of costs and benefits (Ashforth et al., 2000). It follows that when transitioning between roles and boundaries is not possible, as a cost or a consequence, conflict occurs between domains. Gonnelli and Raffagnino (2017) further linked the

associated costs of conflict to an increase in distress and fatigue. It was proposed that modulating boundary management practices could influence the experience of family-work conflict (Ashforth et al., 2000). To be able to flex the home boundary, an individual must feel that they have more control over work time and decision-making because it would then reduce family-work conflict (e.g., Thomas & Ganster, 1995).

2.4.1 Boundary flexibility

To improve the conceptualisation of boundary flexibility, it is essential to understand how family flexibility ability fits into the larger framework of the boundary theory. The measurement of boundary flexibility was developed and described by Matthews and Barnes-Farrell (2010). They divided boundary flexibility into work and family domains according to the boundary theory (Matthews & Barnes-Farrell, 2010). However, each domain was divided into three categories as seen in Figure 2. Work domain: (a) work flexibility ability; (b) work flexibility willingness; (c) work permeability, on the one hand and family domain: (a) family flexibility ability; (b) family flexibility willingness; (c) family permeability, on the other.

Figure 2*Model of boundary flexibility*

Family flexibility ability reflects the degree to which an individual perceives their autonomy from personal or situational constraints that affect their boundary management (Edwards & Rothbard, 1999; Folkman & Lazarus, 1984; Kossek et al., 2006). In other words, family flexibility ability is the perception that external factors enable one to leave a domain and to move easily between domains (Bulger et al., 2007). It further refers to how much an individual can contract or expand their roles or boundaries based on domain demands (Matthews et al., 2010). This research focusses specifically on family flexibility ability in the family domain. High family flexibility ability allows more extensive work-related roles to cross the home boundary and enter the family domain while low family flexibility ability (impermeable) means that elements of the work domain rarely cross the boundary and enter the family role and domain (Kreiner et al., 2009; Nippert-Eng, 1996). The characteristics of any two pairs of roles (e.g., midwife in the work domain and spouse, partner, or parent in the family domain) enables researchers to map boundary permeability and flexibility management styles along a continuous scale ranging from high segmentation with low permeability and flexibility to high integration management style with high permeability and flexibility (Bulger et al., 2007).

2.4.2 Family flexibility ability

Family flexibility ability is divided into the ability to be flexible (meaning you can leave the family domain), the willingness to be flexible (meaning you are prepared to leave the family domain), and family permeability (referring to whether the family domain will allow this transition into the domain) (Clark, 1998; Matthews & Barnes-Farrell, 2010).

Previous research found that individuals experienced less family-work conflict when they felt that they could control the flexibility of boundaries and roles cognitively (Thomas & Ganster, 1995). Ashforth et al. (2000) further theorised that the ability to transition between domains when needed was a way to lessen conflict and strain between family and work domains. Empirical research has also shown that family flexibility ability enables effective transitioning from one role to another (Kossek et al., 2006). Winkel & Clayton (2010) found that family flexibility ability could be used as a predictor to determine transitioning out of family roles. Kempen et al. (2017) added that increased flexibility ability was associated with domain enrichment. Family flexibility ability was exemplified in the work undertaken by Foucreault et al. (2018) as providing individuals a sense of behavioural control over the transitioning process.

Therefore, it is plausible to suggest that when an LMC midwife perceives low family flexibility ability, it may lead them to difficulties in managing their family-work interface and this may result in conflict, decreased levels of personal control, decreased life enrichment, and increased fatigue. The more an LMC can flex their domain boundaries, the more blurred those boundaries can become, which facilitates cognitive and physical transitions between domains (Bulger et al., 2007; Desrochers & Sargent, 2004). The theoretical framework used as a foundation that describes family flexibility ability is the boundary theory (Matthews & Barnes-Farrell, 2010). Although flexibility and permeability describe different characteristics of a boundary or role, they are related

at a conceptual and empirical level (Bulger et al., 2007). Based on a review of the available literature, this is the first time that family flexibility ability has been evaluated as a mediator between workload and work fatigue. Investigating the significance of its relationship between workload and work fatigue for the unique realities of the NZ workforce will have significant value. Underlined by the boundary, JD-R, and motivational control theories, the study aims to investigate whether family flexibility ability, a variable over which an individual has perceptual control, may explain the relationship between their workload and work fatigue.

2.5 Job demands-resources model

The literature reviewed thus far provides evidence for a distinct model of antecedents and consequences of workload, work fatigue, and family flexibility ability. The job demands–resources (JD–R) model suggests that all work characteristics can be modelled according to two different categories: job demands and job resources (Bakker & Demerouti, 2007). A further proposition of the JD-R model is that the demands and resources are part of two independent processes. The job demands are the aspects of the job that require sustained physical and/or psychological effort (Demerouti et al., 2001). Bakker and Demerouti (2007) provided evidence for a distinct model according to the JD-R model of antecedents and consequences of workload (job demand), work fatigue (strain), and family flexibility ability (resource). According to the JD-R model, the nature of workload for LMCs is unique and requires resources on a physical, emotional and mental level (Bakker & Demerouti, 2007).

Consequently, job resources were identified as the main drivers of work engagement and positive organisational results. Job resources are aspects of the job that are operational in achieving work-related goals, reduced job demands, and stimulate

personal growth and development (Demerouti et al., 2001). The JD-R model is defined as a theoretical framework that integrates two independent research traditions: the stress research tradition and the motivation research tradition (Caplan et al., 1975). The JD-R model further states that job demands are initiators of a health impairment process and job resources are initiators of a motivational process (Caplan et al., 1975). The health impairment process entails that high job demands may exhaust workers' resources and lead to energy depletion and health problems (Caplan et al., 1975). The research confirmed that specific job demands (workload) predicted exhaustion (i.e., severe fatigue) among various occupational groups (Bakker et al., 2003; Bakker et al., 2005).

The motivational process states that the availability of job resources leads to organisational dedication and work commitment (Schaufeli & Bakker, 2004). Job resources, due to the motivational potential, encourages workers to meet their goals resulting in increased commitment to their jobs (Hackman & Oldham, 1980). The JD-R model further proposes that job resources buffer the relationship between job demands and exhaustion (Bakker et al., 2005). Therefore, as workload increases fatigue would also increase as a result of depleting resources. For the purpose of this study, family flexibility ability will act as a resource. With the JD-R model, one can identify, describe, and make predictions about work fatigue, workload, and family flexibility ability.

2.6 Motivational control theory

Thorndike (1900) interpreted fatigue as a problem of doing the right thing rather than of doing too much. Therefore, motivational control theory is defined as a meta-theoretical framework that differs from conventional theories of motivation with a more fundamental level of description (Hyland, 1988). Hockey (2011) added that fatigue was a problem of the management of control rather than of energy. The motivational control

theory suggests that increasing the workers' control over their work may allow them more flexibility to shift attention and effort to more rewarding aspects of the work when experiencing fatigue (Hockey & Hockey, 2013).

Hockey proposed a complex model in which subjective fatigue was part of a control mechanism that monitors the effort put into a task (Hockey & Hockey, 2013). However, in a work context, the worker often does not have the option of diverting effort to a different goal other than by withdrawing from their work. Therefore, the motivational account is that perceived feelings of control mitigate the effects of continuous effort and result in less fatigue (Hockey & Hockey, 2013).

In this study, family flexibility ability will relate to feelings of control that further mitigate the effects of reduced levels of fatigue. The relevance of the motivational control theory in this study is due to the link between family flexibility ability and control (Foucreault et al., 2018) as well as control and decreased levels of fatigue as confirmed by Hockey and Hockey (2013).

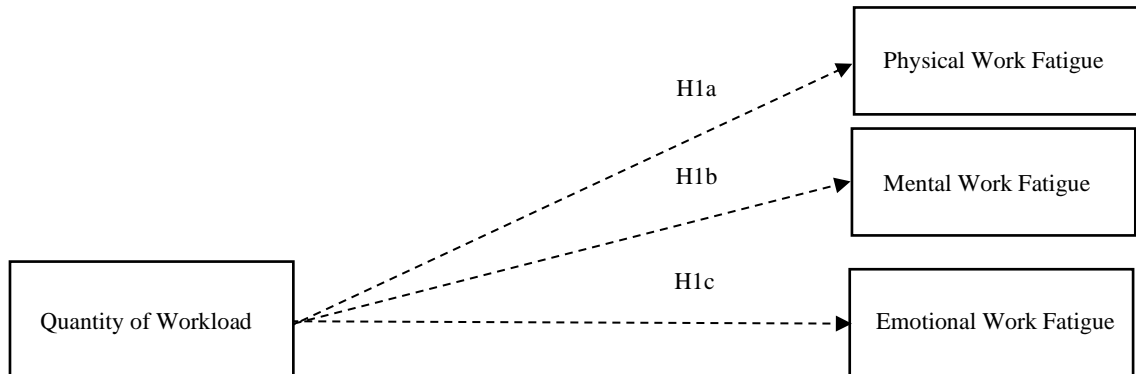
2.7 Hypotheses

The theoretical (Bakker & Demerouti, 2014; Rothbard & Ollier-Malaterre, 2015) and empirical (Banovcinova & Baskova, 2014; Stoll & Gallagher, 2019) research reviewed above allows me to advance the following hypothesis:

H1: Quantity of workload is positively related to: a) physical work fatigue; (b) mental work fatigue; (c) emotional work fatigue in LMC midwives in NZ (Figure 3).

Figure 3

Relationship of Quantity of Workload to Physical Work Fatigue, Mental Work Fatigue, and Emotional Work Fatigue

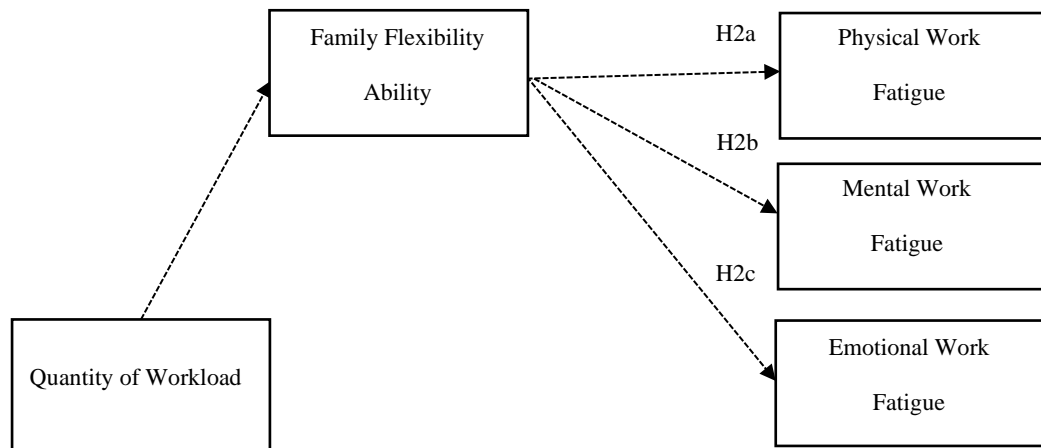


Extant research (Ashforth et al., 2000; Bakker & Demerouti, 2014; Bulger et al., 2007; Kossek et al., 2006) suggests that effective transitioning between role demands of the family domain (being a spouse, partner, or parent) to role demands of the work domain (being a midwife) with increased family flexibility ability (having support and resources from local whanau, an au pair or shared care, to assist in responsibility for dependants) and an increase in the experienced amount of control may explain a decrease in work fatigue. Therefore, I advance the following hypothesis:

H2: Family flexibility ability has a mediating role in the relationship between workload and work fatigue (Figure 4).

Figure 4

Mediating Role of Family Flexibility Ability between Quantity of Workload and Physical Work Fatigue, Mental Work Fatigue, and Emotional Work Fatigue



This chapter began with an assessment of the LMCs' profession and an explanation of the problematic nature of workload and work fatigue as recognised by the study's population of LMC midwives. It identified family flexibility ability as an alternative variable in the unique nature of the COC model. The chapter further explained the application of the boundary, JD-R, and motivational control theories for the purpose of this study. The first objective of this study is to confirm the findings of the relevant research that investigated the relationship between the quantity of workload and work fatigue among LMC midwives in NZ (H1). The first hypothesis is supported by previous relevant theoretical and empirical research (Bakker & Demerouti, 2014; Banovcinova & Baskova, 2014; Stoll & Gallagher, 2019). Collectively, workload and fatigue contribute to transitioning difficulties between boundaries and role confusion. The ease of effective transitioning between roles will explain the decreased effect of suffering from fatigue when facing high quantities of workload. The second objective, supported by the boundary and motivational control theories, investigates the role of

family flexibility ability in the relationship between the quantity of workload and work fatigue in this population of LMC midwives (H2).

The next chapter describes the procedures and methods used in this investigation.

3 Methodology

The third chapter begins with a brief description of the theoretical framework for the current research followed by the methods used to gather, prepare, and analyse data for hypotheses testing.

3.1 Theoretical paradigm

A theoretical paradigm consists of ontology, epistemology, methodology, and methods (Scotland, 2012). A paradigm is essential because it provides a guide for what should be studied, how it should be studied, and how the results should be interpreted (Kivunja & Kuyini, 2017). A paradigm reflects the researcher's beliefs, assumptions, and norms and signifies the approach and thought patterns used to acquire knowledge (Lather, 1986). Every paradigm is based on its own ontological and epistemological assumptions. It is important to remember that all assumptions are estimations therefore, they cannot be proved or disproved (Scotland, 2012). To ensure a coherent study, I chose a post-positivist paradigm. I selected the post-positivist paradigm because I sought to explain the relationship between workload and work fatigue with the awareness that pure objectivity was not possible (Sharma, 2010). Post-positivism recognises that human behaviour is complex and to report research objectively is not always possible (Clark, 1998; Sharma, 2010). The post-positivist paradigm fits with the process of scientific inquiry and collection of quantitative data used in this study. Data was collected from an online, self-completed survey, which is appropriate to this deductive approach, including interval scale statements that can be empirically tested. This was followed by a descriptive analysis with inferential statistics and results that could be generalised.

3.2 Method

3.2.1 Participants and procedure

The participants for this study were LMC midwives who participated in the 2019 NZ Midwifery Work and Wellbeing (NZ MidWoW) study. LMCs are self-employed and funded by the NZ government to provide free maternity care to qualified NZ residents (Ministry of Health, 2007). LMC midwives work within a defined and regulated scope of practice therefore, when extra care is required (e.g., for high-risk pregnancy), they have to collaborate with other healthcare professionals in multi-disciplinary teams (Midwifery Council of New Zealand, 2019). As mentioned in the literature review, the COC model indicates that LMCs need to be flexible (Gilkison et al., 2015) due to the demand for 24/7 availability.

The NZ MidWoW is a longitudinal study conducted in conjunction with the professional association for midwives, the New Zealand College of Midwives (NZCOM). In September 2019, participants were contacted through NZCOM's membership database inviting them to participate in an online survey. Participants were informed of the voluntary and confidential nature of the study and could withdraw from the survey at any time without penalty. The survey was approved by AUTECH (Auckland University of Technology Ethics Committee) ethics board (AUTECH 19/33). Using the Qualtrics online platform, out of 602 LMC midwives that participated, 458 LMC midwives provided answers. After data curation was applied, a final sample of 301 participants was used for data analysis in the current study. Participant median age was 49 years, with 74.2% ($n = 223$) of the group indicating they were 40 years or older. All participants were female and demographic data was representative and consistent with profession data obtained in a work survey (Midwifery Council of New Zealand, 2019). Participants self-identified as New Zealand European 68.4% ($n = 206$), Non-New Zealand European 17.5% ($n = 53$), and New Zealand Māori 5.8% ($n = 18$). The

remaining 8.1% ($n = 24$) of the sample was composed of participants identifying as Pasifika, African, Asian, Middle Eastern, and 'Other'.

Regarding their educational achievement, data indicated that 55.8% ($n = 168$) of LMC midwives attained a direct-entry degree in NZ, 13.3% ($n = 40$) qualified through overseas hospital-based programs, 6.6% ($n = 20$) had a post-nursing midwifery degree from NZ, and 6.3% ($n = 19$) had an international midwifery degree. The others qualified through a variety of diploma and hospital-based programmes, either from NZ or abroad. Expanding on their primary qualifications, 7.4% ($n = 22$) attained a master's degree or higher. For 'hours of work per week', 76% ($n = 229$) of the participants stated they spent 40 hours (mode) per week or less on paid midwifery work. Also, most participants, 65.2% ($n = 196$), specified they spent between 1 to 5 hours per week in unpaid midwifery work. Most participants, 66% ($n = 199$), reported working in partnerships of four or less registered midwives, with two being the most frequently reported number. Including time spent working as a midwife outside of NZ, 12 years was the median tenure reported. Most participants reported that income from midwifery-related work lay within a range of \$75,000 to \$99,000 and 17% ($n = 51$) reported earning more than \$100,000, and 4% ($n = 12$) preferred not to disclose their estimated annual income. It is important to note that for LMCs, income varies annually because of caseload (Midwifery Council of New Zealand, 2019). To gauge the level of interest and importance attached to the 2019 NZ-MidWoW study, 95.8% ($n = 288$) indicated that the survey was of importance to them, with the mode 39.4% ($n = 119$) indicating that the survey held a lot of importance to them. The current sample was representative of the LMC population as measured by the workforce survey (Midwifery Council of New Zealand, 2019).

3.2.2 Measures

Quantity of workload. Quantity of workload was measured using the Quantitative Workload Inventory (QWI) developed by Spector and Jex (1998). Four items focussing on the amount and pace of work were selected. Some sample items were “how often does your job require you to work very fast?” and “how often do you have to do more work than you can actually accomplish?”. Response options ranged from “never” (1) to “several times a day” (6). Previous research using the QWI (Spector & Jex, 1998) reported adequate reliability ($\alpha = .82$).

Work fatigue. The Work Fatigue Index (3D-WFI) developed by Frone and Tidwell (2015) was used to measure work fatigue. The scale consisted of three constructs—physical work fatigue, mental work fatigue, and emotional work fatigue—each with three items. The physical work fatigue scale required participants to indicate whether they felt physically drained at the end of the workday. A sample item was: “I feel physically exhausted at the end of the workday”. The mental work fatigue scale asked participants about their mental ability at the end of the workday. A sample item on mental work fatigue was: “How often do you feel mentally exhausted at the end of the workday?”. Emotional work fatigue was the third dimension of the scale and it asked participants to indicate the level of emotional exhaustion at the end of the workday. A sample item was: “How often do you feel emotionally exhausted at the end of the workday?”. Responses were measured on a Likert scale ranging from “never” (1) to “every day” (5). Previous research by Frone and Tidwell (2015) using this scale showed excellent reliabilities for physical work fatigue ($\alpha = .94$), mental work fatigue ($\alpha = .95$), and emotional work fatigue ($\alpha = .96$).

Family flexibility ability. The study used the family flexibility ability scale developed by Matthews and Barnes-Farrell (2010). Scale items asked participants to indicate whether they attended to work-related issues or concerns while at home. A

sample item from the scale was: “If the need arose, I could work late without affecting my family and personal responsibilities”. A Likert scale (1-7) was used with response options ranging from “strongly disagree” (1) to “strongly agree” (7). A high score indicated high levels of family flexibility ability. Previous research (Matthews & Barnes-Farrell, 2010) has demonstrated adequate internal consistency for the scale ($\alpha = .71$).

3.2.3 Data preparation

Raw scores of demographic and variable data were entered into MS Excel and exported to IBM SPSS Statistics (Version 26). Data was screened for accuracy, outliers, missing values, fit between their distributions, and assumptions of multivariate analysis (DeSimone et al., 2015; Zimmerman, 1994).

Screening involved the identification of respondents who had not provided thoughtful and honest answers that resulted in low-quality response patterns (DeSimone et al., 2015). At the end of this survey, respondents were asked about their level of effort. Direct inquiry is a basic method to interpret whether the respondent had exercised enough effort on the questionnaire. If a respondent willingly admitted to the researcher that they did not exert effort, the use of their responses was not advisable (DeSimone et al., 2015). Outliers were graphically identified because this increased error variance and reduced the power of statistical tests. If these outliers were distributed non-randomly, they could significantly alter the odds of making both type I and type II errors (Zhang et al., 2003). Outliers can also result in bias or influence estimates (Zimmerman, 1994).

Missing data for items is when respondents do not, or choose not to, answer all questions. The number of items missing data is an essential indicator of data quality (Groves, 1989). It is vital to know the reasons for missing data to understand how to

treat the occurrence of the missing data to avoid a biased analysis (Rubin, 1976). Item nonresponse occurs when a person provides data but for some reason data on particular items or questions is not available to be analysed (Dillman et al., 2002). In this dataset, nonresponse items were not ignored as it could have resulted in a loss of information and weaker statistical tests (De Leeuw et al., 2003). Although prevention was the first step to handling missing data, possible solutions to cope with missing data were to make use of imputation and direct estimation techniques (Acock, 2005). But for the purpose of this study, it was not necessary to use these techniques. A distinction concerning missing data is that data is either missing completely at random, missing at random, or not missing at random (Little Roderick & Rubin Donald, 1987). In this sample, 57 participants only answered questions up to a specific point. It can be assumed that they chose not to spend more time on the questionnaire, perhaps due to time constraints. Such data was approached as not missing at random (NMAR) (Allison, 2000). NMAR may result in bias therefore, the missing data is considered non-ignorable (Little Roderick & Rubin Donald, 1987). The variables used in this study were only a small part of the more comprehensive longitudinal study's questions because the lengthy questionnaire may have led to respondent fatigue. Removing the 57 cases that had incomplete data meant that a total 301 participants provided data that was suitable for analysis in the current study.

Univariate descriptive statistics was used to identify skewness and kurtosis with univariate outliers. Kurtosis and skewness levels of relevant variables were within the limit of ± 2 as an indication of normality (Trochim & Donnelly, 2001).

3.2.4 Control variables

It was necessary to control for factors that were likely to influence work fatigue beyond the quantity of workload. These control variables included age (in years), education (1 = high school, 2 = polytechnic, 3 = university degree, 4 = postgraduate

qualification), and job tenure (in years). All participants were female therefore, gender was not used as a control variable. Research methods literature supports the use of age, education, and tenure (Chen et al., 2014; Henriksen & Lukasse, 2016a; Lu et al., 2016).

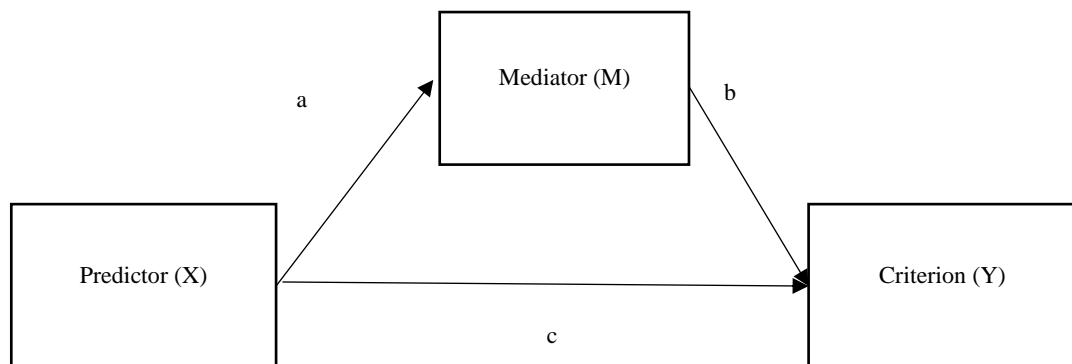
3.2.5 Direct and mediation analysis

Intercorrelations between all study variables were examined through pairwise plots for nonlinearity and heteroscedasticity as described by Breusch and Pagan (1979). Hypotheses 1a, 1b, and 1c were tested through correlation analysis.

Different types of mediation analysis are available, but in this research the model contains only one mediator variable M that is causally between X and Y, which is known as a simple mediation model (Figure 5). The predictor's (X) effect on the criterion (Y) is transmitted through the joint causal effect of the predictor (X) on the mediator (M), which in turn affects the criterion (Y). Simple mediation means that a change in X leads to a change in M (path a) and that a change in M leads to a change in Y (path b). The indirect effect is described as 'path ab' since it is the product of the two paths that connect X to M (path a) and M to Y (path b). If the indirect effect 'ab' is greater or smaller than zero (i.e., if it is statistically significant), one can claim that some form of mediation takes place (Zhao et al., 2010).

Figure 5

The conceptual model that shows direct (path c) and indirect (paths a, b) effects



The PROCESS macro for SPSS, Version 3.0 (Hayes, 2018), was used for Hypotheses 2a, 2b, and 2c. PROCESS includes bootstrapping and mediation to test for significance of regression, total effects, direct effects, and indirect effects (Hayes, 2018). Mediation analysis is the hypothesis testing of a causal effect between an independent (X) and dependent (Y) variable and explores how well another variable, called a mediator, can explain the effect (Iacobucci, 2008; Preacher, 2015).

First, it is necessary to provide information regarding the role of variables (i.e., independent variable, dependent variable, and mediator). Next, the PROCESS software estimates all the path coefficients, standard errors, *t*- and *p*-values, confidence intervals, and various other statistics. PROCESS requires at least two regression equations. Model estimation was included with Ordinary Least Square regression or OLS-based path analysis implemented in the PROCESS macro for SPSS (Hayes, 2018). Each of the equations was calculated separately. Once the macro was activated, it only required a single line of SPSS code to estimate the model. Inference about these statistics is based on bootstrapping methods that PROCESS can generate, output that would otherwise require considerable effort, and programming skills for implementation (Hayes, 2018; Shrout & Bolger, 2002).

Limitations of PROCESS: (a) it is a modelling tool for only observed variables that relies on OLS regression; (b) requires complete data and missing data solutions that depend on imputation to be implemented in advance (Hayes, 2018). The following section explores the results of the statistical analysis.

4 Results

4.1 Descriptive analysis

The analytical procedures and the results obtained from analysis are described in the following section. Table 1 displays the correlations, means, and standard deviations of the study variables:

Table 1

Descriptive statistics and bivariate correlations

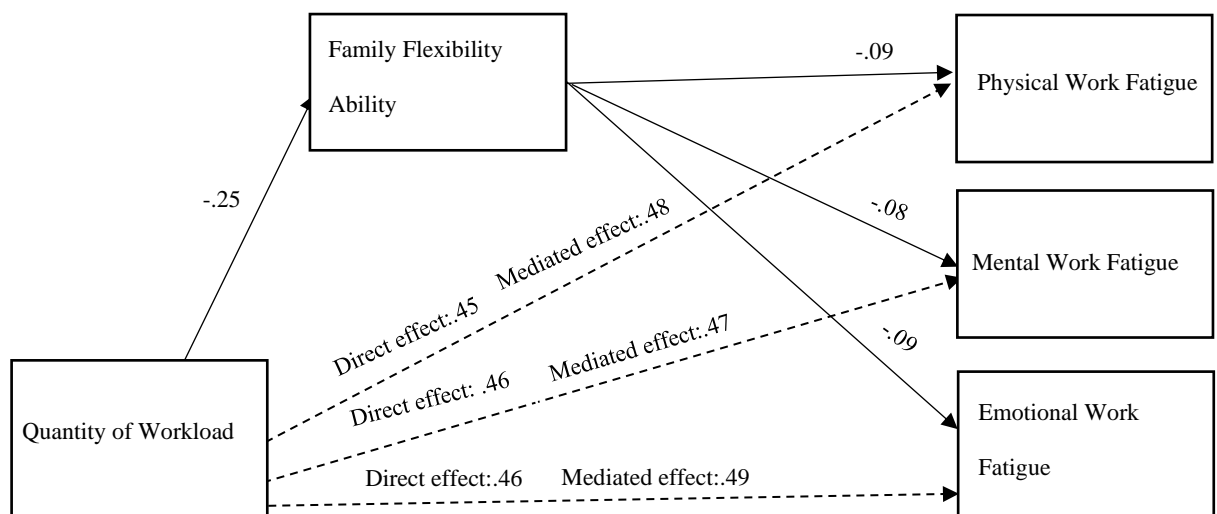
Variable	1	2	3	4	5	6	7	8
1. Quantity of Workload	(0.88)							
2. Family Flexibility Ability	-.17**	(0.76)						
3. Physical Work Fatigue	.55**	-.24**	(.95)					
4. Mental Work Fatigue	.52**	-.21**	.83**	(.96)				
5. Emotional Work Fatigue	.50**	-.21**	.73**	.83**	(.98)			
6. Age	-.04	.22**	-.12**	-.26**	-.21**			
7. Further education	-.02	-.01	.04	.06	.01	-.03		
8. Years worked as a midwife	-.08	.15*	-.20**	-.34**	-.27**	.65**	-.07	
MEAN	4.10	3.20	3.74	3.75	3.44	46.68	4.68	14.79
SD	1.50	1.04	.90	.94	1.01	13.46	1.34	11.03

Note. N = 301; * p < .05; ** p < .01; Cronbach's alpha reliability coefficients are indicated in parentheses.

Quantity of workload is positively and significantly correlated with physical work fatigue $r = .55$, mental work fatigue $r = .52$, and emotional work fatigue $r = .50$. Quantity of workload is negatively correlated with family flexibility ability $r = -.17$. Family flexibility ability is also negatively correlated with physical work fatigue $r = -.24$, mental work fatigue $r = -.21$, and emotional work fatigue $r = -.21$. Coefficient alpha indices among the subscales range from $\alpha = .76$ to $\alpha = .98$. The reliability coefficients were all above $\alpha = .70$, which is the minimum level of acceptability for internal consistency (Cortina, 1993). Figure 6 is a mediation model of the study:

Figure 6

Mediation Model of Quantity of Workload through Family Flexibility Ability to Physical Work Fatigue, Mental Work Fatigue, and Emotional Work Fatigue



Note. Standardised coefficients are displayed; all values are estimated using bootstrapping procedures and the model is controlled for age, further education, and years worked as a midwife (not shown); significant mediation paths are displayed.

As shown in Table 2, quantity of workload was found to be a significant predictor of physical work fatigue ($b = .48$; $p = .000$). Quantity of workload accounts for 30% of the variance in physical work fatigue. Also, family flexibility ability was found to be a significant negative predictor of physical work fatigue ($b = -.09$; $p =$

.000). Family flexibility ability in the direct effect model explains 33% of the variance in physical work fatigue.

Table 2

Mediation and direct effect results produced in PROCESS of Physical Work Fatigue predicted from the Quantity of Workload and Family Flexibility Ability

Variables	Model	b	se	t	p	LLCI	ULCI
Family Flexibility Ability (b)	Direct effect	-.09	.03	-3.10	.002	-.15	-.03
Quantity of Workload (c)	Direct effect	.45	.05	9.49	.000	.37	.56
Quantity of Workload to Family Flexibility Ability (a)	Direct effect	-.25	.08	-3.06	.000	-.41	-.09
Quantity of Workload via Family Flexibility Ability (ab)	Indirect effect	.02	.011	----	---	.01	.05
Quantity of Workload (c)	Total/mediate d effect	.48	.04	11.44	.000	.39	.56

Note. LLCI = Lower Level of Confidence Interval; ULCI= Upper Level of Confidence Interval based on 1,000 bootstrap samples at a 95% confidence interval.

As shown in Table 3, quantity of workload was found to be a significant predictor of mental work fatigue ($b = .47$; $p = .000$). Quantity of workload accounts for 27% of the variance in mental work fatigue. Family flexibility ability was found to be a significant negative predictor of mental work fatigue ($b = -.08$; $p = .000$). Family flexibility ability in the direct effect model explains 29% of the variance in mental work fatigue.

Table 3

Mediation and direct effect results produced in PROCESS of Mental Work Fatigue predicted from the Quantity of Workload and Family Flexibility Ability

Variables	Model	b	se	t	p	LLCI	ULCI
Family Flexibility Ability (b)	Direct effect	-.08	.031	-2.42	.016	-.14	-.01
Quantity of Workload (c)	Direct effect	.46	.05	10.14	.000	.37	.54
Quantity of Workload to Family Flexibility Ability (a)	Direct effect	-.25	.08	-3.06	.000	-.41	-.09
Quantity of Workload via Family Flexibility Ability (ab)	Indirect effect	.02	.01	----	----	.02	.042
Quantity of Workload (c)	Total/mediate d effect	.47	.05	10.64	.000	.39	.56

Note. LLCI = Lower Level of Confidence Interval; ULCI = Upper Level of Confidence Interval based on 1,000 bootstrap samples at a 95% confidence interval.

As shown in Table 4, quantity of workload was found to be a significant predictor of emotional work fatigue ($b = .49$; $p = .000$). Quantity of workload accounts for 25% of the variance in emotional work fatigue. Family flexibility ability was found to be a significant negative predictor of emotional work fatigue ($b = -.09$; $p < .05$). Family flexibility ability in the direct effect model explains 27% of the variance in emotional work fatigue.

Table 4

Mediation and direct effect results produced in PROCESS of Emotional Work Fatigue predicted from Quantity of Workload and Family Flexibility Ability

Variables	Model	b	se	t	p	LLCI	ULCI
Family Flexibility Ability (b)	Direct effect	-.09	.03	-2.59	.010	-.16	-.02
Quantity of Workload (c')	Direct effect	.46	.05	9.49	.000	.37.	.56
Quantity of Workload to Family Flexibility Ability (a)	Direct effect	-.25	.08	-3.06	.000	-.41	-.09
Quantity of Workload via Family Flexibility Ability(ab)	Indirect effect	.022	.0112	----	----	.01	.05
Quantity of Workload (c)	Total/mediate d effect	.49	.05	10.00	.000	.39	.58

Note. LLCI = Lower Level of Confidence Interval; ULCI= Upper Level of Confidence Interval based on 1,000 bootstrap samples at a 95% confidence interval.

When family flexibility ability is included as a mediator in the first model, the effect on physical work fatigue is reduced ($b = -.09$; $p < .05$). The influence of quantitative workload is reduced from $r = .48$ to $.45$ ($p = .000$). When family flexibility ability is included in the second model as a mediator, the effect on mental work fatigue is reduced ($b = -.08$; $p < .05$). The influence of quantitative workload is reduced from $r = .47$ to $.46$ ($p = .000$). In the final model, when family flexibility ability is included as a mediator, the effect on emotional work fatigue is also reduced ($b = -.09$; $p < .05$). The influence of quantitative workload is reduced from $r = .49$ to $.46$ ($p = .000$). Across all three models, the effect of family flexibility ability is small but significant.

In sum, the total effect (mediated effect) of workload on physical work fatigue is .48, and the direct effect of quantitative workload is .45, thus family flexibility ability adds an additional .03 to that value. Hypothesis 2a is supported. Similarly, the total effect (mediated effect) of workload on mental work fatigue is .47, and the direct effect of quantitative workload is .46, thus family flexibility ability adds an additional .01 to that value. Hypothesis 2b is supported. Finally, the total effect of workload on emotional work fatigue is .49, and the direct effect of quantitative workload is .46, thus family flexibility ability adds an additional .03 to that value. Hypothesis 2c is supported.

5 Discussion

The study aimed to confirm that there is a positive relationship between the quantity of workload and work fatigue in NZ LMC midwives (Banovcinova & Baskova, 2014; Stoll & Gallagher, 2019) and highlight that family flexibility ability has a mediating role in the relationship between the quantity of workload and work fatigue. The focus of this study was specifically on family flexibility ability which indicated that a worker was able to expand the family domain to meet work needs and accordingly experienced decreased levels of fatigue. New insights from these research results implied that family flexibility ability explained the increase in variance in the model of workload and work fatigue. Further, this study focussed explicitly on the LMC midwifery profession with unique characteristics from an OB and management perspective.

5.1 Theoretical implications

The results of the first hypothesis indicate that an increase in workload leads to an increase in work fatigue, which is congruent with the empirical findings that confirm the positive relationship between work overload and work fatigue (Banovcinova & Baskova, 2014; Holland et al., 2018; Stoll & Gallagher, 2019). As expected, these results were in line with the relationship between work demand and strain explained by the JD-R model (Bakker & Demerouti, 2007).

Family flexibility ability outcomes however, diverged from the JD-R model as they did not necessarily follow that a high workload automatically placed a worker in a state of tiredness (Carnegie, 1970; Henriksen & Lukasse, 2016a; Hockey & Earle, 2006). Even though the COC model in NZ can involve a high workload, research confirmed other effects of the COC model such as high job autonomy (Dixon et al., 2017). In this study, family flexibility ability is defined as the only construct that was

modifiable and over which an individual had perceptual decision-making control (Foucreault et al., 2018; Kossek et al., 2006). Therefore, in this research, the experience of perceptual decision-making control is linked to family flexibility ability (Foucreault et al., 2018; Kossek et al., 2006). The results of the study indicate that family flexibility ability has a significant mediating role in the relationship between workload and work fatigue, which aligns with the boundary theory and subsequently, with the motivational control theory (Hockey, 2011). The results of this study regarding family flexibility ability align with those of Dixon et al. (2017) that showed that for LMC midwives, empowerment and professional autonomy were protective factors against emotional fatigue and burnout despite higher levels of workload. Further contradictions to the JD-R model arose in light of the motivational control theory which suggested that resources like physical rest were not a significant contributor to recovery from subjective fatigue (Hockey & Hockey, 2013). As illustrated by Hockey and Earle (2006) in their experimental research, control played an imperative role in decreasing the experience of an individual's fatigue levels. Results resonate with the motivational control theory that fatigue was neither dependent on physical energy expended nor perceived work demands, but rather related to perceived control over work (Hockey & Hockey, 2013; Johnston et al., 2018). Family flexibility ability may allow LMC midwives decision-making control by choosing how and when to direct their attention and resources to prioritise tasks within the autonomous scope of the unpredictable nature of their profession.

To be able to flex the home boundary, an individual must feel that they have more decision-making control over work time and psychological detachment, which then reduces family-work conflict (Ashforth et al., 2000; Thomas & Ganster, 1995). Therefore, theoretical arguments (Ashforth et al., 2000; Clark, 1998) and empirical evidence (Bulger et al., 2007; Kossek et al., 2006) are cogent with results in that

effective transitioning between role demands of the family domain (e.g., being a parent) and role demands of the work domain (e.g., being a midwife) is due to increased family flexibility ability (e.g., control of situations due to support from local whanau), which explains a decrease in work fatigue. A consequent theoretical contribution to the work-life boundary management literature (Ashforth et al., 2000; Edwards & Rothbard, 1999; Nippert-Eng, 1996) was by theorising and documenting the role of family flexibility ability of boundaries between family and work, i.e., individual enhancement as a result of family flexibility ability (as behavioural control for segmentation or integration). Furthermore, this study expanded the boundary management literature by offering empirical evidence of the antecedents (i.e., workload) and the effects (i.e., work fatigue) of boundary strength (i.e., family flexibility ability) when boundaries between the family and work domains are encroached (Casper et al., 2013; Guest & Conway, 2002).

In summary, this study builds on recent advances in the fields of OB and management to propose ways of decreasing fatigue through an increase in family flexibility ability. Propositions further linked to the literature state that psychological or physical movement abilities between roles and domains simplify and minimise role conflict in the world around them (Ashforth et al., 2000; Hall & Richter, 1988; Nippert-Eng, 1996; Zerubavel, 1991). This study's rationale on the role of family flexibility ability, supported by empirical evidence, consequently contributed to research on perceived control (Hockey & Hockey, 2013) meaning that support of the family domain will increase the workers' sustainability on a physical, mental, and emotional level.

5.2 Practical implications

The continuity of the midwifery care model has been demonstrated as the healthiest maternity care provision for mothers and babies (Sandall et al., 2016) and as an empowering and satisfying career for midwives (Dixon et al., 2017; Kirkham, 2011; Moncrieff, 2018). However, because the NZ COC model is unique in its regulation,

provision of service, and funding it poses unique challenges (Gilkison et al., 2016; Wiegers, 2007) for policymakers in designing optimal work conditions for midwives. This is in part because of the difficulty in comparing this service to any other public service profession in or outside NZ (Cronie et al., 2019; Ministry of Health, 2020; Thiessen et al., 2020).

Across all three models (physical, mental, and emotional) tested in the current study, the effect of family flexibility ability was small but significant as confirmed by Evans (1985). The relevance of this study is that there is something within the LMC midwives' behavioural control (family flexibility ability) that mediates the relationship between workload and work fatigue. This lends them an overall sense of empowerment resulting in a decrease in their work fatigue levels. Besides the routine care provision that the midwives can plan, the practical implication of being on-call for all pregnancy, labour and birth, and postnatal care concerns cannot be controlled. Their perpetual on-call availability may easily lead to feelings of being 'out of control'. However, by increasing their family flexibility ability through personalised support structures (Donald et al., 2014), they may experience a 'feeling of control' enabling them to 'take control' of the 'uncontrollable' nature of their autonomous, but restrictive profession. An increased family flexibility ability may entail that they can organise their needs towards available resources (e.g., a shared au pair system) that allow them to proceed with their 'uncontrollable' emergency calls of labour and birth that account for a high percentage of their income. Caseload is also inextricably linked to the financial arrangements of self-employed LMC midwives because caseload size determines their income level (New Zealand College of Midwives, 2019). Therefore, the practicality of the results is that the recommended workload could be maintained with increased family flexibility ability due to enhanced decision-making control and reduction in work fatigue to sustain an LMC midwife's requisite income. Previous research confirmed that

LMCs need to be innovative regarding their control to plan for adequate rest and consider varied approaches in their practices (Gilkison et al., 2016). Existing evidence also overturns assumptions that support midwives to take control of feelings of guilt when they are unable to be present, but to accept that time off is necessary to protect their personal wellbeing and for the safety of the mothers and babies (Donald et al., 2014; Schaddelee et al., 2019).

Results regarding increased levels of family flexibility ability also imply that LMC midwives can transition between roles when needed due to domain-relevant behavioural demands (Kossek & Lambert, 2004; Kossek et al., 2006; Perlow, 1998; Schriber & Gutek, 1987). Family flexibility ability enabled transition out of the family role when required (Winkel & Clayton, 2010a) and increased personal resilience in midwives, enabling them to cope better with fatigue (Hunter & Warren, 2014). Fenwick, Lubomski, et al. (2018) further added that control over family-work balance would benefit fatigue levels, specifically among midwives. This study's findings were reflected in previous research results that midwives' satisfaction regarding their work environment was strongly associated with an increased sense of empowerment, support, and access to adequate resources (Hildingsson et al., 2016). The results also suggested that it may be possible on a practical level to mitigate fatigue and the effects of fatigue without reducing the demands and physical energy needed to complete their tasks (Hockey & Hockey, 2013; Johnston et al., 2018). Research reinforced that midwives need to manage their practices by having defined boundaries, collaborative participation in good relations with work colleagues, and support and encouragement from family and friends to enable practical arrangements (Donald, 2012; Gilkison et al., 2015). Access to professional supervision and life coaching was also confirmed as a valuable strategy (Smythe & Young, 2008). It is about providing a space where the LMC midwives can engage in self-reflection; re-evaluating current circumstances and

identifying needs to improve areas of personal decision-making control over their family domain.

5.3 Limitations

Clarifying the limitations of this study provides an improved understanding of the conditions for the interpretation of its results and for a holistic comprehension of the study. Firstly, although an online survey provider is generally considered more objective, it was not necessarily more accurate (Podsakoff et al., 2003). Even if online surveys had the benefit of anonymity, there was a risk of manipulated data and ambiguous answers due to the lack of face-to-face communication between researchers and respondents (Buhrmester et al., 2018; Cheung et al., 2017).

Secondly, there was a risk of potential common method variance as only one data source of a self-report survey was used (Podsakoff et al., 2003). Therefore, there may still be concerns regarding the validity of self-reports. Although this study followed an objective approach, the perception of workload, work fatigue, and family flexibility ability explored in this study were subjective opinions (personal perceptions). It follows that different workers perceive different degrees of fatigue when doing the same amount of work in the same working environment (Åkerstedt et al., 2004). Anonymity and confidentiality were assured during the research process to reduce possible social desirability (Podsakoff et al., 2012). The possibility of method bias was therefore, reduced as LMC midwives were able to respond anonymously (Podsakoff et al., 2012).

Thirdly, reliability of the analysis could be affected as the coefficient alpha indices among the work fatigue subscales ranged from $r = .95$ to $r = .98$, which were substantially-high scores. However, these reliability scores were consistent with high-reliability results ranging from $r = .94$ to $r = .96$ of the measurement of developers Frone and Tidwell (2015). High reliability may also be an indication of redundancy in

cases where similar questions were articulated differently, which further increased the alpha value.

Lastly, a strength of this research was the large sample size of 301 participants. This large sample size enabled consistent average values that had a lower margin of error and were more precise (Fox et al., 2009). Furthermore, a diverse age range over a large geographical area contributed to reliable generalisation. However, as the sample data set was only from the COC NZ model, it is suggested that the study be expanded to include other maternity systems that provide continuity of midwifery care as a part of their public health service (e.g., the Netherlands, regions within Canada). But NZ's unique contractual payment structure makes direct comparisons challenging (Ministry of Health, 2012).

5.4 Future research directions

Previous research mainly focussed on outcomes of midwifery as a profession such as burnout, work-life balance, boundary management strategies, resilience, and intention to quit (Dixon et al., 2017; Fenwick, Lubomski, et al., 2018; Hildingsson et al., 2016; Hunter & Warren, 2014). Although several studies examined the flexibility of boundaries and the role of fatigue levels (Ashforth et al., 2000; Kossek et al., 2006; Thomas & Ganster, 1995), these studies did not use LMC midwives as their population nor did they test the mediating role of family flexibility ability in the relationship between work fatigue and workload. The present study represents an extension of the current literature as it identifies that family flexibility ability has a mediating role in the relationship between workload and work fatigue. More research investigating boundary flexibility in midwifery is warranted to support their well-being in the role that they play to decrease maternal and new-born mortality.

It may be relevant to explore whether individuals with higher family flexibility ability experience different advantages such as lower family stress. Additionally, it will be beneficial to analyse the limitations of family flexibility ability with respect to: (a) when it is useful for reducing adverse outcomes and (b) when it becomes a source of other problems. Exploring flexibility-related ways to counter fatigue will be an essential part of future research. Although the most apparent countermeasure to fatigue is to eliminate it by resting and recuperating, this is not always possible for LMC midwives. It is therefore recommended to look beyond variables that may be predictive of adverse outcomes in the family-work domain like self-care and resilience. Future research could examine variables that may have a mediating or moderating effect on family flexibility ability such as family support, professional supervision, and life coaching, which may also contribute to positive outcomes to countermeasure fatigue. Consequently, greater emphasis can be placed on the re-orientation of maternity services to enable midwives to work in midwifery COC models where flexible family-centred patterns of working are possible (Fenwick, Lubomski, et al., 2018). For example, promoting normal birth in small, local, midwifery-led birth centres. Local, community provision of maternity care by midwives may further situate workers closer to their home and family. Some midwives do not have a high caseload but due to the substantial distances they have to travel, their work situation results in increased time on the job without financial compensation (e.g., for rural Northland regions like Kaitaia). Ensuring midwives can work in caseload models with increased levels of family flexibility ability would not only be an effective use of resources and improve the fatigue levels of the midwives, but, as Newton et al. (2016) argue, will also support sustainability. Internal and external support mechanisms may encourage midwives to think more creatively about family-friendly work environments and emphasise the importance of self-care management (Donald, 2012; Welfare, 2020).

5.5 Recommendations for the midwifery profession in NZ

The LMC midwives have contractual services with New Zealand's Ministry of Health (Ministry of Health, 2019). Therefore, as part of their contract renegotiations, the inclusion of clauses that provide support as a self-help strategy (Welfare, 2020) for increased family flexibility ability could be suggested. Increased family flexibility ability should be part of the practice's arrangements. It may include the provision of different forms of support or funding specifically in the family domain such as paid au pair models including the whanau to support essential workers to take care of the aged, disabled, or people with poor health at home. Further suggestions include implementation of personalised internal support packages that specifically address the different boundary management patterns like dissonance between personal midwifery philosophy and work life (Welfare, 2020).

Interventions in the family domain, reflected in related research, were evident from covariance analysis which confirmed enhancements of the Satir family therapy model (Bozorgmanesh et al., 2016). The Satir family therapy model includes psychotherapy that nurtures family change and development as a system of interaction that significantly increased family cohesion and flexibility (Bozorgmanesh et al., 2016). The intervention method of the Satir family therapy model was explicitly designed to assist families in coping effectively at a process level to enhance family flexibility ability (Bozorgmanesh et al., 2016). Midwives further need to develop excellent communication skills to negotiate in conflict situations to enable a culture that is self-preserving and not self-sacrificing.

However, the practical implication may be challenging due to the unique nature of the LMC midwives' jobs and their practice arrangements (Wieggers, 2007). Research has shown that company policies can affect the family flexibility ability of their employees (Chen et al., 2014; Rothbard & Ollier-Malaterre, 2015) however, LMC

midwives are not employees; they do not have a union or, as sole traders, have protection under Worksafe NZ (New Zealand College of Midwives, 2017). Following a review of the literature, the research identified advantages of different employment models, organisation of practice, and compensation methods (Thiessen et al., 2020), but each of these has its own set of drawbacks (Cronie et al., 2019). Alternatively, instead of being contracted by the MoH, another suggestion may be that the MoH pays salaries to midwives and only specifies caseload size per practice. However, research has shown that although the salary basis of payment was practical, the preparation of a fee schedule for midwifery care would involve difficult comparisons with the fee schedule and co-pay charges for obstetrical services rendered by physicians and will defeat the holistic purpose of the autonomous profession of the COC model (Thiessen et al., 2020).

Alternatively, the provincial government provides external support mechanisms like funding to support setting up a practice (with an administrator). This links to the system used in Ontario (Canada) where the administrator is responsible for the organisation of medical equipment, support staff, office rent, telephone, and travel (Giacomini & Peters, 2008) and acts as a business manager for the LMC midwife. The administrator further takes responsibility to log their working hours and regulate their caseload size, which is limited to 4-6 women per month with regular weekends or weeknights off duty. Research confirmed that provision for funding contributes to the legitimacy and autonomy of the midwifery profession on a symbolic and instrumental level, including their status relative to professions such as medicine and nursing (Giacomini & Peters, 2008). Family flexibility ability could be increased and sustained through the administrator who manages their yearly planned time off. In terms of financial arrangements, the administrator sets clear procedures for back-up midwives who cover for the midwife when on leave. All midwives in the practice must think through, negotiate, and reach a holistic agreement about taking regular time off;

aligning caseload size; working together as a practice team; committing to regular meetings; having clear financial arrangements; and, sharing their team goals with each other before appointing a new LMC midwife as part of their practice. The procedures need to be revisited and articulated regularly to optimise their positive effect on a sustainable LMC midwifery practice. Practice arrangements by themselves will not sustain LMC midwives as they are an essential part of a complex whole. Other NZ studies also support that having effective working relationships with their practice partners, setting boundaries and having personal time off were central to the sustainability of a practice (James, 2013; McAra-Couper et al., 2014). Further arrangements are managed by the administrator with the caseload in advance in terms of back up provisions. The practice then has a fixed, reliable income for funding the practice including all administrative tasks (e.g., rosters, maternity data claiming, taxation etc.) and requires midwives to work together in structures that are aligned to what Gilkison et al. (2015) found in their sustainability study. Empowering the LMC midwife to focus on the joy of the midwifery practice, trusting relationships, and managing the unpredictability of being on-call are precious attributes that should be encouraged with ongoing support in the practice to increase family flexibility ability. Consequently, NZ's MoH increases LMC midwives' family flexibility ability to improve movement between domains which, in essence, gives the midwives freedom, a sense of decision-making control to work at an optimal level with less fatigue, and may even enable them to partake in actions of job crafting and self-care (Ashforth et al., 2000; Clark, 2000; Donald, 2012; Hall & Richter, 1988; Nippert-Eng, 1996).

5.6 Conclusion

Considering all the evidence, I was able to determine that the cost of work fatigue influences personal outcomes which may include decreased physical, mental, and emotional health (Bakker & Demerouti, 2007; Frone & Tidwell, 2015; Uchmanowicz et

al., 2019) and reduced organisational outcome and performance (De Vries et al., 2003; Ilies et al., 2015). Monitoring fatigue levels is relevant for all industries (Cohen et al., 2017), but especially crucial for safety-sensitive operations such as the transportation, health care, and energy industries (Lerman et al., 2012)

A thorough investigation of related studies led to the belief that no other research had investigated the role of family flexibility ability as a mediator in the relationship between workload and work fatigue. Reviewing the boundary, JD–R, and motivational control theories made it evident that high workload was not the only contributor to fatigue (Foucreault et al., 2018; Hockey & Hockey, 2013). Family flexibility ability was related to decision making control, as confirmed in previous research, and played a role in decreasing the experience of an individual's fatigue levels (Foucreault et al., 2018; Hockey & Earle, 2006). Work is an inevitable part of life and although most of the work-life literature focusses on conflict caused by competing roles and demands between the family and work domains, research indicated that work could have a positive effect on employees' non-work lives and vice versa (Barnett & Hyde, 2001; Grzywacz & Marks, 2000). This study contributed to the literature by identifying that family flexibility ability (resource), when increased, may enable an individual to have a sense of decision-making control when planning their daily activities according to changing circumstances and, consequently, experience less work fatigue with associated frustration, worrying, and resentment (demands). Building high levels of family flexibility ability, through mutual support for and from others, may imply advancements in sustainability of fatigue levels in any profession with high and unpredictable workloads. With the boundary, JD–R, and motivational control theories, we can understand, explain, and make predictions about work fatigue, workload, and family flexibility ability.

The study adopted an OB and management approach where the focus was on the wellbeing of a population of LMC midwives to work sustainably in a unique COC model in NZ. Worry, frustration, and resentment are common elements of not only the lives of LMC midwives, but human existence. Evaluation of fatigue levels and personal wellbeing is an ongoing process. Knowledge of the principles of a work-life balance, the importance of family flexibility, and associated boundaries should therefore begin when preparing for your career. NZ midwifery students should take full advantage of the three key processes available to them that include mentorship, preceptorship, and clinical supervision (Lennox et al., 2008). Midwives should further be educated to network within and across their social and geographical areas to enable opportunities to choose work environments best suited for their family life and associated needs. Furthermore, a variety of literature on fatigue indicated that a health professional was most at risk when they did not attend to self-care (Butler et al., 2009). The present study concludes with recommendations for LMC midwives to consider family therapy and promote self-care towards ensuring a sustainable and supportive midwifery practice that leads to increased flexibility and perceived decision-making control.

Midwives will benefit from a structured practice management with controlled administrative support, collaborative participation, and access to flexible and personalised childcare arrangements (i.e., funding whanau, au pairs, sharing home carers) that, in turn, support their transition between roles and ultimately yield advantages to all concerned. NZ needs to present research demonstrating ways to sustain this important, but intensive on-call, COC model of working. The findings will support LMC midwives and their service providers to realise and implement measures to reduce work fatigue effectively, thereby allowing midwives to work more efficiently, healthily, safely, and happily. Findings could also be generalised to other countries and industries. The current study's results accomplished more than only to confirm that

family flexibility ability had a mediating role in the relationship between workload and work fatigue. The study's results indicate increased ability to be flexible in your family domain may play an essential role in controlling the worry, frustration, and resentment experienced not only in LMC midwives in NZ, but also in other industries and countries. Carnegie's (1970) statement, although in a different context, may be plausible in this case due to the consequences of a lack of decision-making control, incapacity to move between roles of the family and work domain roles, role conflict, and inability to maintain a work-life balance. Resentment and frustration when COC midwives are not able to support a client's labour and birthing process, tedious administration, or worrying whether their dependents will be looked after while attending to a critical situation contribute to fatigue. The unique reality and challenges of the LMC profession is the constant need for alertness and potential acuity of the care. Furthermore, the associated unpredictable need for high-risk interventions and the requirement for flexibility when needed is directly linked to a possibility that they might not receive their full salary if such an event is missed or unsuccessful. Therefore, this study's results conclude with Carnegie's (1970) probe that in a work environment, workload is not the only reason for fatigue. Hence, maintenance of family flexibility ability and consequent decision-making control may be an alternative way to support fatigue levels not only for LMC midwives, but also for any worker across professions.

6 References

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7 Appendix

Ethics approval



Auckland University of Technology Ethics Committee (AUTC)

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13 March 2019

Tagonei Mharapara
 Faculty of Business Economics and Law

Dear Tagonei

Re: Ethics Application: → 19/33 Midwifery Work & Wellbeing (MidWoW) Study

Thank you for your request for approval of amendments to your ethics application.

The minor edits to the questionnaire are approved.

I remind you of the Standard Conditions of Approval.

1. → A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through <http://www.aut.ac.nz/research/researchethics>.
2. → A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through <http://www.aut.ac.nz/research/researchethics>.
3. → Any amendments to the project must be approved by AUTC prior to being implemented. Amendments can be requested using the EA2 form: <http://www.aut.ac.nz/research/researchethics>.
4. → Any serious or unexpected adverse events must be reported to AUTC Secretariat as a matter of priority.
5. → Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTC Secretariat as a matter of priority.

Please quote the application number and title on all future correspondence related to this project.

AUTC grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. If the research is undertaken outside New Zealand, you need to meet all local legal and ethical obligations and requirements.

For any enquiries please contact ethics@aut.ac.nz

Yours sincerely,



Kate O'Connor
 Executive Manager
 Auckland University of Technology Ethics Committee

CC: → Janine Clemons