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Cardiovascular disease risk prediction in older people: a qualitative study

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“Cardiovascular disease risk prediction in older people: a qualitative study.”

Abstract

Background: Despite cardiovascular disease (CVD) risk prediction equations becoming more widely available for people aged 75 years and over, views of older people on CVD risk assessment are unknown.

Aim: To explore older people’s views on CVD risk prediction and its assessment.

Design and Setting: Qualitative study of community dwelling older New Zealanders.

Methods: We purposively recruited a diverse group of older people. Semi-structured interviews and focus groups were conducted, transcribed verbatim and thematically analysed.

Results: Thirty-nine participants (mean age 74 years) of Māori, Pacific, South Asian and European ethnicities participated in one of 26 interviews or three focus groups. Three key themes emerged, (1) Poor knowledge and understanding of cardiovascular disease and its risk assessment, (2) Acceptability and perceived benefit of knowing and receiving advice on managing personal cardiovascular risk; and (3) Distinguishing between CVD outcomes; stroke and heart attack are not the same. Most participants did not understand CVD terms but were familiar with ‘heart attack,’ ‘stroke’ and understood lifestyle risk factors for these events. Participants valued CVD outcomes differently, fearing stroke and disability which might adversely affect independence and quality of life, but being less concerned about a heart attack, perceived as causing less disability and swifter death. These findings and preferences were similar across ethnic groups.

Conclusion: Older people want to know their CVD risk and how to manage it, but distinguish between CVD outcomes. To inform clinical decision making for older people, risk prediction tools should provide separate event types rather than just composite outcomes.

Table 2a to support Abstract here:

How this fits in

Cardiovascular disease (CVD) risk prediction equations are increasingly available for people 75 years and older and predict a combined set of outcomes. We explored the views of older

people on CVD risk assessment and their preferences regarding prediction of different CVD outcomes.

Our findings suggest older people want to know their CVD risk and how to manage this, but they distinguish between CVD outcomes, fearing a stroke and being less concerned about a heart attack.

Developers of risk prediction tools should consider both combined CVD outcomes and providing separate estimates for future coronary and stroke events.

Introduction

Cardiovascular disease (CVD) is a leading cause of health loss and mortality in older people.¹ In terms of preventive care, there is evidence that reducing smoking,² blood pressure (BP),³ and lipids⁴ are associated with improved CVD outcomes for adults at any age, with the benefits largely determined by patients' pre-treatment CVD risk (using five-year or 10-year risk equations as key prognostic tools). CVD risk prediction equations are available for older people including the United Kingdom QRISK3 for people aged 25-84 years;⁵ the United States Pooled Cohort Equations for people aged 40 to 79 years;⁶ the European Systematic COronary Risk Evaluation in older people (SCORE O.P.) for people aged 65-80 years;⁷ and the Canadian CVD Population Risk Tool (CVDPoRT) for people aged 20-105 years.⁸ In New Zealand, there are new primary prevention CVD risk equations for people aged 30-74 years⁹ but as yet no specific equations for those 75 years and older. National guidelines recommend that healthy older people with few co-morbidities and a life expectancy of greater than 5 years have their CVD risk assessed and managed in the same way as younger people and that risk management is at the discretion of the clinician taking into consideration CVD risk, potential benefits and risks of treatment, and patient preferences.⁹

10

We found qualitative studies examining the preferences for discussing prognostic information in older adults with late-life disability,¹¹ those with heart failure^{12 13} and those with cancer, chronic obstructive pulmonary disease or other chronic disease.¹³⁻¹⁵ The recurring theme was that older people wanted to discuss their prognosis, to be prepared, anticipate need for treatment or potential consequences and to plan ahead.^{15 16} However,

we could find no studies that investigated older people's views about CVD risk assessment, would a risk prediction estimate be of value to them, would they want to know their CVD risk, the outcomes they would want to avoid (e.g. death and/or hospitalisation, stroke and/or heart attack), and whether preferences for CVD prognosis might vary e.g. across ethnicity groups, or sex.

We aimed to explore the views of a diverse group of older New Zealanders regarding CVD risk prediction and its assessment.

Methods

Design and Setting: We employed a descriptive qualitative methodological approach using focus group and semi-structured interview methods, with an inductive and iterative thematic analysis stance.¹⁷ Potential participants were community dwelling older New Zealanders aged ≥ 75 years for European and ≥ 65 from four ethnic groups: Māori, Pacific (including Tongan, Samoan, Niuean, Cook Island), South Asian, and European ethnicities. These four ethnic groups were chosen because the majority of older people are European; Māori (indigenous people of New Zealand), Pacific and South Asian because the latter three groups experience CVD events on average 10 years earlier than NZ Europeans.¹⁸⁻¹⁹

Recruitment: Budgetary constraints influenced our sample size and we purposefully recruited up to six older people from each ethnic group, although we did not turn away interested participants. As this was a small study we were not aiming for data saturation, as we expected a diverse range of rich data, due to the heterogeneity of our participants.

We recruited participants using flyers at three general practice clinics, local libraries, social groups such as University of the Third Age (UoTA), places of worship, and other community groups, and by word of mouth. At two UoTA events, DAT gave a non-CVD presentation before introducing the project, so for some participants a relationship was established prior to participation. Participant information sheets outlined details of the research and researchers and invited potential participants to take part in a single one-to-one interview with the researcher at a place of their choice, or as part of one focus group with people from the same ethnic group.

Data Collection: We developed a topic guide (Supplementary Topic Guide ST1) asking participants what they understood by the term CVD, if they were aware that the risk of

experiencing CVD was able to be predicted (CVD risk assessment), whether they would want to know their risk, what CVD outcomes were of most concern to them, and their preferences regarding CVD prediction. The topic guide was piloted with both male and female elders and language (medical jargon) adjusted accordingly. Two of the Tongan focus groups were completed in Old Tongan, and the rest in English. All interviews and focus groups were digitally recorded, translated as appropriate, transcribed verbatim and written up as a de-identified transcript for participants to comment on. Twelve participants commented on the accuracy of transcribing and maintenance of confidentiality. Tongan Elders were member checked, receiving an overview of their findings via SM and SF. They and other participants await this publication which will be shared with all those requesting it.

Cultural Considerations: We employed ethnic-specific researchers to help with recruitment, data collection, interpretation and analysis in populations where spoken English was poor. This ensured analytical processes captured cultural and social nuances, and findings were embedded within specific cultural contexts. For example, ML and EF highlighted in the analyses the deep respect Pacific Peoples had for medical practitioners, but that was entirely different to their devotion to their God. We worked in partnership with Tongan elders to arrange separate gender focus groups to enable female participants to speak freely. We provided refreshments to participants as an expression of creating a safe place to share stories and demonstrate generosity.²⁰ Talanoa, a Pacific research methodology, was used to guide the interviews and focus groups to foster a culturally safe environment that enabled participants to feel comfortable in sharing their experiences.²¹ We used a Mātauranga Māori approach,²² guided by a lead Māori researcher, which supported key Māori values of tikanga (cultural principles guiding appropriateness of action and behaviour), and kawa (cultural practices) to be embedded throughout the project to honour sharing of knowledge, the mana (essence) of the person sharing it and protecting knowledge (kaitiakitanga).²³

The Research Team

DAT (PhD), an experienced qualitative researcher working in older people's health, was the lead researcher and responsible for recruitment, data collection, analysis and delivery of project objectives. DAT completed the European cohort interviews, most South Asian (5/6)

and Māori (6/7) interviews and facilitated one focus group in English for Tongan Elders. ML (MSc) and EF (MSc) conducted further interviews for Pacific, Māori and South-Asian participants. SF and SM (Tongan investigators) led two focus groups (one male and one female participants) in Old Tongan which were translated and transcribed by ML, with verification by SF (MSc) and SM (MBChB). Field notes were captured after each interview or focus group to contextualise the shared information and to add new questions to the topic guide as appropriate. Final analysis teams were: European cohort DAT, SW (PhD) and KW (PhD); Pacific cohort DAT, EF, ML and SF, South-Asian cohort DAT and PS (PhD), and Māori cohort DAT and Aria Graham (PhD). At the time of the study, SF was based in elder Public Health policy services, SM was a retired general practitioner and the rest of the team were in academic research positions. Each analysis team used personal reflection and cultural and contextual guidance from each other to ensure findings were grounded in the reality of the participant and their community. Potential participants opted into the study, and two people who expressed an interest in the study were unable to attend due to CVD-related hospitalisation. However, due to our data recruitment strategy it was unclear how many potential participants declined to participate.

Analysis

Each participant was assigned an identification code for the analysis according to their ethnicity, sex and participant number in that ethnic group. For example the first Māori male participant is identified as M-M1 and the third male South Asian is SA-M3. An iterative inductive approach to thematic analysis was used,¹⁷ due to its flexibility in relation to the data it is applied to and because it is not tied to one epistemological stance. To honour the cultural and social perspectives of each ethnic group, we analysed each group separately followed by an overarching analysis. Steps included: (1) familiarisation with the data; (2) generation and refinement of codes; (3) searching for themes which were then named and refined.¹⁷ To ensure reliability and validity, at least two members of the team reviewed all data, codes and themes and agreed coding and naming decisions at each of the four coding iterations before progressing. This validity and reliability were enhanced by our ethnic specific researchers who contextualised findings, the use of quotations to demonstrate key findings and honour participant stories and the consolidated criteria for reporting qualitative research (COREQ) to guide reporting.²⁴ We did not use a data management tool to support

coding, as we wanted the chance to debate the analytical process in real time with the whole research team until consensus was achieved,

Results

Table 1 describes the thirty nine participants aged 61 to 91 years (mean age 74 years; 19 female, 20 male) who were recruited from four ethnic groups: Māori (7), Pacific (15), South Asian (8) and European (9). All but two participants had one or more of the following diagnoses: diabetes, hypertension, heart failure, atrial fibrillation, angina, or history of coronary bypass or stent surgery.

Table 1 here

Participants took part in one of 26 interviews and three focus groups. Interviews ranged from 25 to 60 minutes, and focus groups from 20 to 40 minutes. Most interviews were conducted in the participant's home, one in a church, two at participant's workplaces, and two at the participant's general practice clinic. Three South-Asian participants had a non-participating member of their family present at the interview for support, and two South Asian couples were interviewed together as husband and wife. Three focus groups were conducted with Tongan elders in their weekly meeting space. Two focus groups were conducted in Old Tongan (one with four male elders; and one with five female elders, two accompanied by their niece) and one in English (two female elders).

A series of iterative coding and recoding resulted in three superordinate themes, each with 3 or 4 subthemes and these are presented in Table 2.

Table 2 here

1. Poor knowledge and understanding of cardiovascular disease and its risk assessment.

Few participants recognised or understood the term 'cardiovascular disease', although most knew what 'having a heart attack or stroke' meant. Some participants were aware that the risk of experiencing a CVD event was able to be predicted, but the majority were not. Many Tongan participants were shocked to discover that CVD risk could be predicted and

managed, reporting they would have liked to have known this when they were younger so they could have done something about it. Other Pacific participants thought a diagnosis of CVD was akin to a death sentence, while South Asian participants thought it was inevitable. Many participants understood their own health to follow that of their own family history, for example, if their mother had a stroke then they also would have a stroke. Please see Table 3 for exemplar quotes.

Table 3 here

2. Acceptability and perceived benefit of knowing and receiving advice on managing personal cardiovascular risk.

Most (37/39) participants wanted to know their CVD risk, although some believed that predictions about the future were in the hands of God and not their general practitioner (GP). Most participants wanted to know what they could do to reduce their CVD risk, and were aware of CVD lifestyle recommendations concerning diet, exercise, smoking, and alcohol as well as CVD preventive medications. The Tongan elders said they participated in the study to learn about CVD so they could share this new knowledge with their children and grandchildren to empower better health and lifestyle choices. Some participants accessed information via the internet, but many wanted information in a form it could be shared with family either verbally and through a printed document. Please see Table 4 for exemplar quotes.

Table 4 here

3. Distinguishing between CVD outcomes; stroke and heart attack are not the same.

Participants perceived stroke as a separate disease unrelated to heart disease. They feared a stroke, which was associated with prolonged hospitalisation adversely affecting their ability to think, communicate, their quality of life and being a burden to the rest of the family. They were less concerned about a heart attack, believing it could be treated, for example with stents, and caused less disability or a swifter death. Participants believed that the risk of stroke and heart attack were different because a stroke was much more devastating in terms of personal outcomes and potential impact on family. Consistent with this understanding, most participants believed that risk for the different CVD outcomes

should be predicted separately. These preferences regarding CVD risk prediction and outcomes were consistent across participants, regardless of ethnicity. Please see Table 5 for exemplar quotes.

[Table 5 here](#)

Discussion

Strengths and Limitations

To our knowledge, our study is the first to investigate elders' preferences regarding CVD risk prediction. A strength of the study is the inclusion of an ethnically diverse group of older people Māori, Pacific, South Asian and European ethnic groups from different geographical sites in New Zealand, including city, rural and urban. Our team included ethnic specific researchers to contextualise our findings and sense-check data within specific ethnic groups. Embedded within our methodologies were key processes to ensure the trustworthiness of our findings; these included collaboration with ethnic-specific researchers to ensure credibility, dependability and contextualisation of data; reflexivity of each researchers when engaged with coding re-iterations, so the stories of the participants came through and not our own. Qualitative data may not be completely transferable but given the convergence of views, our findings are likely to be reflected in similar population groups.

Important limitations are that participants were a small sample of self-selected volunteers living at home or with extended family or in retirement complexes, and may not be representative of all older people, in particular those in aged residential care. Furthermore, this was a small study and we did not aim for data saturation, as due to the heterogeneity of our participants we expected a diverse range of rich data. However, for this question on the views of older people on CVD risk prediction, data saturation was reached with only three opinions; the majority wanting to know their risk so they could lessen this, that stroke risk rather than coronary was more important believing the only person who should deliver such news was their God.

Comparison with existing literature

It is not surprising that participants did not understand the term 'CVD' because 'CVD' is a medical term for a mix of diagnoses (e.g., coronary heart disease, stroke, peripheral vascular

disease, heart failure) due to arterial atherosclerosis. While CVD medical management seeks to mitigate the pathophysiological impact of the latter, the benefit and harms of treatment are usually conveyed to patients by clinicians according to risk factor (e.g. lower your blood pressure or cholesterol) or common CVD outcomes (e.g. lower your risk of a heart attack or stroke).¹⁸

However, it is perhaps surprising that participants were unaware that CVD risk could be predicted and managed, given that many were on CVD preventive medications. This may be in part because in New Zealand, the Ministry of Health has promoted CVD risk assessment as having a 'heart and diabetes check' and that these checks are recommended for people younger than 75 years.^{10,18} With the exception of two participants, there was substantial interest in the fact that the risk of CVD outcomes could be predicted and a desire to be offered, to know, discuss and understand their own prognosis.

Our findings are consistent with other studies in that the majority of participants are reported to be interested in their prognosis or individualised survival statistics.^{11,15,19} For example, in a study of 60 American elders (African-American, Chinese American, European-American, Latinos and other) 75% indicated they would want to discuss prognosis with their doctor to prepare logistically or financially, emotionally or spiritually; and to involve family and friends, to make health-related decisions, and make the most of the time they have left.²⁵ However, some do not. Like our study, one in four of their participants would prefer not to discuss prognosis as they did not think the information was useful, was too emotionally distressing or that doctors cannot estimate prognosis (only God can).²⁵ Furthermore, similar to our study a sense of helplessness from having a family history (e.g. my mother had a stroke and therefore so will I) has also been expressed. In a study of older Chinese women on health and cancer screening,²⁰ the authors report themes of genetic predisposition (e.g. inheritance from their ancestors) and a sense of fatalism towards illness (what will happen, will happen).²⁶

Earlier CVD risk equations have been developed for separate categories of CVD outcomes. For example, in 1991 Anderson et al. published separate equations for myocardial infarction, coronary heart disease (CHD), death from CHD, stroke, cardiovascular disease, and death from cardiovascular disease.²⁷ However, more recent equations which have included older patients, have comprised only one composite outcome⁵⁻⁸ Our findings suggest that, for older

people, it is important for CVD risk prediction tools to not only identify the magnitude of CVD risk, but also to separate outcome such as non-fatal stroke, non-fatal CHD, fatal CVD and all-cause mortality. These separate prognostic outcomes are important for discussions and decision-making regarding the potential benefits and harms of treatment, especially when the potential harms (adverse-effects) may be experienced immediately while the potential benefits may only be gained after many years. Our study is also consistent with national guidance¹⁰ and findings highlighted by Jansen et al²⁸, which suggest participants want to know their prognosis and be involved in clinical discussions and decisions.

Implications for research and practice

Older people want to know their CVD risk and how to manage it and welcome individualised clinician advice. However, because they distinguish between CVD outcomes such as stroke and myocardial infarction, CVD risk prediction algorithms should be developed to provide separate prognostic indicators for the separate CVD outcomes, taking into consideration both the magnitude of CVD risk and the type of CVD outcome. Importantly, they valued interaction with their general practitioner and trusted them to make the best decision for them as an individual. A recent systematic review of 47 clinical practice guidelines on CVD prevention, found that although older people are mentioned in most guidelines, the information provided to guide treatment for older people is vague and limited.²⁹ Clearer guidance is needed for tailoring management to each older person's context and facilitating greater involvement in shared decision making which considers patient preferences and goals.¹⁸

Conclusions

Older people want to know their CVD risk, how to manage it, welcome individualised clinician advice and be involved in clinical discussions and decisions. However, because they distinguish between CVD outcomes such as stroke and myocardial infarction, CVD risk prediction algorithms should be developed to provide separate prognostic indicators for the separate CVD outcomes, taking into consideration both the magnitude of CVD risk and the type of CVD outcome.

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Ethical considerations: This study was approved by the University of Auckland's Human Participants Ethics Committee in 2017 (Approval number 018358).

Competing Interests:

The authors declare that there are no known conflicts of interest.

Authors' Contributions

SW and KW contributed to the conception, design, analysis and interpretation of the work. DT contributed to the acquisition, analysis and interpretation. PS, contributed to the analysis and interpretation of the work. ML, EF, SM, and SF contributed to the acquisition and interpretation of the work. DT and SW drafted the manuscript. KW, ML, EF, SM, SF and PS critically reviewed the manuscript. All gave final approval and agree to be accountable for all aspects of the work ensuring integrity and accuracy.

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Tables

Table 1: Participant characteristics and method of data collection

	Total N=39	Women	Mean age (years)	Range (years)	Interview	Focus groups
<i>Ethnic Group</i>						
NZ European (E)	9	5	81.0	73-91	9	
Māori (M)	7	2	69.6	65-76	7	
Pacific (T), (N) (S) (CI)	15	10	72.2	61-88	4 (S=2) (N=1) (CI=1)	11 (T)
South Asian (SA)	8	2	72.3	65-83	8*	

*Two interviews included both husband and wife

Table 2: Hierarchal Coding Framework

Table 2 Hierarchal Coding Framework
1. Poor knowledge and understanding of cardiovascular disease and its risk assessment. <ul style="list-style-type: none">1.1 I don't know what it (CVD) means.1.2 How do I avoid a risk of stroke or heart attack?1.3 My genetics mean I won't get a heart attack.1.4 Will risks of medication outweigh any benefits?
2. Acceptability and perceived benefit of knowing and receiving advice on managing personal cardiovascular risk. <ul style="list-style-type: none">2.1 We need to know before anything happens.2.2 I do not want to know2.3 I would do anything to reduce risk.2.4 If I knew I was high risk I would do more about it.
3. Distinguishing between CVD outcomes; stroke and heart attack are not the same. <ul style="list-style-type: none">3.1 I would prefer to have a heart attack.3.2 I want quality of life, not dependence.3.3 I don't want to die of any.

Table 2a to Support Abstract

Hierarchal Coding Framework
<ol style="list-style-type: none">1. Poor knowledge and understanding of cardiovascular disease and its risk assessment.<ol style="list-style-type: none">1.1 I don't know what it (CVD) means.1.2 How do I avoid a risk of stroke or heart attack?1.3 My genetics mean I won't get a heart attack.1.4 Will risks of medication outweigh any benefits?
<ol style="list-style-type: none">2. Acceptability and perceived benefit of knowing and receiving advice on managing personal cardiovascular risk.<ol style="list-style-type: none">2.1 We need to know before anything happens.2.2 I do not want to know2.3 I would do anything to reduce risk.2.4 If I knew I was high risk I would do more about it.
<ol style="list-style-type: none">3. Distinguishing between CVD outcomes; stroke and heart attack are not the same.<ol style="list-style-type: none">3.1 I would prefer to have a heart attack.3.2 I want quality of life, not dependence.3.3 I don't want to die of any.

Table 3. Superordinate Code 1 Themes and example quotations

Sub-themes	1. Poor knowledge and understanding of cardiovascular disease and its risk assessment.
1.1. I don't know what it (CVD) means.	Not really, but I know if there's a problem with the heart they call it cardio. That's how they tackle everything like that. But I don't know much about it. SA-M2
	The red blood cells which supplies heart, supplies blood to the heart, that is, that is what gets affected, isn't it, in general terms? E-F3
1.2. How do I avoid a risk of stroke or heart attack?	Am I likely to get a stroke or a heart attack or any form of cardiovascular disease? And if so, what can I do to change my lifestyle to minimise those risks? SA-M6
	What are the habits that would lead to a heart attack? What health conditions would lead to a heart attack, and what they should do to avoid getting in that situation? E-F2
1.3. My genetics mean I won't get a heart attack.	I'm pretty sure that I won't get the heart attack because my genetic is on my mother. She died of the kidney failure and my problem is the same. SA-M2
1.4. Will risks of medication outweigh any benefits?	(CVD risk) Well not as much as I would like in the sense that, I think what I've been given is in very broad brush kind of terms. And even a bald statement of 'you've got a 15 percent chance, or whatever it is, of being admitted in the next five years with heart or a stroke'. I mean okay it's a sort of risk and it's worth taking, yeah and I'd rather know that than not know it. But it's not all that helpful in the things that I'm really concerned about. Is what am I doing that can help this and what are the risks of doing that? And is it worth taking some risky thing for some pretty marginal kind of benefit? And so that's where I don't actually think the information has been as robust as I would like, because as I've said I'm not sure that it's there for people of my age and my range of comorbidities. E-M4

Table 4. Superordinate Code 2 Themes and example quotations

Sub-themes	2. Acceptability and perceived benefit of knowing and receiving advice on managing personal cardiovascular risk.
2.1. We need to know before anything happens.	<p>I think this is really important these things, to know beforehand and then we can be cautious and prevent these things from happening. But what I believe is it will be useful for the future, when our children grow up and learn and become knowledgeable. T-M3 (FG1)</p> <p>People should know the risk before. After a certain age you are prone to so many things and it is better for them to know exactly where they stand. At least they can change their lifestyle...If I'm having a high risk then I would like to know what I can do to avoid that, yeah, definitely. SA-M4</p>
2.2 I do not want to know.	<p>No, I would not want to know from our GP. I just leave my life to our maker, that's the reason I don't want my GP to say to me, <i>'you're going to have a heart attack, in 2 to 3 years' time.</i> That's like a predicting, my days but it's not him... it's our Lord, that's my belief anyway. N-F1</p> <p>If it was offered and somebody had the choice to accept that, then that would be okay. But just to tell somebody that there's this prediction you will have a heart attack, or some form of heart problem in the next five years, would be a bit much for some people to take I'm sure. E-F5</p>
2.3 I would do anything to reduce risk.	<p>I would like to be told before something happened. I'd like the doctor say 'well 'we've checked your blood test and there's something wrong with your heart'...(I would) do anything the doctor wanted me to do, you know? I don't know what, if they put you on pills. M-M4</p>
2.4 If I knew I was high risk I would do more about it.	<p>I understand that it's not probably exact science, it's not going to say 'well you've got three and a half years before you have a stroke, or four years before', it's just a general situation...if I knew my risk was high, I would take more notice of the symptoms. M-M1</p>

Table 5. Superordinate Code 3 Themes and example quotations

Sub-themes	3. Distinguishing between CVD outcomes; stroke and heart attack are not the same.
3.1. I would prefer to have a heart attack	<p>I think a heart attack is different. Just a heart attack where you may damage a portion of your heart during the heart attack, I think I could cope with that. As long as I wasn't impeded in my ability to get around and enjoy life. E-F5</p> <p>I wouldn't want to be dependent on anyone, whereas a heart attack, okay, you may have a severe heart attack and you're gone, that's okay. SA-F2</p>
3.2 I want quality of life, not dependence	<p>I've immediately got some reservation about lumping those two together. Because being hospitalised for a heart attack is different to me from being hospitalised for a stroke. My mental function is important to me in my old age and I don't want a heart attack either, but I'm conscious that a lot of heart attacks these days can be ably managed with stenting and various other things...but those two that have been lumped together are different risks for me in terms of how they would affect me and what I can do in my old age. E-M4</p> <p>Given the option between stroke, cardiac disease and death, I think that would be the best [heart attack]. Because after a stroke, life is not really, the quality of life is not the best. SA-M6</p>
3.3 I don't want to die of any.	<p>The death probably not, no. I think from what I've seen, a stroke would worry me more than anything. The fact of being very active, right throughout my life, brought up on a farm, and carried on since then. Played a lot of sport, to be an active mind in a body that is not going to respond and give me the freedom and the movement and so on would worry me more than, I think, potentially a heart attack. And I would expect that maybe I can do more to prevent a heart attack, maybe, than a stroke, I don't know, but that's just my, you know, layman's view on it. M-M3</p> <p>For me, I would choose not to have all of them. T-M4 (FG1)</p> <p>Prefer to prevent a stroke, don't particularly want to die from either, but I realise that death is becoming closer. And so I don't really wanna be disabled and unable to walk or, you know, all these other things. And so, I'm not afraid of death, but I prefer not to die. I'm enjoying life, I regard myself as well despite all these ailments. E-M4</p>