ASSOCIATIONS BETWEEN LIVING ALONE AND POSITIVE MENTAL HEALTH

Nina Tamminen

Master's thesis in Health Promotion and Health Education
Faculty of Sport and Health Sciences
University of Jyväskylä
Spring 2020

ABSTRACT

Tamminen, N. 2020. Associations between living alone and positive mental health. Faculty of Sport and Health Sciences, University of Jyväskylä, Master's thesis, 36 pp, published article.

Living alone has become more common in today's societies. In 2018, one third of households in the EU were single-person households. In Finland, there are almost 1,2 million people living alone. In spite of the high number of population living alone, research on issues related to living alone has been limited focusing mainly on older people and their well-being. More importantly, much of the research has been problem-oriented. This Master's thesis aimed to review the existing knowledge on living alone and positive mental health, and to investigate the possible associations between living alone and positive mental health.

The thesis is consisted of two parts: 1. a narrative review of current literature to portray descriptions and conceptualisations of living alone and positive mental health together with views and meanings related to the two concepts and 2. an article manuscript describing an original research, a systematic literature review on the association between living alone and positive mental health.

The first part of the thesis provided a look at the current situation and existing knowledge on living alone and positive mental health. The inquiry confirmed that research directed towards mental well-being issues related to living alone has been limited and that more research is needed. The second part of the thesis, the systematic literature review, resulted in a low number of only four studies focusing on positive mental health and living alone. The review concluded that the findings were limited as the number of included studies was low and the quality of evidences varied across studies. However, a potential association was found in studies that had large or fairly large population sample sizes. The association was perceived especially between with living alone and low positive mental health.

More research is needed on the mental well-being of those living alone. Knowledge on factors related to high or low levels of positive mental health of those living alone is required. Positive mental health may have beneficial influence on health and quality of life of people living alone. People living alone form a large part of the population, however, their needs are still unmet. Utilising measurements of positive mental health such as the WEMWBS or SWEMWBS provide a fresh perspective on mental well-being producing original and novel knowledge.

Key words: living alone, positive mental health, Warwick-Edinburgh Mental Well-being Scale, the WHO-5 Well-being Index

TIIVISTELMÄ

Tamminen, N. 2019. Yksinasumisen ja positiivisen mielenterveyden väliset yhteydet. Liikuntatieteellinen tiedekunta, Jyväskylän yliopisto, terveyskasvatuksen pro gradu -tutkielma, 36 s., julkaistu artikkeli.

Yksinasuminen on yleistynyt nykypäivän yhteiskunnassa. Vuonna 2018, yksi kolmasosa kotitalouksista EU:ssa oli yhden hengen talouksia. Suomessa on melkein 1,2 miljoonaa yksinasuvaa. Siitä huolimatta, että suuri määrä väestöstä asuu yksin, tutkimus yksinasuvista on rajoittunut pääasiassa ikääntyneisiin ja heidän hyvinvointiin. Vielä merkittävämpää, suuri osa tutkimuksesta on ollut ongelmalähtöistä. Tämän pro gradu – tutkielman tavoitteena oli tarkastella olemassa olevaa tietoa yksinasumisesta ja positiivisesta mielenterveydestä, ja tutkia mahdollisia yhteyksiä yksinasumisen ja positiivisen mielenterveyden välillä.

Tämä pro gradu – tutkielma koostuu kahdesta osasta: 1. narratiivinen katsaus tämänhetkiseen kirjallisuuteen tarkoituksena kuvata yksinasumisen ja positiivisen mielenterveyden käsitteitä ja määritelmiä sekä niihin liittyviä käsityksiä ja merkityksiä, ja 2. artikkelikäsikirjoitus, joka kuvaa alkuperäistutkimusta, systemaattista kirjallisuuskatsausta yksinasumisen ja positiivisen mielenterveyden yhteyksistä.

Ensimmäinen osa opinnäytteessä tarjosi katsauksen tämänhetkiseen tilanteeseen ja olemassa olevaan tietoon yksinasumisesta ja positiivisesta mielenterveydestä. Selvitys vahvisti sen, että tutkimus mielen hyvinvoinnista yksinasumiseen liittyen on ollut rajoittunutta, ja että lisätutkimus on tarpeen. Opinnäytteen toinen osa, systemaattinen kirjallisuuskatsaus, johti ainoastaan neljään tutkimukseen, joissa keskitytään yksinasumiseen ja positiiviseen mielenterveyteen. Katsauksen johtopäätöksenä oli, että tulokset ovat rajalliset tutkimusten vähäisen määrän sekä niiden näytön vaihtelevan tason vuoksi. Potentiaalinen yhteys kuitenkin löydettiin tutkimuksissa, joissa väestön otoskoko oli laaja tai melko laaja. Yhteys havaittiin erityisesti yksinasumisen ja matalan positiivisen mielenterveyden välillä.

Yksinasuvien mielen hyvinvoinnista tarvitaan lisätutkimusta. Tarvitaan tietoa tekijöistä, jotka ovat yhteydessä yksinasuvien matalaan tai korkeaan positiiviseen mielenterveyden tasoon. Positiivisella mielenterveydellä voi olla suotuisia vaikutuksia yksinasuvien terveyteen ja elämänlaatuun. Siitä huolimatta, että yksinasuvat muodostavat ison väestöryhmän, heidän tarpeisiinsa ei ole vastattu. Hyödyntämällä positiivisen mielenterveyden mittareita kuten WEMWEB tai SWEMWBS saadaan luotua uudenlainen näkökulma mielen hyvinvointiin ja tuotettua alkuperäistä ja uutta tietoa.

Asiasanat: yksinasuvat, positiivinen mielenterveys, Warwick-Edinburgh Mental Well-being Scale, the WHO-5 Well-being Index

CONTENT

1 INTRODUCTION

Living alone has become more common in today's societies. In 2018, one third (33.9%) of households in the EU (European Union) and over 40% of households in the Nordic countries (with the exception of Iceland) were single-person households (Eurostat 2019). In Finland, there are almost 1,2 million people living alone, 44% of all house-hold dwelling units are 1 person households (Official Statistics of Finland 2018a). Kauppinen et al. (2014) estimate the number to be around 1,5 million by the year 2050. The number of people living alone is likely to continue to increase globally among both older people and working adults (Jamieson & Simpson 2013). In this review, living alone is understood as only one person living in a household at the time of the research, in other words, a household size of one person. As Jamieson & Simpson stated (2013): 'The essence of living alone is simple: nobody else lives in the same living space or routinely shares everyday domestic life' (p. 5).

In spite of the high number of population living alone, research on issues related to living alone has been limited focusing mainly on older people and their well-being. More importantly, much of the research has been problem-oriented. Living alone has been found to be associated with various psychological and social challenges such as poorer experienced health, psychological problems such as depression, poorer quality of life and experiences of loneliness (Joutsenniemi et al. 2006, Pulkki-Råback et al. 2012, Sok& Yun 2011). This thesis concentrates on vital aspect of well-being, namely, the concept of positive mental health. The World Health Organization (WHO) has defined positive mental health as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO 2018). Positive mental health is thus based on the assumption that mental health is something positive and a resource for well-being, and more than just the absence of mental illness (WHO 2018). The term positive mental health is often used interchangeably with the term mental well-being. This Master's thesis examines possible associations between living alone and positive mental health. The thesis is consisted of two parts: 1. a narrative review of current literature to portray descriptions and conceptualisations

of living alone and positive mental health together with views and meanings related to the two concepts and 2. an article manuscript describing an original research, a systematic literature review.

The narrative review of the current literature formed the basis for the thesis as it examined existing descriptions and meanings of the concepts of living alone and positive mental health as well as views and reports on mental health and mental well-being of individuals living alone. Further, it looked at existing studies on positive mental health (i.e. mental well-being) and possible associations between living alone and positive mental health. First, the review illustrated that living alone is a multifaceted concept and that people living alone do not constitute a uniform group but a heterogeneous collection of individuals of varying life stages, ages, gender, and education and work status. Second, the inquiry demonstrated that research directed specifically towards mental well-being issues related to living alone has been limited despite the high number of people living alone today. Third, conflicting results concerning the association between living alone and mental health were found. According to some studies, living alone does not constitute a risk factor to mental health (Michael et al. 2001; Kawamoto et al. 2005). On the other hand, some authors have reported associations with depression, poorer experienced health and quality of life, and experiences of loneliness (Joutsenniemi et al. 2006; Sok & Yun 2011; Pulkki-Råback et al. 2012; McManus et al. 2014). Last, the review showed that people living alone face challenges that may place a potential burden on their mental well-being, such as financial difficulties and higher living costs as they do not have the scale advantage of those living with another adult (Joutsenniemi et al. 2006; Lindström 2009). The investigation established the need to further examine the relationship between living alone and the concept of positive mental health (Part 2. Article manuscript).

The article manuscript presents an original research based on a systematic review that assessed the body of empirical research on the association between living alone and positive mental health. The review concentrated on adults living alone and on two indicators that measure positive mental health, the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant et al. 2007) and the WHO-5 Well-being Index (Bech et al. 2003). The two measurements share common features and measure same aspects of positive mental health (Bech 2004; Eurofound 2013). The article has been published in a peer reviewed

journal in 2019 (Tamminen, N., Kettunen, T., Martelin, M., Reinikainen, J., Solin. P. 2019. Living alone and positive mental health: a systematic review. Systematic Reviews 8, 134. https://doi.org/10.1186/s13643-019-1057-x).

PART I

NARRATIVE REVIEW OF CURRENT LITERATURE

2 LIVING ALONE

2.1 Descriptions and conceptualisations

Living alone can have various meanings depending on the use of the term or by who is using it. Typically living alone refers to a one-person household where only one sole person is living without a spouse, partner or children (Jamieson & Simpson 2013; Official Statistics of Finland 2018a). These solo-dwellers are not a homogenous group; they are of different ages and life stages, unmarried, divorced or widowed, they might have partners who live in a different household or they may have children. Partnership status thus does not define whether a person is living alone (Jamieson & Simpson 2013). To illustrate this, there is a relatively new concept, living apart together (LAT), which refers to individuals that share a partnership but live separately (Martin et al. 2011; Jamieson and Simpson 2013). On the other hand, it is perfectly possible to be single and living in shared arrangements. Moreover, living arrangements can fluctuate several times during a person's life course thus portraying living alone as a rather multidimensional and an elusive concept.

As mentioned earlier, there are nearly 1,2 million people living alone in Finland (Official Statistics of Finland 2018a). That means that almost every fifth person in Finland lives alone. Several suggestions have been made to explain the rising number of people living alone. According to Klinenberg (2012), living alone is more common today as more people can afford to live alone due to economic prosperity and especially in the Nordic countries, social security. Living alone can thus be a sign of wealth or welfare. In addition, the rising status of women due to education and independency, the communications revolution creating new opportunities for social relationships, and urbanization and individualism are all propositions for more people living alone (Klinenberg 2012). Other explanations are that people are nowadays living longer than before, young people become independent earlier and divorces are becoming more common (Klinenberg 2012; Pyykkönen 2016). As a result, living alone changes during different life stages.

Living alone can be defined as a somewhat neutral concept of one person living alone in a household. The subjective experience of living alone, however, can differ between people. The experience may depend whether living alone is a person's own choice, 'elective single', or forced by circumstances, 'forced single' (Bennet & Dixon 2006; Jamieson & Simpson 2013). Some individuals may have deliberately and actively chosen and decided to live alone. Others, on the other hand, may have ended up living alone but would like to live with someone.

2.2 Living alone in Finland

The number of people living alone in Finland has doubled during the last twenty years (Official Statistics of Finland 2018b). Over half of those living alone are over 55 years old. However, the biggest groups living alone are under 30 year olds as well as over 70 year olds (figure 1). This can be seen reflecting the different life stages a person is living and moving from one stage to another during his or her life course; young adults moving out from their parents' house to living alone and older people widowed, especially women outliving their spouses (Jamieson & Simpson 2013; Terämä et al. 2018).

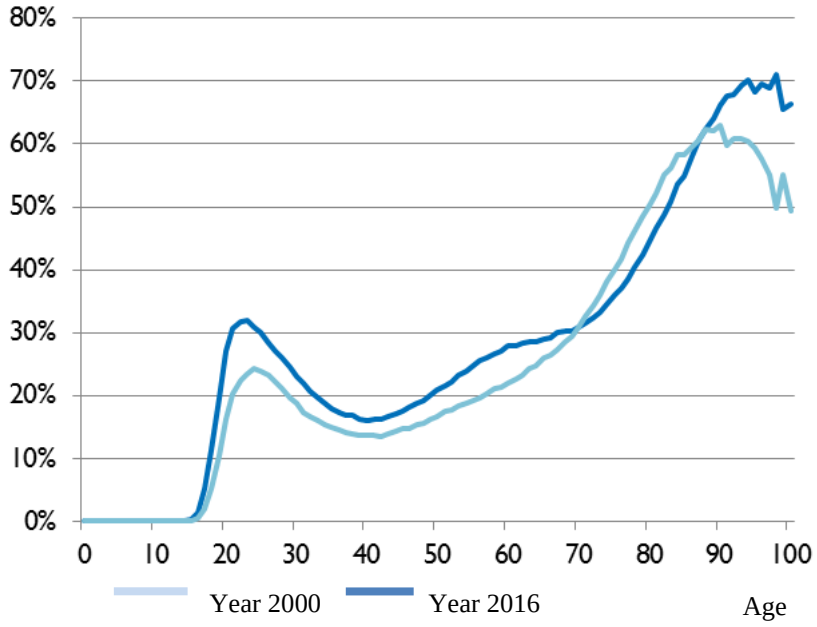

Figure 1. The proportion (%) of people living alone by age (years 2000 and 2016). Source: Terämä et al. 2018.

Over half of those living alone in Finland are women (56%); however, men form a majority among 25–54 year olds living alone (Terämä et al 2018). This could be partly explained by increased divorce numbers. In Finland, in divorce only one parent or carer can be named as the primary parent/carer and because mother is usually named as such they are not classified as living alone. Figure 2 presents a more detailed outlook on the differences between genders.

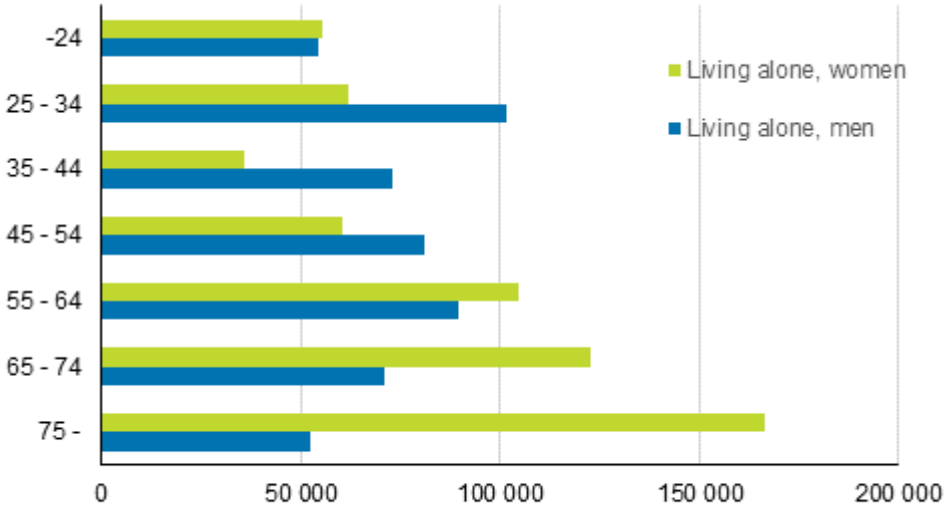

Figure 2. Number of persons living alone by sex and age in 2016. Source: Official Statistics of Finland (OSF): Dwellings and housing conditions 2016.

Among over 64 year olds Finnish, 36% live alone (Terämä et al. 2018). As people get older, the number of those living alone increases further; almost 70% of the Finns over 80 years old are living alone - majority of these being women (Terämä et al. 2018).

The largest number of people living alone in Finland is in Helsinki when examining one person households by municipality (Terämä et al. 2018). In Helsinki, every fourth person is living alone (Terämä et al. 2018). Relatively largest proportion of people living alone can be found in municipalities such as Sottunga (37%), Kuhmoinen (29%) and Turku (29%) (Terämä

et al. 2018). Majority of those living alone live in so called inner and outer urban areas (Helminen et al. 2014; Terämä et al. 2018). The inner urban area refers to the tight and uniform efficiently build areas whereas the outer urban area is consisted of separate suburbs, commerce, industry and office areas as well as green spaces (Helminen et al. 2014).

There are some differences between genders when looking at one person households at a regional level. Women living alone tend to live more often than men in urban municipalities and widely in the southern parts of Finland. Men, however, make up majority of those living alone in Northern Finland, Kainuu region and the Eastern Finland's rural areas (Terämä et al. 2018). When compared to those living with someone, people living alone tend to live more often in the inner urban areas where the level of services is good and there are social happenings taking place outside the home (Klinenberg 2012). A study conducted by Borg (2015) described that people who lived alone in Helsinki found the city appealing to live in because of the wide services and possibilities for hobbies.

On average, every fourth Finnish person lives in rented accommodation whereas almost half of those living alone rent their homes (Terämä et al. 2018). In addition, people living alone tend to live in apartments blocks more often than in houses which may be explained by the high costs of living in a house (Terämä et al. 2018). Moreover, as Terämä and partners (2018) report, those living alone in urban areas may have to live in the smallest of flats due to high housing prices. This issue was evident also in the study carried out in Helsinki (Borg 2015); those living alone in the city thought that the high living and housing costs were the downside of the city.

2.3 Socioeconomic issues

People living alone may face social and economic challenges such as lower income and higher living costs as they do not have the scale advantage as those living with another adult (Kauppinen et al. 2014; Terämä et al. 2018). This may propose a risk of poverty and consequently, a study conducted in Finland in 2018 found that the proportion of single person households residing under the poverty line was nearly 30% (Terämä et al. 2018). In addition,

the study demonstrated that a large proportion of social assistance recipients were people living alone. People living alone have been found to have lower income and higher unemployment rates than others (Kauppinen 2014). Living alone may propose challenges to income levels especially when facing unemployment. Almost half of unemployed 20-64 year olds living alone have experienced income problems (Terämä et al. 2018). On the other hand, unemployment does not propose such a huge threat to those who live with a partner as only every fourth of them has experienced difficulties with income (Terämä et al. 2018).

Nevertheless, Terämä and partners (2018) found that people who live alone most of their life are not on average lesser educated or suffer more from low incomes than those living with someone. Actually, they reported that women who live alone for a long period of time have higher than the average income levels. On the other hand, the income level of men who live alone for a long time is evidently lower than other men.

People living alone do seem to have some difficulties with income level. Terämä et al. (2018) found that people living alone have had to make compromises when shopping for groceries or medicine compared to those not living alone. Almost every fourth person living alone had feared that they will not have enough money for food; 12% of those not living alone had feared the shortage of money. In a study conducted in Helsinki (Borg 2015), people living alone reported that they have had to save expenses when buying clothes or paying for hobbies.

2.4 Social networks and loneliness

Living alone is sometimes understood as equal to being lonely; they are, however, not the same thing. Loneliness is a subjective feeling resulting from perceived deficiencies in social relationships, the experience of being lonely. Living alone, on the other hand, may be considered as an objectively quantifiable variable (Andersson 1998; Weiss 1973; Holt-Lunstad et al. 2015; Saari 2016; Beller & Wagner 2017). However, a person living alone can experience lack of social relations and social networks which can lead to experiences of loneliness (Jamieson & Simpson 2013). Loneliness has been found to be a risk factor for

depressive symptoms as well as mortality (Cacioppo et al. 2006; Holt-Lunstad et al. 2015; Rico-Uribe et al. 2018).

Kauppinen and partners (2014) found that people living alone experienced more loneliness compared to those not living alone. In a study conducted in 2014 (Population Research Institute 2017), among those living alone, 45% of men and 34% of women experienced loneliness quite often. Those who were less educated and had lower income levels reported more loneliness than others. The respondents described various negative feelings with reference to loneliness such as doing things alone, not having anyone to talk to, feelings of failure in life and low self-esteem. On the other hand, one third of the respondents felt, that living alone was their own choice and suited them well at the time. They thought that living alone was the right and natural way to live; they enjoyed their freedom and were able to make decisions on their own. Terämä and partners (2018) also reported that many of those living alone actually met with their friends and acquaintances more often than those who were not living alone. Borg (2015) found that of those living alone in Helsinki actually less than 3% felt themselves lonely all of the time. The least lonely group was 65–80 year olds, especially women. This group, however, had an increase in social isolation, i.e. they were rarely in contact with friends and relatives.

2.5 Health and well-being

Living alone in itself does not necessary propose problematic life circumstances or lack of well-being. However, earlier research suggests that people living alone experience more shortages in their well-being compared to those living with someone. Living alone has been found to be associated with various psychological and social challenges such as poorer experienced health, more mental health problems such as depression, poorer quality of life and, as mentioned in the previous chapter, experiences of loneliness (Joutsenniemi et al. 2006, Pulkki-Råback et al. 2012, Sok & Yun 2011; Jacob et al. 2019).

According to a report by Kauppinen and partners (2014), on average, people living alone in Finland experience more deficiencies in their health compared to the rest of the population:

higher mortality, lower levels of mental health, higher suicide rates and more loneliness. However, the report noted that there were differences between different groups of people living alone. Age and gender were found to be among those differentiating factors. The study by Terämä and partners (2018) also reported that people living alone experienced their health on average poorer than those not living alone. These health inequalities seemed to be associated especially with psychological health; those living alone experienced depressive symptoms more often than those not living alone. Furthermore, they had suicidal thoughts more often than those living with someone. Especially younger, the 20–34 year olds, living alone experienced mental health problems; almost every third of women and every fourth of men living alone had experienced depressive symptoms. For comparison, Borg (2015) stated in his report that people living alone in Helsinki experienced depressive symptoms only slightly more often that people living in other type of families; 12% of those living alone experienced depressive symptoms often compared to 9% of those not living alone.

Similarly to earlier studies, Borg (2015) also found people living alone experiencing their health as good more seldom than those with families. However, it is worth to mention that they had the experienced state of health at the same level as with couples with no children. The assessment of one's own state of health weakened linearly with age of those living alone. The experienced health differed depending on the education level of the respondent; those living alone and with the lowest education level experienced their health poorer more often than those with higher education level. When asked about happiness, those living alone felt unhappy more often than those living with someone. Nevertheless, 28% felt really happy and 41% happy. The study found no significant differences in the happiness levels with relation to gender, age, education level or marital status. However, unemployed people living alone were less happy than others living alone.

A study on the quality of life of more than 4000 Finnish adults using the EUROHIS-QOL 8-item index for a measurement of quality of health (Vaarama et al. 2014) found that people living alone differentiated in questions measuring satisfaction with oneself and social relationships, compared to those with two or more habitants in a household. People living alone experienced lower general quality of life compared to two or more persons living in a household. Another study of middle-aged persons living alone (Ojala & Kontula 2002)

discovered that the quality of life was lower with individuals who were not very independent and who did not receive enough support and help. The study also noted stressors caused by living alone such as risk of falling ill and loneliness. Research on community-dwelling older people living alone found that older people's lower quality of life levels were associated with lower social support and higher rates of depression (Chen et al. 2014, Bilotta et al. 2012).

3 POSITIVE MENTAL HEALTH

3.1 The concept of positive mental health

Earlier there has been ambiguity relating to use of the term ’mental health’ to describe matters related to mental ill health causing confusion regarding the relationship between mental health and mental illness. As a consequence, terms such as positive mental health and mental well-being have been adopted to better describe this relationship. The concept of positive mental health, or mental well-being - a concept often used interchangeably with positive mental health, has evolved from the understanding that mental health encompasses more than just the absence of mental illness. Positive mental health is recognised as a key resource for health and well-being and contributing to quality of life (Barry & Jenkins 2007; Huppert 2009). It is currently receiving increased attention in research, policy making, and clinical practice (EU Joint Action 2016).

The concept of positive mental health is understood as a multifaceted construct that is comprised of two theoretical perspectives: namely hedonic and eudaimonic. The hedonic perspective focuses on subjective experience of happiness and life satisfaction (feeling good). The eudaimonic perspective focuses on positive psychological functioning, good relationships with others and self-realisation (functioning well) (Stewart-Brown 2015; Ryan & Deci 2001). Positive mental health is thus a positive sense of well-being and includes aspects such as self-esteem, optimism, a sense of mastery and coherence, satisfying personal relationships and resilience, that is, the ability to cope with adversities and face stressors (Lehtinen 2008; Huppert 2009; Vaillant 2012).

Terms such as flourishing and languishing are also being used when discussing about positive mental health. Flourishing refers to having optimal levels of both hedonic and eudaimonic well-being (Keyes 2002; Huppert 2009), in other words, both feeling good and functioning well. Languishing, on the other hand, is used to describe a person that has low level of psychological, emotional and social well-being – s/he is not feeling good nor functioning effectively (Keyes 2002). This view comprehends mental health and mental ill-health as two

separate dimensions and is described in figure 1. A person with mental illness can also have positive mental health which supports his functioning and emotional, psychological and social well-being. On the other hand, a person with low level of positive mental health (languishing) can feel unwell and function badly even with the absence of mental illness.

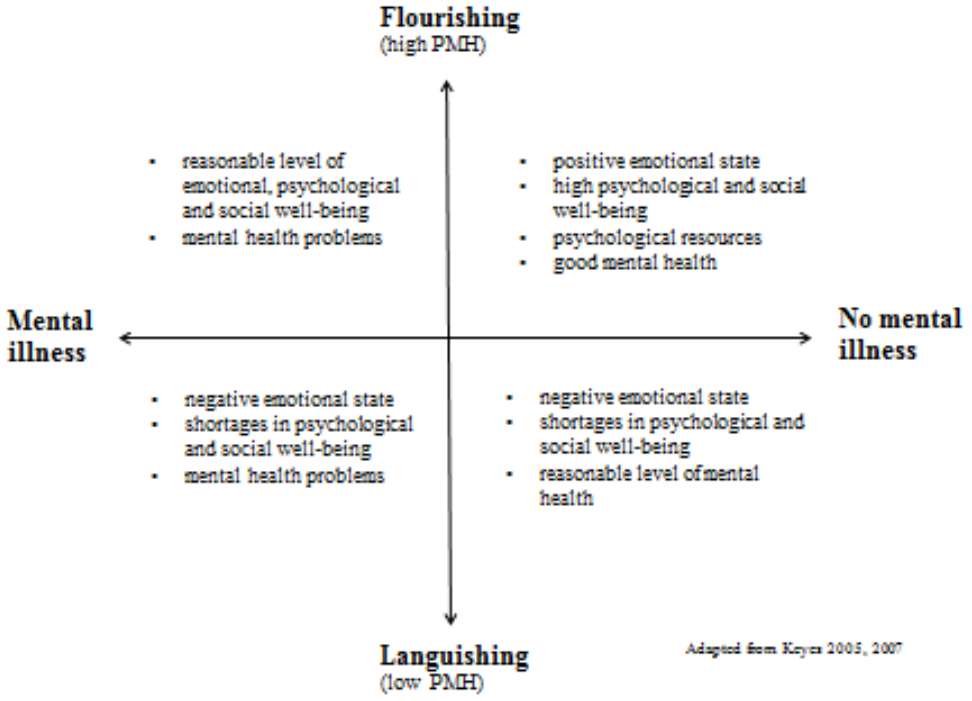

Figure 1. The two continua model based on Keyes' work

3.2 Measuring positive mental health

Efforts to investigate positive mental health have been hampered by a lack of valid instruments which are suitable for measuring the attributes of positive mental health. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) was developed in 2006 to meet this demand. Researchers from the universities of Warwick and Edinburgh were commissioned by NHS Health Scotland to develop an instrument to enable the measurement of mental well-being, i.e. positive mental health, in the general population in the UK. The

developed instrument, WEMWBS, derives from a model of mental well-being that is more than the absence of mental illness, and involves both perspectives of positive mental health, feeling good (hedonic perspective), and functioning well (eudaimonic perspective) (Taggart et al. 2016). The scale allows investigations into the determinants of positive mental health and enables both monitoring of mental well-being and evaluation of projects, programmes and policies which aim to improve mental well-being.

WEMWBS is consisted of 14 positively worded items covering 'positive affect (feelings of optimism, cheerfulness, relaxation), satisfying interpersonal relationships, and positive functioning (energy, clear thinking, self-acceptance, personal development, competence and autonomy). Respondents rate their feelings over the previous two weeks from 1 (none of the time) to 5 (all of the time) on statements such as 'I've been feeling optimistic about the future', 'I've been feeling useful', 'I've been feeling relaxed', 'I've been dealing with problems well', 'I've been thinking clearly', 'I've been feeling close to other people' and 'I've been able to make up my own mind about things'. The total score ranges from 14-70. (Tennant et al. 2007). There is also a shortened version of the scale with 7 items (SWEMWBS). The psychometric properties of the scales are robust (Stewart-Brown et al. 2009). Both versions of the scale have also been translated into Finnish (administration via THL's mental health unit).

WEMWBS results are presented as a mean score for the population of interest, with either a standard deviation or 95% confidence interval. In addition, categorisation of the scores according to the extent of their standard deviation from the mean is recommended to present data in a categorical and analytical way (Taggart et al. 2016). For instance, the survey population can be divided into three groups: (i) those with relatively good positive mental health, i.e. flourishing (a WEMWBS score of more than one standard deviation above the mean); (ii) those with average positive mental health (a WEMWBS score of within one standard deviation of the mean); and (iii) those with relatively poor positive mental health, i.e. languishing (a WEMWBS score of more than one standard deviation below the mean). This three-fold classification was first used as a key analysis variable in the Scottish Government's Well? 2006 survey report (Braunholtz et al. 2007).

An instrument similar to the WEMWBS is the WHO-5 Well-being Index (Bech 2003). The two measurements share common features and measure same aspects of positive mental health incorporating both the hedonic and eudaimonic perspectives of well-being (Bech 2004; Tennant et al. 2007; Eurofound 2013). The WHO-5 Well-being Index has been widely validated with relation to both its clinical and psychometric validity (Bech 2012). The Index is consisted of five positively presented statements measuring person's current mental well-being: "I have felt cheerful and in good spirits", "I have felt calm and relaxed", "I have felt active and vigorous", "I woke up feeling fresh and rested" and "My daily life has been filled with things that interest me". The answers are assessed on a 6-score scale (from 'All of the time' to 'At no time') with the possible total raw score varying from 0 to 25 (Bech 2012).

3.3 Research findings on positive mental health

Age seems to play significance with regards to the level of positive mental health. Research shows that positive mental health is associated with age showing variation across different age groups: the younger adult groups (ages 16 to mid-thirties) and, on the other hand, the time after retirement, ages 65 to 74, reporting high mean scores of positive mental health, whereas the lowest levels of positive mental health are found among those aged 40 to 54 years old and the oldest group of 75+ years (Jones et al. 2013; Wilson et al. 2015).

The National FinHealth 2017 Study (Koponen et al. 2018) found that almost 70% of the respondents had moderate level of positive mental health, 16% had low positive mental health and only 14% had high level of positive mental health. Respondents that were 60 years old or older seemed to have higher levels of positive mental health than younger respondents. Women between 50–59 years old had slightly higher positive mental health than men of the same age whereas men 70 years old or older had slightly higher levels of positive mental health.

Studies have shown positive mental health to be associated with mortality and physical health (Keyes & Simoes 2012; Keyes 2005). According to a study by Keyes & Simoes (2012), the absence of positive mental health (i.e. flourishing) increased the probability of all-cause

mortality for men and women at all ages after adjusting for known causes of death. The North West Mental Wellbeing Survey 2012/13 *(*Jones et al. 2013) found that people with long-term conditions such as stroke and liver disease had a significantly lower level of mental well-being than average. Further, analysis of the 2011 Health Survey for England data (Taggart et al. 2016) showed that mental well-being was generally lower among people with health conditions (e.g. cardiovascular disease, diabetes, hypertension, chronic pain). In addition to physical health, positive mental health has been found to be associated with mental illness (Keyes 2005; Suldo & Shaffer 2008) and to protect from suicidal behaviour regardless of the psychological state of the person (Keyes et al. 2012).

With regards to lifestyle factors, there is growing evidence that along with smoking, fruit and vegetable consumption is another health behaviour most consistently associated with both low and high mental well-being in both sexes (Blanchflower et al. 2013; Stranges et al. 2014). However, due to cross-sectional nature of the studies, the causality and temporality of the observed relationships cannot be established. Physical activity has also shown to have a relationship with positive mental health showing some potential benefits in increasing the level of positive mental health (Richards et al. 2015; Mason et al. 2016; Zhang & Chen 2019). A study by Tamminen and partners (2020) found that physical inactivity was strongly associated especially with low positive mental health. Earlier studies have suggested that associations with low level of positive mental health follow a different pattern than associations with high level of positive mental health (Stranges et al. 2014; Stewart-Brown et al. 2015; Ng Fat et al. 2016). Differences between predictors of the low end of the mental well-being scale with the high end of the mental well-being scale have been found with health behaviours such as diet, smoking and alcohol consumption (Stewart-Brown et al., 2015). Santini and partners (2020) conducted a study in Denmark which aimed to compare socioeconomic and relational/recreational behaviour predictors of different levels of mental well-being as well as common mental disorders. They found that socioeconomic predictors of high mental well-being did not mirror those of low mental well-being and common mental disorders, whereas relational/recreational predictors of high mental well-being did mirror those of low mental well-being and common mental disorders. Relational and recreational behaviours included social interaction, social support, informal and formal social participation and recreational activity.

There is growing evidence on the economic benefits of promoting positive mental health. Actions targeted especially at children and adolescents have shown to be good value for money (Zechmeister et al. 2008; Knapp et al. 2011; McDaid et al. 2019). Moreover, interventions promoting positive mental health can generate significant savings in public health expenditure such as reductions in health and social care costs (Knapp et al. 2011).

3.4 Studies on living alone and positive mental health

Research concentrating on investigating associations between living alone and positive mental health have been scarce. As stated earlier, existing research efforts on issues concerning people living alone has mainly evolved around older people living alone and their well-being or the focus has been on negative factors related to living alone. Marital status, though not a direct indication of living arrangements, has been linked to positive mental health in that people who were single, divorced or widowed had lower positive mental health scores than those who were married or living as a couple (Wilson et al. 2015; Taggart et al. 2016).

A study conducted in Finland (Luokkala et al. 2018) found that most of the people living alone had moderate level of positive mental health (72%); 14% had high positive mental health. The study sample consisted of 232 individuals living alone, majority of respondents being women (80%) and over 55 years of age (75%). The study found that gender and income level were associated with positive mental health; women had higher levels of positive mental health than men, and those who had annual income over 35 000 euros had higher positive mental health than those who earned less. Interestingly, those who were satisfied with the size of their home and the view from their home window had higher levels of positive mental health. Third of the study respondents experienced loneliness all of the time or fairly often. Those who experienced loneliness had low or moderate level of positive mental health. On the other hand, those who never experienced loneliness had significantly higher positive mental health compared to those who experienced loneliness fairly often or all of the time.

Another study carried out in the Lapland region of Finland showed that, overall, people living alone in the Lapland region experienced lower levels of positive mental health and less higher positive mental health than those living with someone (Solin et al. 2019). Furthermore,
men living alone experienced low positive mental health more often than men living with a partner. The researchers also found social support to be strongly associated with both low and high levels of positive mental health among people living alone. Participating in activities provided by organisations or societies decreased the odds of having low positive mental health (Solin et al. 2019).

4 DISCUSSION AND CONCLUSION

The first part of this thesis provided a look at the current situation and existing knowledge on the conceptualisations and descriptions of living alone and positive mental health. Based on this examination, a more rigorous systematic review was then followed aiming to assess the association between living alone and positive mental health in more detail. The results and the discussion of the latter are presented and published in a peer reviewed article (part II of this thesis).

In Finland, there are nearly 1,2 million people living alone (Official Statistics of Finland 2018a) meaning that almost every fifth person lives alone. The number of people living alone in Finland has doubled during the last twenty years (Official Statistics of Finland 2018b). The review presented several suggestions that have been made to explain the increasing number of people living alone. Most pertinent to the state of affairs in Finland seems to be that more people can afford to live alone due to economic prosperity. Moreover, the social security system in Finland permits allowances for solo living. However, the high housing prices as well as general living costs especially in big cities such as Helsinki may propose a threat to the income level of those living on their own as they do not have another adult to share the costs. The rising status of women due to higher education level and independency has also been mentioned as one of the reasons for more people living alone in Western societies such as Finland. Other perhaps more understandable explanations are that people are nowadays living longer than before, young people becoming independent earlier and divorces are more common than earlier (Klinenberg 2012; Pyykkönen 2016).

In this review, living alone was understood as an objectively measurable item, a household size of one person unrelated to marital or partnership status. The investigation revealed that people living alone form a heterogeneous group, not just with relation to age and gender but also concerning living surroundings and the subjective experiences of living alone. Young people less than 30 years of age and, on the other hand, older people over 70 years of age are the two biggest groups living alone in Finland. This reflects the earlier mentioned argument

that young people become independent earlier and people living longer than before. There are also regional differences when looking at people living alone in Finland. The largest number of people living alone is in Helsinki when looking at one person households by municipality (Terämä et al. 2018); every fourth person in Helsinki is living alone (Terämä et al. 2018). Majority of those living alone in Finland live in the inner and outer urban areas (Helminen et al. 2014; Terämä et al. 2018). Borg (2015) found out that the pull factors attracting solo dwellers to live in the Helsinki Metropolitan Area included the good provision of services, leisure opportunities and cultural offerings. This suggests that the opportunities for social participation and interaction outside home are meaningful and important for people living alone and allow for creation of social networks. On the other hand, the high cost of living and expensive housing as mentioned before reduce people's desire to live in the capital.

Studies conducted in Finland have found that, on average, people living alone in Finland experience more deficiencies in their health compared to the rest of the population: higher mortality, lower levels of mental health, higher suicide rates and more loneliness. It is, however, worth to remember that there are differences between different groups of people living alone. There may be differentiating factors such as age and gender or education level or current employment situation affecting the health and well-being of the person living alone. In addition, the subjective experience of living alone may differ between solo dwellers; it may be considered as a preferable choice or an obliged circumstance.

This current inquiry confirmed that research directed towards mental well-being issues related to living alone has been limited. Earlier research has been concentrating on mental health problems and mental ill-health and much of the focus has been on older people. However, as demonstrated in this review, living alone can take place in many stages of life, not just towards the end of the life cycle. As the number of people living alone is likely to continue to increase, it is advisable to investigate the issue on a much greater scale.

The problem-based approach to examine living alone and the issues evolving from it provides a very narrow outlook on living alone and especially on the experience of living alone. Some of the earlier studies show that people living alone may experience challenges in their well-

being. However, there is very limited evidence on the factors that support and promote the mental health and well-being of those living alone. Positive mental health or mental well-being has been recognised as a key resource for health and well-being and contributing to quality of life (Barry & Jenkins 2007; Huppert 2009). Consequently, positive mental health could act as a protective and supportive element when faced with challenges, such as studies suggest those living alone may face in their everyday life. It would be sensible then to investigate what kind of factors may play a role in supporting and increasing the positive mental health of those living alone. What creates positive sense of well-being and resilience when living alone?

Related to the above issue of what creates positive mental health, this review identified studies that have demonstrated that the predictors of different levels of mental well-being might be different; the factors that contribute to higher levels of positive mental health may be dissimilar to those associated with lower levels of positive mental health. As the study by Santini (2020) demonstrated, the socioeconomic predictors of high mental well-being do not necessary mirror those of low mental well-being. However, their study found that relational and recreational behaviours such as social interaction, social support, informal and formal social participation and recreational activity were associated with both low and high positive mental health. The researchers thus suggest that strategies focusing on relational and recreational behaviours may be essential in both preventing poor mental health but also promoting higher levels of mental well-being. With reference to people living alone and their state of positive mental health, this view seems to be of special importance as social interaction, social support and social participation may provide people living alone the needed or desired social networks and thus potentially prevent experiences of loneliness. With regards to socioeconomic factors, they are valuable and vital to preventing mental ill-health but may be limited in approaches addressing the high end of the mental health spectrum. It seems though, that when investigating the well-being of people living alone, both inquiry lines are required.

4.1 Conclusion

This review demonstrated that more research is needed on the mental well-being of those living alone. More specifically, knowledge on factors related to high or low levels of positive mental health of those living alone is warranted. Positive mental health may have a beneficial influence not just on the health and quality of life of people living alone but also on their social functioning and societal empowerment. People living alone form a large part of the population, however, their needs are still largely unmet. Utilising measurements of positive mental health such as the WEMWBS or SWEMWBS will provide a fresh perspective on mental well-being producing original and novel knowledge. The generated intrinsic information can be of use in policy development and decision-making in relation to matters concerning those living alone and their health and well-being. As more people both in Europe and globally are living alone, the issue is of high societal importance.

REFERENCES

Andersson L. 1998. Loneliness research and interventions: a review of the literature. Aging & Mental Health 2 (4), 264–274.

Barry, MM. & Jenkins, R. 2007. Implementing Mental Health Promotion. Edinburgh: Churchill Livingstone Elsevier.

Bech, P. 2004. Measuring the dimensions of psychological general well-being by the WHO-5. Quality of Life Newsletter 32, 15–16.

Bech P. 2012. Clinical Psychometrics. Oxford: Wiley-Blackwell.

Bech, P., Olsen, LR., Kjoller, M. & Rasmussen, NK. 2003. Measuring well-being rather than the absence of distress symptoms: a comparison of the SF-36 Mental Health subscale and the WHO-Five Well-Being Scale. International Journal of Methods in Psychiatric Research 12, 85–91.

Beller, J. & Wagner, A. 2018. Disentangling Loneliness: Differential effects of subjective loneliness, network quality, network size, and living alone on physical, mental, and cognitive health. Journal of Aging and Health 30 (4), 521–539.

Bennet, J. & Dixon, M. 2006. Single person households and social policy. Looking forwards. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.505.6854&rep=rep1&type=pdf Accessed 16.11.2019

Bilotta, C., Bowling, A., Nicolini, P., Casè, A. & Vergani, C. 2012. Quality of life in older outpatients living alone in the community in Italy. Health & Social Care in the Community 20 (1), 32–41.

Blanchflower, DG., Oswald, AJ. & Stewart-Brown, S. 2013. Is psychological wellbeing linked to the consumption of fruit and vegetables? Social Indicator Research 114, 785–801.

Borg, P. 2015. Yksinasuvien helsinkiläisten kokema hyvinvointi. Tutkimuksia 3/2015. Helsinki: Helsingin kaupungin tietokeskus. https://www.hel.fi/hel2/tietokeskus/julkaisut/pdf/16_04_25_yksin_kaupungissa_valini emilaurson_borg_keskinen.pdf

Braunholtz, S., Davidson, S., Myant, K. & O'Connor, R. 2007. Well? What do you think? 2006. The third national Scottish survey of public attitudes to mental health, mental wellbeing and mental health problems. Edinburgh: Scottish Executive.

Cacioppo, JT., Hughes, ME., Waite, LJ., Hawkley, LC. & Thisted, RA. 2006. Loneliness as a specific risk factor for depressive symptoms: Cross-sectional and longitudinal analyses. Psychology and Aging, 21 (1), 140–151. https://doi.org/10.1037/0882-7974.21.1.140

Chen, Y, Hicks, A & While, AE. 2014. Quality of life and related factors: a questionnaire survey of older people living alone in Mainland China. Quality of Life Research, 23 (5), 1593–1602.

De Moortel., D, Palència, L., Artazcoz, L., Borrell, C. & Vanroelen, C. 2015. Neo-Marxian social class inequalities in the mental well-being of employed men and women: The role of European welfare regimes. Social Science & Medicine 128, 188–200.

Dreger, S., Buck, C. & Bolte, G. 2014. Material, psychosocial and sociodemographic determinants are associated with positive mental health in Europe: a cross-sectional study. BMJ Open 4. e005095. doi:10.1136/bmjopen-2014-005095.

Eurostat. Statistics explained. Household composition statistics. Accessed 13.9.2019. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Household_composition_statistics

Eurofound. 2013. Third European quality of life survey – quality of life in Europe: subjective well-being. Luxembourg: publications Office of the European Union.

EU Joint Action on Mental Health and Wellbeing. European Framework for Action on Mental Health and Wellbeing, Final Conference - Brussels, 21–22 January 2016.

Helminen, V., Nurmio, K., Rehunen, A., Ristimäki, M., Oinonen, K., Tiitu, M., Kotavaara, O. Antikainen, H. & Rusanen, J. 2014. Kaupunki-maaseutu-alueluokitus. Suomen ympäristökeskuksen raportteja 25/2014. Helsinki: Suomen ympäristökeskus. http://hdl.handle.net/10138/135861

Holt-Lunstad, J., Smith, TB., Baker, M., Harris, T. & Stephenson, D. 2015. Loneliness and Social Isolation as Risk Factors for Mortality: A Meta-Analytic Review. Perspectives on Psychological Science 10 (2), 227–237.

Huppert, FA. 2009. Psychological well-being: Evidence regarding its causes and consequences. Applied Psychology: Health and Well-being 1, 137–164.

Jacob, L., Haro, JM. & Koyanagi A. 2019. Relationship between living alone and common mental disorders in the 1993, 2000 and 2007 National Psychiatric Morbidity Surveys. PLoS ONE 14 (5): e0215182. https://doi.org/10.1371/journal.pone.0215182

Jamieson, L. & Simpson, R. 2013. Living Alone. Globalization, Identity and Belonging. Hampshire: Palgrave Macmillan Studies in Family and Intimate Life.

Jones, A., Perkins, C., Stansfield, J., Mason, J., O'Keefe, M., McHale, P., Leckenby, N. & Bellis, MA. 2013. North West Mental Wellbeing Survey 2012/13. London: Public Health England, Liverpool John Moores University.

Joutsenniemi, K., Martelin T., Martikainen, P., Pirkola, S. & Koskinen, S. 2006. Living arrangements and mental health in Finland. Journal of Epidemiology & Community Health 60, 468–475.

Kauppinen, T., Martelin, T., Hannikainen-Ingman, K. & Virtala, E. 2014. Yksin asuvien hyvinvointi. Mitä tällä hetkellä tiedetään? Helsinki: Terveyden ja hyvinvoinnin laitos. Työpaperi 2014:27.

Kawamoto, R., Yoshida, O., Oka, Y. & Kodama, A. 2005. Influence of living alone on emotional well-being in community-dwelling elderly persons. Geriatrics & Gerontology International 5, 152–158.

Keyes, C. 2002. The mental health continuum: From languishing to flourishing in life. Journal of Health and Social Behavior 43, 207–222.

Keyes, C. 2005. Mental Illness and/or Mental Health? Investigating Axioms of the Complete State Model of Health. Journal of Consulting and Clinical Psychology 73 (3), 539–548. http://dx.doi.org/10.1037/0022-006X.73.3.539

Keyes, C. 2007. Promoting and protecting mental health as flourishing: A complementary strategy for improving national mental health. American Psychologist 62, 95–108.

Keyes, C., Eisenberg, D., Perry, G., Dube, S., Kroenke, K. & Dhingra, S. 2012. The Relationship of Level of Positive Mental Health With Current Mental Disorders in Predicting Suicidal Behavior and Academic Impairment in College Students, Journal of American College Health 60 (2), 126–133. doi: 10.1080/07448481.2011.608393

Keyes, C. & Simoes, E. 2012. To flourish or not. Positive mental health and all-cause mortality. American Journal of Public Health 102 (11), 2164–72.

Klinenberg, E. 2012. Going solo. New York: The Penguin Press.

Knapp, M., McDaid, D. & Parsonage, M. (eds.) 2011. Mental health promotion and

mental illness prevention: The economic case. London: Department of Health.

Koponen, P., Borodulin, K., Lundqvist, A., Sääksjärvi, K. & Koskinen, S. (eds.). 2018. Health, functional capacity and welfare in Finland – FinHealth 2017 study. Helsinki: National Institute for Health and Welfare (THL).

Lehtinen, V. Building Up Good Mental Health. 2008. Guidelines based on existing knowledge. Helsinki: Stakes.

Lindström, M. 2009. Marital status, social capital, material conditions and self-rated health: A population-based study. Health Policy 93, 172–179.

Lukaschek, K., Vanajan, A., Hamimatunnisa, J., Weiland, N. & Ladwig, KH. 2017. "In the mood for ageing": determinants of subjective well-being in older men and women of the population-based KORA-Age study. BMC Geriatrics 17, 126.

Luokkala, K., Tamminen, N. & Solin, P. 2018. Yksin kotona. Yksinelävien positiivinen mielenterveys ja kokemuksia yhteiskunnallisesta asemasta. Yhteiskuntapolitiikka 83: 5–6.

Martin, C., Cherlin, A. & CrossBarnet, C. 2011. Living Together Apart in France and the United States. Population (Engl Ed) 66 (3–4), 561–581. doi: 10.1353/pop.2011.0025

Mason, P., Curl, A. & Kearns, A. 2016. Domains and levels of physical activity are linked to adult mental health and wellbeing in deprived neighbourhoods: A cross-sectional study. Mental Health and Physical Activity 11, 19–28.

McDaid, D., Park, A.L. & Wahlbeck, K. 2019. The Economic Case for the Prevention of Mental Illness. Annual Review of Public Health, 40. doi: 10.1146/annurev-publhealth-040617-013629

McManus, S., Bebbington, P., Jenkins, R. & Brugha, T. (eds.) 2016. Mental health and wellbeing in England: Adult Psychiatric Morbidity Survey 2014. Leeds: NHS Digital.

Michael, YL., Berkman, LF., Golditz, GA. & Kawachi, I. 2001. Living Arrangements, Social Integration, and Change in Functional Health Status. American Journal of Epidemiology 153, 123–131.

Moher, D., Liberati, A., Tetzlaff, J. & Altman, DG. The PRISMA Group. 2009. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Medicine 6: e1000097. doi:10.1371/journal.pmed1000097.

Munn, Z., Moola, S., Lisy, K., Riitano, D. & Tufanaru, C. 2015. Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and

cumulative incidence data. International Journal of Evidence Based Healthcare 13, 147–53. https://doi.org/10.1097/XEB.0000000000000054

Munn, Z., Moola, S., Lisy, K., Riitano, D. & Tufanaru C. 2017. Chapter 5: Systematic reviews of prevalence and incidence. In: Aromataris, E. & Munn, Z. (eds.). Joanna Briggs Institute Reviewer's Manual. The Joanna Briggs Institute. https://wiki.joannabriggs.org/display/MANUAL/Joanna+Briggs+Institute+Reviewer%27s+Manual. Accessed 15.9.2019.

Ng Fat, L., Mindell, J., Boniface, S. & Stewart-Brown, S. 2016. Evaluating and establishing national norms for the short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS) using the health survey for England. Quality of Life Research 26 (5), 1129–1144.

Oates, J., Jones, J. & Drey, N. 2017. Subjective well-being of mental health nurses in the United Kingdom: Results of an online survey. International Journal of Mental Health Nursing 26, 391–401.

Official Statistics of Finland (OSF). 2018a. Dwellings and housing conditions [e-publication]. Helsinki: Statistics Finland. Accessed 15.11.2019. http://www.stat.fi/til/asas/2018/asas_2018_2019-05-14_tie_001_en.html

Official Statistics of Finland (OSF). 2018b. Dwellings and housing conditions [e-publication]. Appendix table 1. Household-dwelling units by number of person 1960-2018. Helsinki: Statistics Finland. Accessed 22.2.2020. http://www.stat.fi/til/asas/2018/asas_2018_2019-05-14_tau_001_en.html

Ojala, EM. & Kontula, O. 2002. Tarvitseeko minua kukaan? Keski-ikäiset yksineläjät perhekeskeisessä yhteisössä. Väestöntutkimuslaitoksen julkaisusarja D 40. Helsinki: Väestöntutkimuslaitos, Väestöliitto.

Population Research Institute. 2017. Yksinäisyys kalvaa yksinasuvia. Tietovuoto toukokuu.

Pulkki-Råback, L., Kivimäki, M., Ahola K, Joutsenniemi, K., Elovainio, M., Rossi, H., Puttonen, S., Koskinen, S., Isometsä. E., Lönnqvist, J. & Virtanen, M. 2012. Living alone and antidepressant medication use: a prospective study in a working-age population. BMC Public Health 12, 236–243.

Pyykkönen, T. 2016. Väestörakenteen muutos selittää yksinasumisen yleistymistä. Yhteiskuntapolitiikka 81:2.

https://www.julkari.fi/bitstream/handle/10024/131093/yp1602_pyykkonen.pdf?sequence=1

Richards, J., Jiang, X., Kelly, P., Chau, J., Bauman, A. & Ding, D. 2015. Don't worry, be happy: cross-sectional associations between physical activity and happiness in 15 European countries. BMC Public Health 15, 53. doi 10.1186/s12889-015-1391-4.

Rico-Uribe, LA., Caballero, FF., Martín-María, N., Cabello, M., Ayuso-Mateos, JL. & Miret, M. 2018. Association of loneliness with all-cause mortality: A meta-analysis. PLoS ONE 13 (1): e0190033. https://doi.org/10.1371/journal.pone.0190033

Ryan, R. & Deci, E. 2001. On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. Annual Review of Psychology 52, 141–66.

Saari, J. (ed.) 2016. Yksinäisten Suomi. Gaudeamus.

Santini, DZI., Stougaard, S., Koyanagi, A., Ersbøll, AK., Nielsen, L., Hinrichsen, C., Madsen, KR., Meilstrup, C., Stewart-Brown, S. & Koushede, V. 2020. Predictors of high and low mental well-being and common mental disorders: findings from a Danish population-based study. European Journal of Public Health, ckaa021. https://doi.org/10.1093/eurpub/ckaa021

Sok, SR. & Yun, EK. 2011. A comparison of physical health status, self-esteem, family support and health-promoting behaviours between aged living alone and living with family in Korea. Journal of Clinical Nursing 20, 1606–1612.

Solin, P., Reinikainen, J., Martelin, T. & Tamminen, N. 2019. Predicting high and low levels of positive mental health among people living alone in the Lapland region of Finland. Journal of Public Mental Health 18 (4), 214–223. doi 10.1108/JPMH-02-2019-0026

Stewart-Brown, S., Samaraweera, PC., Taggart, F., Kandala, NB. & Stranges, S. 2015. Socioeconomic gradients and mental health: implications for public health. The British Journal of Psychiatry 206, 461–465.

Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J. & Weich, S. 2009. Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): a Rasch analysis using data from the Scottish health education population survey. Health and Quality of Life Outcomes 7, 15.

Stranges, S., Samaraweera, PC., Taggart, F., Kandala, NB. & Stewart-Brown, S. 2014. Major health-related behaviours and mental well-being in the general population: the Health Survey for England. BMJ Open, 4: e005878. doi:10.1136/bmjopen-2014-005878

Suldo, S. & Shaffer, E. 2008. Looking Beyond Psychopathology: The Dual-Factor Model of Mental Health in Youth. School Psychology Review, 37 (1), 52–68.

Taggart, F., Stewart-Brown, S. & Parkinson, J. 2016. Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). User Guide (Version 2). NHS Health Scotland, Warwick Medical School, University of Warwick.

Tamminen, N., Reinikainen, J., Appelqvist-Schmidlechner, K., Borodulin, K., Mäki-Opas, T. & Solin, P. 2020. Associations of physical activity with positive mental health: A population based study. Mental Health and Physical Activity 18, 100319. https://doi.org/10.1016/j.mhpa.2020.100319

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J. & Stewart-Brown, S. 2007. The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. Health & Quality of Life Outcomes 5, 63. doi:10.1186/1477-7525-5-63

Terämä, E., Tiitu, M., Paavola, JM., Vainio, A., Määttänen, N., Miettinen, A., Kontula, O. & Hiilamo, H. 2018. Yksin osana elinkaarta. Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 66/2018. Valtioneuvoston kanslia.

Vaarama, M., Mukkila, S. & Hannikainen-Ingman, K. 2014. Suomalaisten elämänlaatu nuoruudesta vanhuuteen. Teoksessa Vaarama, M., Karvonen, S., Kestilä, L., Moisio, P. & Muuri. A. (toim.) Suomalaisten hyvinvointi 2014. Helsinki: Terveyden ja hyvinvoinnin laitos, 20–39.

Vaillant, G. 2012. Positive mental health: is there a cross-cultural definition? World Psychiatry 11, 93–9.

Weiss, R. 1973. Loneliness: the experience of emotional and social isolation. Massachusetts: The MIT Press.

Wilson, M., Kellock, C., Adams, D. & Landsberg, J. 2015. The Scottish Health Survey Topic Report: Mental Health and Wellbeing. Edinburgh: Scottish Government.

World Health Organization. 2018. Mental health: strengthening our response. Fact sheet. Retrieved from https://www.who.int/en/news-room/fact-sheets/detail/mental-health-strengthening-our-response

Zechmeister, I., Kilian, R., McDaid, D. & the MHEEN group. 2008. Is it worth investing in mental health promotion and prevention of mental illness? A systematic review of the

evidence from economic evaluations. BMC Public Health 8, 20. doi.org/10.1186/1471-2458-8-20

Zhang, Z. & Chen, W. 2019. A systematic review of the relationship between physical activity and happiness. Journal of Happiness Studies 20, 1305. doi.org/10.1007/s10902-018-9976-0

PART II ARTICLE MANUSCRIPT

Citation: Tamminen, N., Kettunen, T., Martelin, M., Reinikainen, J., Solin. P. 2019. Living alone and positive mental health: a systematic review. Systematic Reviews 8, 134. https://doi.org/10.1186/s13643-019-1057-x

Tamminen et al. Systematic Reviews (2019) 8:134
https://doi.org/10.1186/s13643-019-1057-x

Systematic Reviews

RESEARCH Open Access

Living alone and positive mental health: a systematic review

Nina Tamminen[1,2*], Tarja Kettunen[3,4], Tuija Martelin[5], Jaakko Reinikainen[6] and Pia Solin[1]

Abstract

Background: Living alone has become more common in today's societies. Despite the high number of the population living alone, research directed towards the mental wellbeing issues related to living alone has been limited. This systematic literature review aimed to assess the association between living alone and positive mental health.

Methods: We conducted searches in Medline, Web of Science, Cochrane Library, CINAHL, PsycINFO, and other complementary databases from January 1998 to May 2019. Randomised trials and observational studies investigating adults over 18 years of age and living alone (defined as living in a single household or a household size of one person) were eligible. The primary outcome was positive mental health, defined as comprising both hedonic and eudaimonic elements of mental wellbeing, and it was measured with the Warwick-Edinburgh Mental Well-being Scale and/or theWHO-5 Index. Two reviewers independently screened and selected data; one reviewer extracted data, and the second checked the extracted data. A narrative synthesis described the quality and content of the evidence. Included studies were appraised using relevant Joanna Briggs Institute checklist.

Results: A total of 4 cross-sectional studies (22,591 adult participants) were included after screening of 341 titles and abstracts and 46 full-text articles. These studies were conducted in Europe and were published between 2014 and 2017. The studies differed in their measurements of positive mental health (WHO-5 Well-Being Index, 3 studies; WEMWBS, 1 study), sources of data (1 regional, 1 national, and 2 European-level studies), and study populations (regional study, adults over 65 years of age; national-level study, mental health nurses over 21 years of age; European-level studies, employees between 15 and 65 years of age and adults over 18 years of age). A potential association between living alone and low positive mental health was found in three out of the four studies. Our findings were limited as the number of included studies was low and the quality of evidence varied across studies.

Conclusions: This review allows a limited look at the association between living alone and positive mental health. Because the number of included studies was low and the quality of evidence varied across studies, further research is warranted.

Keywords: Living alone, Positive mental health, Systematic literature review

Background

Living alone has become more common in today's societies. In 2017, one third (33.6%) of households in the EU (European Union) and around 40% of households in the Nordic countries (with the exception of Iceland) were single-person households [1]. The number of people living alone is likely to continue to increase globally among both older people and working adults [2].

The definitions of living alone or being single may vary. Nowadays, official marital status no longer necessary reflects an individual's living arrangements as single, divorced, and widowed persons may live alone or with other people such as a partner, children, parents, or other unrelated persons. Thus, more than official marital status, living arrangements may better describe one's social bonds. In addition, people living alone do not constitute a uniform group. People living alone may be at

* Correspondence: nina.tamminen@thl.fi
[1]WHO Collaborating Centre for Mental Health Promotion, Prevention and Policy, Mental Health unit, National Institute for Health and Welfare, Helsinki, Finland
[2]Department of Health Sciences, University of Jyvaskyla, Jyväskylä, Finland
Full list of author information is available at the end of the article

very different life stages depending on their age, gender, education, and work status. Moreover, living arrangements can change several times during an individual's life course. In this review, living alone is understood as only one person living in a household at the time of the research, in other words, a household size of one person. As Jamieson et al. stated [2] 'The essence of living alone is simple: nobody else lives in the same living space or routinely shares everyday domestic life' (p. 5).

Earlier studies have produced conflicting results concerning the association between living alone and mental health. According to some studies, living alone does not constitute a risk factor to mental health [3, 4]. On the other hand, some authors have reported associations with depression, poorer experienced health and quality of life, and experiences of loneliness [5–8]. Further, research shows that people living alone face challenges that may place a potential burden on their mental wellbeing, such as financial difficulties and higher living costs as they do not have the scale advantage of those living with another adult [5, 9]. There is therefore a need to further examine the relationship between living alone and positive mental health.

The term *positive mental health* is often used and understood in policy and academic literature as interchangeable with the term *mental wellbeing* [10, 11]. Furthermore, in research, both of these concepts have sometimes been operationalised under the concept of *subjective wellbeing* [12–14]. In this review, positive mental health is understood as being interchangeable with mental wellbeing or subjective wellbeing.

Positive mental health is based on the assumption that mental health is something positive, consists of wellbeing, and is more than the absence of mental illness [15]. It is recognised as a key resource for health and wellbeing [16]. Positive mental health has been shown to be associated with mortality, physical health, social functioning, and academic achievement, as well as with mental illness [13, 17, 18]. It is currently receiving increased attention in research, policymaking, and clinical practice [19], and it has been recognised as a priority research area in public mental health [20]. Positive mental health is conceived as a multi-faceted construct that comprises both hedonic and eudaimonic elements. The hedonic perspective focuses on subjective experience of happiness and life satisfaction. The eudaimonic perspective, on the other hand, views wellbeing as something more than subjective feelings, and focuses on psychological functioning and self-realisation [11, 12]. Positive mental health includes individual resources, such as self-esteem, optimism and a sense of mastery and coherence; the ability to initiate, develop and sustain mutually satisfying personal relationships; and the ability to cope with adversities [21].

Efforts to investigate positive mental health have been hampered by a shortage of valid instruments suitable for measuring the attributes of positive mental health. The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) measures positive mental health, covering both the hedonic and eudaimonic aspects of mental wellbeing. The scale consists of 14 positively worded items covering 'positive affect (feelings of optimism, cheerfulness, relaxation), satisfying interpersonal relationships, and positive functioning (energy, clear thinking, self-acceptance, personal development, competence and autonomy)' ([22], p. 3). The scale was developed to enable the monitoring of mental wellbeing in the general population and the evaluation of projects, programmes, and policies which aim to improve mental wellbeing. There is also a shortened version of the WEMWBS with seven items (SWEMWBS) [23]. The scale has been used in national surveys in Scotland and England [24, 25]. In the Scottish Health Survey, in the 2012 and 2013 combined dataset [24], the WEMWBS scores were lowest for adults who were separated. In the Health Survey for England, in the 2010 and 2011 combined dataset [25], people who were single, divorced, or widowed had lower wellbeing scores than those who were married or lived as a couple. Both studies described marital status and did not differentiate those who were living alone for real.

An instrument similar to the WEMWBS is the WHO-5 Well-Being Index [26]. The index shares common features with the WEMWBS measurement, capturing positive affect and wellbeing [22, 27] and measuring both the hedonic and eudaimonic aspects of wellbeing [26]. The index is a positively worded 5-item questionnaire measuring current mental wellbeing. The scale was first presented at a WHO (World Health Organization) meeting in Stockholm in 1998. Since then, the WHO-5 Well-Being Index has been validated in a number of studies with regard to both its clinical and psychometric validity [28].

Despite the high number of the population living alone, research directed specifically towards mental wellbeing issues related to living alone has been limited. The objective of this review is to collect and assess the body of empirical research on the association between living alone and positive mental health. The review concentrates on adults living alone and on two indicators that measure positive mental health, the WEMWBS and the WHO-5 Index as they both comprise the hedonic and eudaimonic aspects of mental wellbeing.

Methods

This systematic review was reported in accordance with the reporting guidance provided in the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement [29] (see the checklist in

Additional file 1). The review protocol is included as Additional file 2.

Eligibility criteria

Studies were eligible for inclusion if they reported original research (such as randomised controlled trials, observational studies, or mixed methods studies) and the study population included adults (those over 18 years of age) living alone. *Living alone* could be covered by belonging to the category of 'living alone', 'living in a single household', or 'a household size of one person'. Studies considering positive mental health as an outcome and/or including the WEMWBS/SWEMWBS and/or the WHO-5 positive mental health measurement scales were included. Studies conducted from 1998 onwards (the WHO-5 measurement was introduced in 1998) were eligible. Only fully published, peer-reviewed papers reported in English were included.

Information sources and the literature search

The literature search was performed by an information specialist in October and November 2017. Sixteen databases were searched from 1998 to November 2017 to identify English language publications. The main electronic databases included: Medline, Web of Science, Cochrane Library, the Cochrane Database of Systematic Reviews, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO. Complementary databases included ASSIA (Applied Social Sciences Index and Abstracts), the International Bibliography of the Social Sciences (IBSS), the Political Science Database, the Social Science Database, the Sociology Database, the Education Database, Sociological Abstracts and Social Services Abstracts, Academic Search Elite, SocINDEX, AgeLine and Urban Studies Abstracts, and one search engine, Google Scholar. The search was updated in May 2019 regarding the main 5 databases: Medline, Web of Science, Cochrane Library, CINAHL and PsycINFO. The search strategy was developed with the team's professional health science librarian and search algorithms were tailored for each database (see the search strategies by database in Additional file 3). Searches were piloted, and as a result, broader descriptions of living alone and positive mental health were used to ensure as wide as possible coverage in the review. The final strategy consisted of two search aspects: (1) search terms related to living alone: *living alone*, *single-living*, *one-person households*, *singlehood*, *single people*, *single persons*, *single men*, *single women* and (2) search terms related to positive mental health: *positive mental health*, *mental wellbeing*, *subjective wellbeing*, *Warwick-Edinburgh Mental Well-being Scale*, *WHO-5 Well-being Index*.

The screening and selection procedure

Two researchers (NT, PS) independently carried out the screening process. Any discrepancies were discussed until there was a consensus. The screening took place in two steps. In Step 1, all titles and abstracts were screened for relevance and eligibility. Articles that were not relevant or did not meet the inclusion criteria were removed. Articles that had insufficient information in the title and the abstract to determine their relevance were screened in Step 2. In Step 2, the full texts of the remaining articles were reviewed for relevance and in reference to the inclusion criteria.

Data collection

A data extraction form was developed to enable the collection of data. One review author extracted the data (with the assistance of the Atlas.ti data analysis software) and the second author checked the extracted data. The following information was extracted from each study: (1) study identification features: authors, title, country, year; (2) study characteristics: aims/objectives, study design, data source, data collection method; (3) population characteristics: age, gender, sample size; (4) outcome results: measured positive mental health, scales used, key findings; and (5) study limitations/strengths.

Quality assessment

To assess the risk of bias in individual studies, a methodological quality critical appraisal checklist proposed by the Joanna Briggs Institute (JBI) systematic review methods manual [30, 31] was used. This tool for observational studies reporting prevalence data considers the following: sample frame appropriateness, recruitment appropriateness, sample size, descriptions of subjects and setting, coverage of data analysis, ascertainment and measurement of the condition, the thoroughness of reporting statistical analysis, and the adequacy and management of the response rate (see Additional file 4). We judged each individual domain as having a high, low, or unclear risk of bias. Two reviewers (NT, PS) independently assessed the studies. Discrepancies were discussed and resolved through finding consensus. The results of the appraisal were used to inform the synthesis and interpretation of the review results.

Data analysis

The data from each study (e.g. the study characteristics, context, participants, outcomes and findings) were used to build evidence tables for an overall description of the included studies. As study populations and data sources differed between the included studies, a quantitative analysis was considered inappropriate and a narrative synthesis was conducted instead.

Results

The literature search identified 341 records, of which the full texts of 46 were examined and 42 of these were then excluded. Accordingly, we included four studies. A PRISMA flowchart documenting the process of study selection is shown in Fig. 1.

The characteristics of the studies

Two of the studies were European-level studies [32, 33]: one was carried out in Southern Germany [34] and one in the UK [35]. All the studies were published within the last few years (between 2014 and 2017) (Table 1).

The included studies were all cross-sectional in design. One study used the European Social Survey (ESS) as the data source for their study [32], one used the dataset from the European Quality of Life Survey (EQLS) [33], one from the KORA-Age study (KORA stands for Cooperative Health Research in the Region of Augsburg) [34], and one study carried out their own survey [35]. The survey tools varied encompassing face-to-face interviews [32, 33], an online questionnaire [35], and a telephone interview and a postal questionnaire [34].

Study populations

Three of the studies included wide study populations which described the number or percentage of those living alone (see Table 1 for study population sizes). De Moortel et al. [32] studied male and female employees between 15 and 65 years of age; the study population of Dreger et al. [33] consisted of men and women 18 years of age and older; and Lukaschek et al. [34] investigated a population that included men and women 65 years of age or older. The study of Oates et al. [35] involved female and male mental health nurses over 21 years of age. Only a small number of the participants lived alone.

Positive mental health measures and study outcomes

Positive mental health was measured with the WHO-5 Well-Being Index in three of the studies [32–34] and with the WEMWBS in one study [35].

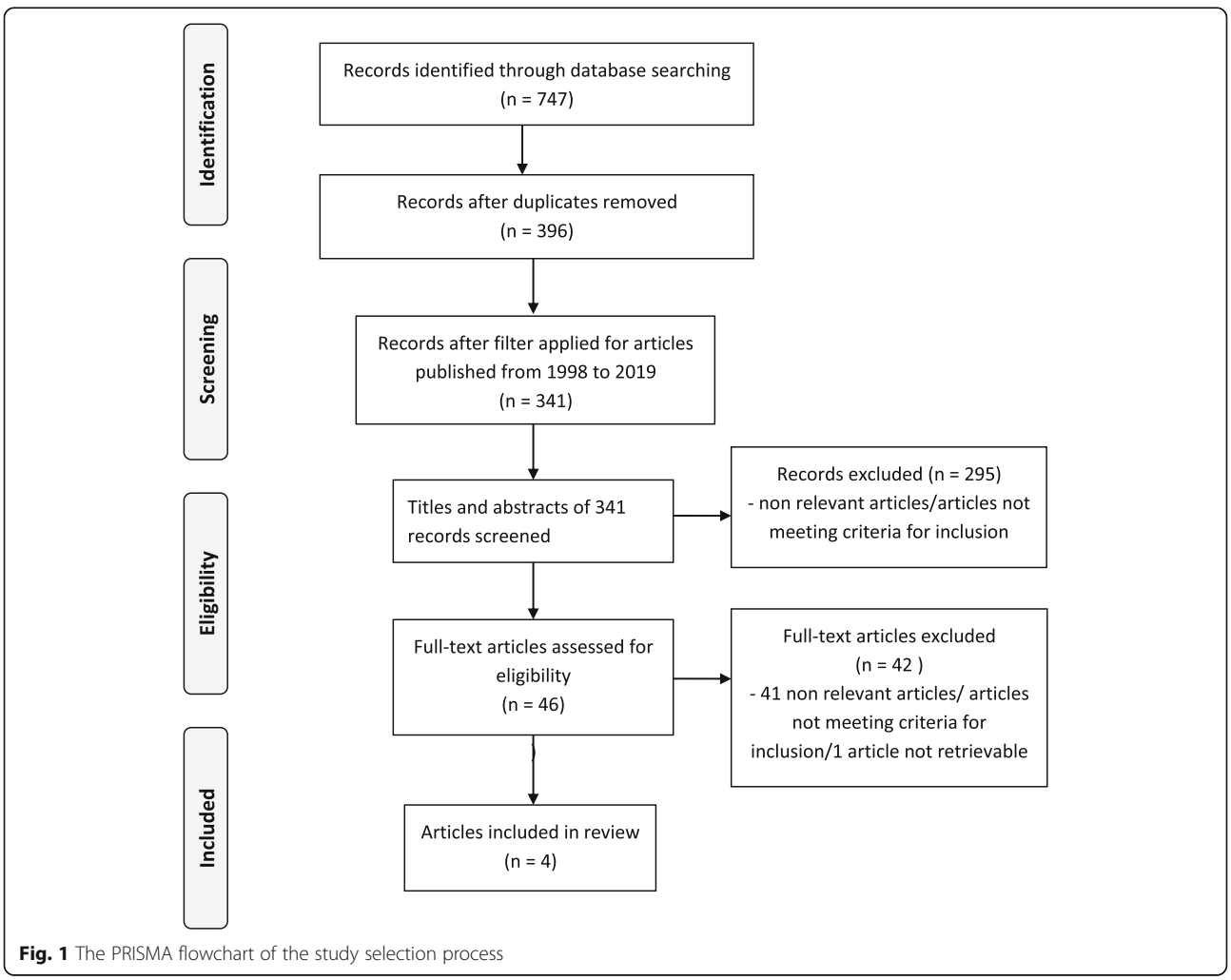

Fig. 1 The PRISMA flowchart of the study selection process

Table 1 The characteristics of the included studies

Author, year	Country	Study design	Data source; type of tool	Study population; sample size	Positive mental health measure	Key findings
De Moortel et al., 2015 [32]	European	Cross-sectional	European Social Survey (ESS); face-to-face interviews.	Male ($n = 7119$) and female ($n = 6988$) employees, aged 15–65 years; approx. 12% described as living alone (percentage stated per welfare regime).	WHO-5 Well-Being Index: three items	Good mental wellbeing (positive mental health) was less prevalent for women living alone, compared to women without children living with a partner who did half or more of the household labour (prevalence ratio among women: 0.81 (95% confidence interval 0.72–0.90) and among men: 0.98 (0.89–1.08)).
Dreger et al.,2014 [33]	European	Cross-sectional	European Quality of Life Survey (EQLS); face-to-face interviews.	Men ($n = 21,066$) and women ($n = 22,569$), aged 18 years and over; 8926 men and 10,749 women described as living alone.	WHO-5 Well-Being Index	Living alone was associated with positive mental health in both genders. Living without a partner was significantly associated with low positive mental health among both genders (odds ratio among men: 1.18 (95% confidence interval 1.07–1.30) and among women: 1.17 (1.09–1.25)).
Lukaschek et al., 2017 [34]	Southern Germany	Cross-sectional	The KORA (Cooperative Health Research in the Region of Augsburg) -Age study; telephone interview or postal questionnaire.	Participants aged 65 years or older: $n = 3602$ (men $n = 1750$; women $n = 1822$); 335 men and 852 women described as living alone.	WHO-5 Well-Being Index	The impact of living alone on low subjective wellbeing (positive mental health) was significant only in women. Living alone increased the odds of having low subjective wellbeing in women (odds ratio: 1.43 (95% confidence interval 1.10–1.87)), but not significantly in men (1.19 (0.85–1.68)).
Oates et al., 2017 [35]	UK	Cross-sectional	UK mental health nurses (MHN); online questionnaire.	Female ($n = 159$) and male ($n = 65$) mental health nurses; living alone ($n = 37$, including both sexes).	Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)	Household size was not significantly correlated with subjective wellbeing (positive mental health), although those living alone had lower mean subjective wellbeing measure score. Mean score of those living alone: 46.69 (standard deviation 8.30), living with 1 person: 48.88 (7.95), living with 2–3 others: 46.89 (8.54) and living with 4+ others: 47.60 (8.33).

Regarding study outcomes, three of the studies reported associations between living alone and positive mental health. Dreger et al. [33] found that living without a partner was significantly associated with poor positive mental health for both genders in a model adjusted for sociodemographic and psychosocial factors and in a model adjusted for sociodemographic, psychosocial, and material factors. They used a large dataset provided by the EQLS, producing a large study population of those living alone, thus providing strength to their study results. This study was the only study that found associations in both women and men.

De Moortel et al. [32] found that good mental wellbeing (positive mental health) was less prevalent for women living alone, compared to women without children living with a partner who did half or more of the household labour (state corporatist/family support welfare regimes). The study employed a large dataset provided by the ESS. The ESS dataset only contained three items of the WHO-5 Well-Being Index to measure mental wellbeing (i.e. positive mental health). The researchers of the study, however, were confident of its internal consistency and the use of the three-item scale to measure mental wellbeing. Lukaschek et al. [34] reported similar findings regarding women living alone. They found that the impact of living alone on low subjective wellbeing (positive mental health) was only significant in women. Living alone increased the odds of having low subjective wellbeing in women but not in men. The study population in their research was again different from the other included studies; the study participants were older men and women between 65 and 90 years of age. The study population size was fairly large in their study. As a result of their findings, they suggested that living alone may have a negative effect on the wellbeing of older women. The researchers proposed that women place greater value on social ties than men, signifying that living alone could make older women vulnerable to lower subjective wellbeing.

Oates et al. [35] found no significant correlations between living alone and positive mental health. They reported that household size was not significantly correlated with subjective wellbeing (positive mental health). Their study was the only study to use the WEMWBS measurement to assess positive mental health. The sample size in their study was fairly small, and the study concerned a very specific study population: mental health nurses in the UK.

The quality of the included studies

We assessed the risk of bias in the included studies in nine domains. The results of the critical appraisal are

presented in Table 2. All the included studies had their target population appropriately framed; however, two of them (those by De Moortel et al. and Dreger et al.) did not provide detailed information regarding sample recruitment and were thus considered to have an unclear risk of bias in this domain. One study (by Oates et al.) was assigned a high risk of bias regarding the precision of the results as the sample size was small. Two of the studies had a high risk of coverage bias as the response rates were either low (in the study by Oates et al.) or varied between subgroups—some having a higher response rate and some having a lower response rate (in the study by Dreger et al.). In terms of factors that reduced the risk of bias, all the included studies employed appropriate statistical tests reporting the analyses made. One study (that of De Moortel et al.) was, nonetheless, considered to have a high risk of measurement bias as they used only a part of a validated measurement.

Discussion

This review aimed to collect and assess empirical data on the association between living alone and positive mental health, and to highlight possible shortages in this field of research. Despite including an extensive number of databases in the review and a comprehensive search strategy, the search resulted in a surprisingly low number of studies (four) that focused on positive mental health and living alone, thus indicating a shortage of research investigating the association. Positive mental health as such is a relatively new concept and research area, and according to this review, studies concentrating specifically on the positive mental health of those living alone seem to be very scarce. This novelty of the research area was supported by the finding that all the included studies were published within the last few years.

As the number of included studies was low and the quality of evidence varied across studies, the review only allows a narrow look at the associations of living alone and positive mental health. Three of the studies reported associations between living alone and low positive mental health [32–34]. These studies had large or fairly large population sample sizes. The study that found no correlation had, on the other hand, a low response rate with a small sample size [35], thus contributing to a high risk of bias regarding the precision of the results. This may suggest that in order to find potential associations, the study sample needs to be based on adequate response rates and be of a fairly large size.

Some gender differences were found in the study findings: two of the studies found associations in women but not in men [32, 34]. The national surveys of Scotland and England [24, 25], as well as the recently conducted National FinHealth 2017 Study [36], however, did not find differences in positive mental health scores between women and men. It is worth noting that none of these studies distinctly classified those living alone (i.e. a household size of one person). Interestingly, research on mental illness has found that living arrangements are strongly associated with mental health and particularly among men [5]: compared with married persons, persons living alone had higher odds of psychological distress and psychiatric disorders. These puzzling results may suggest that the correlates of positive mental health may be different from the correlates of mental illness [11], calling for further investigations into positive mental health outcomes in general, as well as into the positive mental health status of people living alone.

Given the range of the eligibility criteria, the studies differed in their measurements of positive mental health. Two measurements of positive mental health were used

Table 2 The critical appraisal results of the included studies using the JBI-Prevalence Critical Appraisal Checklist

Study	Was the sample frame appropriate to address the target population?	Were study participants sampled in an appropriate way?	Was the sample size adequate?	Were the study subjects and the setting described in detail?	Was the data analysis conducted with sufficient coverage of the identified sample?	Were valid methods used for the identification of the condition?	Was the condition measured in a standard, reliable way for all participants?	Was there appropriate statistical analysis?	Was the response rate adequate, and if not, was the low response rate managed appropriately?
De Moortel et al., 2015 [32]	Yes	Unclear	Yes	Yes	Yes	No	Yes	Yes	Unclear
Dreger et al., 2014 [33]	Yes	Unclear	Yes	Yes	No	Yes	Yes	Yes	Yes
Lukaschek et al., 2017 [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oates et al., 2017 [35]	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No

in the included studies: the WEMWBS and the WHO-5 Well-Being Index. Even though the two instruments share the same characteristics—both are positively worded and both measure the hedonic and eudaimonic aspects of mental wellbeing—caution needs to be taken when comparing study results between two ultimately different measurements [37]. In addition to this, a partial measurement was employed in one study, thus producing a high risk of measurement bias. These notions add to the weak evidence found in the review regarding associations between living alone and positive mental health. To conclude, no general conclusions can be made from the included studies and their study results; they must be evaluated individually and within their study context.

The limitations of the review

This review has a number of limitations affecting its validity. Firstly, due to the resources available, the systematic search only focused on articles published in English, possibly leaving unidentified studies published in other languages outside the review. In a similar way, grey literature and unpublished articles were not systematically searched for. This could contribute to publication bias. To minimise the effect of this limitation and to ensure as wide as possible coverage in the review, a high number of databases were searched and broader descriptions of the key terms were used. Secondly, as all the studies included in the review were cross-sectional in study design, it is impossible to make conclusions with regard to causality. In addition, the study populations were diverse and two different measures were used to assess positive mental health, and this thus affected the applicability of this review. However, these types of studies can provide evidence of the health status of a specified population group in a certain location at a given time [38]. Thirdly, all the included studies involved participants self-reporting, either by answering a questionnaire or being interviewed, which can lead to information bias. Consequently, care must be taken in interpreting such information as there is a tendency for respondents to provide what they believe to be socially acceptable answers, especially with regard to health conditions associated with taboos [38].

Conclusions

The review findings permitted a limited look at the association between living alone and positive mental health. A potential association with living alone and low positive mental health was perceived in those studies where the sample size was large or fairly large. It is therefore clear that more research is needed in study samples of appropriate sizes. As the number of people living alone is likely to continue to increase, it is recommended to investigate the issue on a much greater scale. An example would be to study the associations of living alone and positive mental health in large population studies such as the National FinHealth 2017 Study [36] carried out in Finland.

Positive mental health has been recognised as a key resource for health and wellbeing, and it may have a beneficial influence not just on health and quality of life but also on social functioning and productivity. New knowledge produced by vigorous research can be of use in policy development and decision-making in relation to those living alone and their health and wellbeing. As more people both in Europe and globally are living alone, the issue is of high societal importance.

Additional files

Additional file 1: PRISMA checklist. This file presents the PRISMA 2009 checklist employed in the study. (DOC 65 kb)

Additional file 2: Review protocol. This file presents the protocol of the study. (DOC 93 kb)

Additional file 3: Search strategies by database. This file presents the search strategies by each database employed in the study. (DOCX 35 kb)

Additional file 4: JBI critical appraisal checklist for prevalence studies. This file presents the JBI critical appraisal checklist for studies reporting prevalence data. (DOCX 17 kb)

Abbreviations

ASSIA: Applied Social Sciences Index and Abstracts; CINAHL: Cumulative Index to Nursing and Allied Health Literature; EQLS: European Quality of Life Survey; ESS: European Social Survey; EU: European Union; IBSS: International Bibliography of the Social Sciences; JBI: Joanna Briggs Institute; KORA: Cooperative Health Research in the Region of Augsburg; PRISMA: Preferred Reporting Items for Systematic Review and Meta-Analysis; SWEMWBS: Short Warwick-Edinburgh Mental Well-being Scale; UK: United Kingdom; WEMWBS: Warwick-Edinburgh Mental Well-being Scale; WHO: World Health Organization

Acknowledgements

The authors would like to thank Ritva Miikki, the information specialist from the National Institute for Health and Welfare, Finland, for technical support with the database search.

Authors' contributions

NT and PS developed the study design, conducted the review, and carried out the quality assessment ratings. NT wrote the initial draft of the manuscript. TM, JR, and TK contributed to the interpretation of the data. All the authors contributed to amending and drafting the manuscript. All the authors read and approved the final manuscript.

Funding

This work was supported by the Research Council for Health of the Academy of Finland (grant number: *308823*).

Availability of data and materials

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Competing interests
The authors declare that they have no competing interests.

Author details
[1]WHO Collaborating Centre for Mental Health Promotion, Prevention and Policy, Mental Health unit, National Institute for Health and Welfare, Helsinki, Finland. [2]Department of Health Sciences, University of Jyvaskyla, Jyväskylä, Finland. [3]Research Centre for Health Promotion, University of Jyvaskyla, Jyväskylä, Finland. [4]Central Finland Health Care District, Jyväskylä, Finland. [5]Equality and Inclusion unit, National Institute for Health and Welfare, Helsinki, Finland. [6]Public Health Evaluation and Projection unit, National Institute for Health and Welfare, Helsinki, Finland.

Received: 13 December 2018 Accepted: 27 May 2019
Published online: 07 June 2019

References

1. Eurostat. Statistics explained. Household composition statistics. http://ec.europa.eu/eurostat/statistics-explained/index.php/Household_composition_statistics. Accessed 1 June 2018.
2. Jamieson L, Simpson R. Living alone. Globalization, identity and belonging. Hampshire: Palgrave Macmillan studies in family and intimate life; 2013.
3. Michael YL, Berkman LF, Golditz GA, Kawachi I. Living arrangements, social integration, and change in functional health status. Am J Epidemiol. 2001; 153:123–31.
4. Kawamoto R, Yoshida O, Oka Y, Kodama A. Influence of living alone on emotional well-being in community-dwelling elderly persons. Geriatr Gerontol Int. 2005;5:152–8.
5. Joutsenniemi K, Martelin T, Martikainen P, Pirkola S, Koskinen S. Living arrangements and mental health in Finland. J Epidemiol Community Health. 2006;60:468–75.
6. Sok SR, Yun EK. A comparison of physical health status, self-esteem, family support and health-promoting behaviours between aged living alone and living with family in Korea. J Clin Nurs. 2011;20:1606–12.
7. Pulkki-Råback L, Kivimäki M, Ahola K, et al. Living alone and antidepressant medication use: a prospective study in a working-age population. BMC Public Health. 2012;12:236–43.
8. McManus S, Bebbington P, Jenkins R, Brugha T, editors. Mental health and wellbeing in England: Adult Psychiatric Morbidity Survey 2014. Leeds: NHS Digital; 2016.
9. Lindström M. Marital status, social capital, material conditions and self-rated health: a population-based study. Health Policy. 2009;93:172–9.
10. World Health Organization. The European mental health action plan. Conference document no. EUR/RC63/11. Copenhagen: World Health Organization regional Office for Europe; 2013.
11. Stewart-Brown S, Samaraweera PC, Taggart F, Kandala NB, Stranges S. Socioeconomic gradients and mental health: implications for public health. BJ Psych. 2015;206:461–5.
12. Ryan R, Deci E. On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. Annu Rev Psychol. 2001;52:141–66.
13. Keyes C, Simoes E. To flourish or not. Positive mental health and all-cause mortality. Am J Public Health. 2012;102:2164–72.
14. Lang G, Bachinger A. Validation of the German Warwick-Edinburgh mental well-being scale (WEMWBS) in a community-based sample of adults in Austria: a bi-factor modelling approach. J Pub Health. 2017;25:135–46.
15. World Health Organization. Mental health: strengthening our response. Fact sheet. http://www.who.int/en/news-room/fact-sheets/detail/mental-health-strengthening-our-response. Accessed 2 June 2018.
16. Huppert FA. Psychological well-being: evidence regarding its causes and consequences. Appl Psychol Health Well-Being. 2009;1:137–64.
17. Keyes C. Chronic physical disease and aging: is mental health a potential protective factor? Ageing Int. 2005;33:88–104.
18. Suldo S, Shaffer E. Looking beyond psychopathology: the dual-factor model of mental health in youth. School Psychol Rev. 2008;37:52–68.
19. EU Joint Action on Mental Health and Wellbeing. European framework for action on mental health and wellbeing, Final Conference - Brussels; 2016. p. 21–2.
20. Forsman AK, Wahlbeck K, Aarø LE, et al. Research priorities for public mental health in Europe: recommendations of the ROAMER project. Eur J Pub Health. 2015;25:249–54.
21. Lehtinen V. Building up good mental health. Guidelines based on existing knowledge. Helsinki: stakes; 2008.
22. Tennant R, Hiller L, Fishwick R, et al. The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. Health Qual Life Outcomes. 2007;5:63.
23. Stewart-Brown S, Tennant A, Tennant R, Platt S, Parkinson J, Weich S. Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): a Rasch analysis using data from the Scottish health education population survey. Health Qual Life Outcomes. 2009;7:15.
24. Wilson M, Kellock C, Adams D, Landsberg J. The Scottish health survey topic report: mental health and wellbeing. Edinburgh: Scottish government; 2015.
25. Taggart F, Stewart-Brown S, Parkinson J. Warwick-Edinburgh Mental Well-Being Scale (WEMWBS). User Guide (Version 2). Edinburgh: NHS Health Scotland, Warwick Medical School, University of Warwick; 2016.
26. Eurofound. Third European quality of life survey – quality of life in Europe: subjective well-being. Luxembourg: publications Office of the European Union; 2013.
27. Bech P. Measuring the dimensions of psychological general well-being by the WHO-5. QoL Newsletter. 2004;32:15–6.
28. Bech P. Clinical psychometrics. Oxford: Wiley-Blackwell; 2012.
29. Moher D, Liberati A, Tetzlaff J, Altman DG. The PRISMA group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med. 2009;6:e1000097. https://doi.org/10.1371/journal.pmed1000097.
30. Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Chapter 5: Systematic reviews of prevalence and incidence. In: Aromataris E, Munn Z (Editors). Joanna Briggs Institute Reviewer's Manual. The Joanna Briggs Institute; 2017. https://wiki.joannabriggs.org/display/MANUAL/Chapter+5%3A+Systematic+reviews+of+prevalence+and+incidence. Accessed 15 Mar 2019.
31. Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and cumulative incidence data. Int J Evid Based Healthc. 2015; 13:147–53. https://doi.org/10.1097/XEB.0000000000000054.
32. De Moortel D, Palència L, Artazcoz L, Borrell C, Vanroelen C. Neo-Marxian social class inequalities in the mental well-being of employed men and women: the role of European welfare regimes. Soc Sci Med. 2015;128:188–200.
33. Dreger S, Buck C, Bolte G. Material, psychosocial and sociodemographic determinants are associated with positive mental health in Europe: a cross-sectional study. BMJ Open. 2014;4:e005095. https://doi.org/10.1136/bmjopen-2014-005095.
34. Lukaschek K, Vanajan A, Hamimatunnisa J, Weiland N, Ladwig KH. "In the mood for ageing": determinants of subjective well-being in older men and women of the population-based KORA-age study. BMC Geriatr. 2017;17:126.
35. Oates J, Jones J, Drey N. Subjective well-being of mental health nurses in the United Kingdom: results of an online survey. Int J Mental Health Nurs. 2017;26:391–401.
36. National Institute for Health and Welfare. National FinHealth Study. https://thl.fi/en/web/thlfi-en/research-and-expertwork/population-studies/national-finhealth-study. Accessed 2 June 2018.
37. World Health Organization Regional Office for Europe. European health report 2012: charting the way to well-being. Copenhagen: WHO Regional Office for Europe; 2013.
38. Yu IT, Tse SL. Clinical epidemiology workshop - workshop 6 — sources of bias in cross-sectional studies; summary on sources of bias for different study designs. Hong Kong Med J. 2012;18:226–7.

Publisher's Note