

**Flourishing in Midlife – What is known about Women's Mental Well-Being during their
Menopausal Years: A Scoping Review**

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Abstract

Introduction: While much research has investigated the relationship between the menopausal transition and an increased risk for mental illness, less is known about women's mental well-being during this time. This review aims to provide a comprehensive overview of current research on emotional, social and psychological well-being in menopausal women.

Method: This scoping review was performed in line with the scoping review extension of the PRISMA guidelines. According to the review's eligibility criteria, selected studies had to be published between 2000 and 2022 and examine mental well-being in healthy women aged 40-60 during their natural menopausal transition.

Results: Fourteen relevant studies were found. Five studies investigated a possible relationship between *menopausal stage* and emotional well-being, one of them also assessing overall mental well-being. However, none of these studies found a significant association. Moreover, four studies examined whether *menopausal symptoms* were related to emotional, psychological or overall well-being. Mostly, menopausal symptoms were not associated with mental well-being if other factors, such as self-compassion, were also considered. Finally, several studies indicated a relationship between psychological and lifestyle factors, such as menopausal beliefs, physical activity, or cognitive behavioural therapy and mental well-being in menopausal women. Yet, no study on social well-being during the menopause has been found.

Discussion: Overall, scientific information on mental well-being throughout the menopause is still limited. While considerable evidence suggests that emotional well-being is not negatively affected by the menopausal transition, further research, especially on social and psychological well-being during the menopause, is needed.

Keywords: menopause, well-being, emotional well-being, social well-being, psychological well-being, flourishing

Introduction

The menopause is a major turning point in a woman's life that marks the end of her reproductive phase and fertility (Utian, 2004). It has long been recognised that this time can critically affect women's physical health (Nappi et al., 2022; Santoro et al., 2015; Warming, 2002). More recently, researchers have found that the menopause might also influence mental health. Many studies have reported a rise in depressive and anxiety symptoms during the menopausal transition, which suggests that women could have a higher vulnerability to mental illness during this period (Freeman, 2010; Llaneza et al., 2012). However, less is known about how the menopause may affect women's mental well-being. According to current scientific knowledge, mental health comprises both the absence of psychopathology and the presence of emotional, social, and psychological functioning (i.e., mental well-being) (Keyes, 2005). The current review aims to examine what is known about mental well-being throughout the menopause to get a complete picture of the mental health of menopausal women.

The menopausal transition

Every woman is born with a finite number of oocytes. Over the course of her reproductive years (i.e., pre-menopausal stage), the ovarian reserve is gradually depleted through ovulation (Takahashi & Johnson, 2015). Usually, between the ages of 45 and 55, the progressing depletion causes hormonal changes resulting in increasingly irregular menstrual cycles. This peri-menopausal stage can last a few months to a few years (NHS, 2022; Takahashi & Johnson). At an average age of 51, the peri-menopause eventuates at the end of ovarian function (i.e., menopause) (Menopause, 2022; Takahashi & Johnson, 2015; Utian, 2004). The post-menopausal stage is reached 12 months after the last menstrual period has occurred, given that there are no other pathological or physiological causes (Utian, 2004).

Although the menopausal transition is a natural phase of a woman's life, it can significantly impact their health, work, sexual life, and relationships (NHS, 2022). Especially during the peri-menopausal stage, women may experience unpleasant menopausal symptoms, such as menstrual irregularity, vasomotor symptoms (i.e., hot flushes and night sweats) and vaginal dryness (Santoro et al., 2015; Taechakraichana et al., 2002; Takahashi & Johnson, 2015). Next to these physical symptoms, many women also report psychological complaints in their menopausal transition (Craig, 2015).

Mental illness in the menopausal transition

Among the most common psychological complaints are mood swings, anxiety, and depressive symptoms (Craig, 2015). In several longitudinal studies, it was found that, during the peri-menopausal stage, women are significantly more likely to experience depressive symptoms or be diagnosed with a depressive disorder than during their entire pre-menopausal phase (Bromberger et al., 2007, 2011; Cohen et al., 2006; Schmidt et al., 2004). In her review of epidemiologic studies on depressed mood in the menopausal transition, Freeman (2010) concluded: During the menopausal transition, women have a three times higher risk of experiencing depressed mood than outside of this window. Recent studies also found an association between peri-menopause and an increased risk of developing anxiety symptoms or an anxiety disorder (Delam & Bazrafshan, 2020; Li et al., 2016).

So far, research could not discover an unequivocal causative factor for the associations described above. However, it has been found that more severe menopausal symptoms (especially vasomotor symptoms), hormonal changes, a history of depression, stressful life events, and a negative attitude towards the menopause and ageing increase the risk of developing depressive symptoms or depression during the menopausal transition (Delam & Bazrafshan, 2020; Grigoriadis & Kennedy, 2002; Li et al., 2016; Newhouse & Albert, 2015; Vivian-Taylor & Hickey, 2014). In light of this, it has been suggested to

monitor at-risk women for signs of mental illness during their menopausal transition to prevent long-term negative consequences (Llaneza et al., 2012). While this is important, preventing or curing mental illness does not guarantee complete mental health. For that, it is equally crucial to investigate and, if necessary, improve mental well-being in menopausal women.

The two-continua model of mental health

In the past, mental health and mental illness have been seen as two opposite poles of the same continuum. Consequently, the absence of mental illness was regarded as the presence of mental health and vice versa (Keyes, 2007). However, research could not find sufficient evidence to support this one-factor model of mental health (Greenspoon & Saklofske, 2001; Westerhof, 2012). As an alternative, Keyes (2002) developed the *Two-Continua Model of Mental Health*. According to this model, "mental health is a complete state that is best studied through the combined assessments of mental well-being with mental illnesses" (Keyes, 2007, p. 100) as these are related but distinct continua.

Keyes defines mental well-being as a combination of 14 aspects of emotional, social, and psychological well-being (see Table 1). It can range from low (i.e., languishing), over moderate (i.e., moderate mental well-being), to high (i.e., flourishing) mental well-being. Flourishing is characterised by the simultaneous presence of at least one aspect of emotional well-being and at least six aspects of social or psychological well-being.

While mental well-being has been operationalised in other ways too (for an overview, see Hone et al., 2014), Keyes' model currently receives the most substantial support for its utility and psychometric properties (for example, Iasiello et al., 2020; Joshanloo, 2017, 2018; Keyes, 2005, 2006; Keyes et al., 2008, 2010; Khumalo et al., 2022; Lamers et al., 2010; Salama-Younes, 2011). Therefore, the current review will focus on mental well-being as operationalised by Keyes (2002).

Table 1*Aspects of mental well-being*

	Definitions
Emotional well-being	
Happiness	The presence of positive affect, as well as the absence of negative affect
Life satisfaction	Evaluating one's life positively
Interest in life	Being interested in one's life
Social well-being	
Social acceptance	Being accepting of others
Social actualisation	Believing in the positive potential of people and society
Social contribution	Feeling that one can make a positive contribution to society
Social coherence	Perceiving the course of society as predictable and meaningful
Social integration	Feeling belongingness to a social group
Psychological well-being	
Autonomy	Feeling self-determined and independent
Environmental mastery	Feeling competent in one's environment and daily life
Personal growth	Experiencing self-development and the realisation of one's potential
Positive relations	Having warm and trusting relationships
Purpose in life	Having meaningful goals and experiencing direction in life
Self-acceptance	Being positive, accepting and compassionate with oneself

Mental well-being in the menopausal transition

Despite the considerable interest in the relationship between menopause and mental illness, not much is known about women's mental well-being throughout the menopausal transition. To date, only one systematic literature review on this topic has been published. Brown, Bryant and Judd (2015) found 19 studies investigating mental well-being in menopausal women. All studies indicated an association between menopausal stage or menopausal symptoms and symptoms of mental illness. However, mental well-being seemed to be largely unaffected by the menopausal transition. Instead, mental well-being was more related to psycho-social variables, such as stress, sense of mastery, loneliness, physical

activity levels, work satisfaction, and attitudes towards menopause and ageing. The authors concluded that not the biological changes during the menopausal transition but the psychosocial context of menopausal women would be relevant to their mental well-being.

Study rationale

In their review, Brown, Bryant and Judd (2015) included articles published until 2014. Likely, more studies on mental well-being in menopausal women were published in the meantime. Moreover, the researchers only searched for articles including the search term "well-being". According to Keyes (2002), mental well-being consists of 14 individual aspects. Therefore, a literature search containing these aspects may discover additional relevant articles. Indeed, Brown, Bryant and Judd (2015) mainly found studies on emotional well-being during menopause. Very few studies were related to psychological well-being, and no studies on social well-being were found. Therefore, the current review aims to examine what is known about emotional, social and psychological well-being throughout the menopausal transition to gain a comprehensive and updated overview of research on this topic.

Methods

Protocol

The scoping review extension of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Tricco et al., 2018) was used as a protocol for the current study.

Search strategy

Literature was obtained on October 15th using three electronic databases: Scopus, PsychInfo and PubMed. The search terms used were "menopaus*", "midlife women" OR "middle-aged women", in combination with "mental well-being", "flourish*", "hedonic well-being", "eudaimonic well-being", "emotional well-being", "social well-being", "psychological

well-being", "happiness", "interest in life", "life satisfaction", "social contribution", "social integration", "social actualisation", "social acceptance", "social coherence", "self-acceptance", "environmental mastery", "positive relations", "personal growth", "autonomy" OR "purpose in life". The reference lists of relevant articles were screened for supplementary literature.

Eligibility criteria

Eligible studies had to be peer-reviewed, reporting original research, and being written in English or German. Due to the scope of the current study, the publication range was set between the years 2000 and 2022. Quantitative, qualitative and mixed-methods studies were allowed for inclusion. Reviews and meta-analyses were excluded, but their reference lists were screened for relevant literature. Moreover, studies already included in the review of Brown, Bryant and Judd (2015) were excluded from the current study.

Furthermore, selected studies had to examine mental well-being or one of its sub-components in healthy women aged 40-60 who were in their natural menopausal transition. Studies concerning specific sub-populations (e.g., breast cancer patients) were excluded as they might involve factors not specific to menopause that could strongly influence mental well-being.

Mental well-being could be assessed with the Mental Health Continuum–Short Form (MHC-SF) (Keyes, 2005) or the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) (Tennant et al., 2007). Assessment tools for emotional well-being included the Satisfaction with Life Scale (SWLS) (Diener et al., 1985) or the Positive and Negative Affect Schedule (PANAS) (Thompson, 2007; Watson et al., 1988). Finally, social and psychological well-being could be measured with the Social Well-Being Scale (SWBS) (Keyes, 1998) and Psychological Well-Being Scale (PWBS) (Ryff, 1989; Ryff & Keyes, 1995), respectively. Different versions of the assessment tools mentioned above or comparable self-developed questionnaires were also allowed for inclusion.

Selection of sources

All data was uploaded to Microsoft Excel to remove duplicates. Afterwards, all titles and abstracts were reviewed according to eligibility criteria by the main author (I.K.). The remaining articles were read in full text by the main author (I.K.) and included if they met the eligibility criteria.

Data charting process

From the included articles, data was extracted by the main author (I.K.) and charted in Microsoft Excel. The data extracted from the articles were: Authors, year of publication, country of publication, study aim, study design, sample size, age group and participants' menopausal stage, the method used to assess menopausal stage, the tool(s) used to measure mental well-being or one of its sub-components, and the main findings of the study.

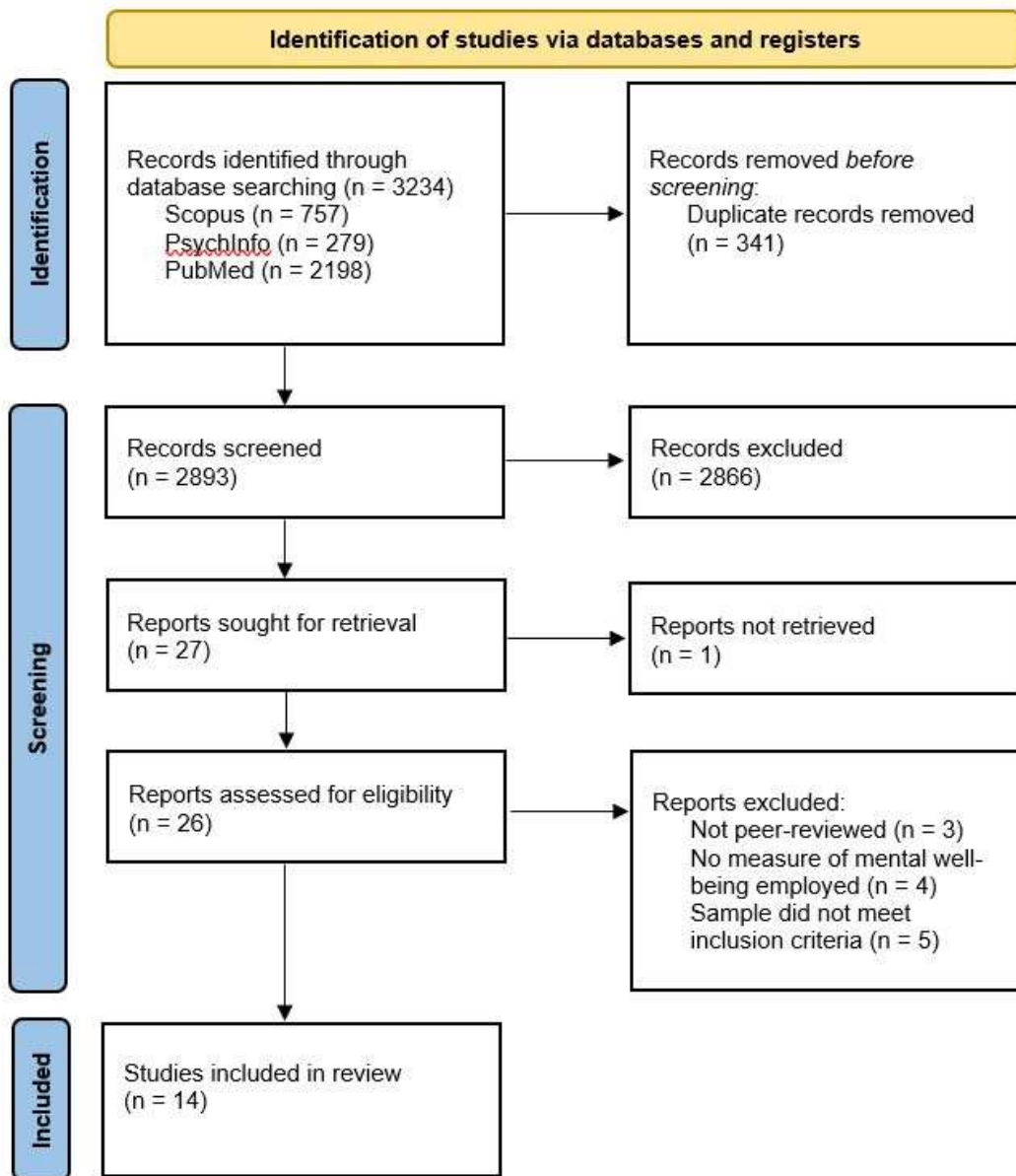
Results

Description and demographics of selected studies

The database search¹ yielded 3243 results. After removing duplicates, the titles and abstracts of 2893 studies were screened according to the above-mentioned eligibility criteria. 27 articles were sought for retrieval, but one of them could not be retrieved. Thus, 26 studies were screened at the level of full text. In total, 14 articles met all eligibility criteria and were included in the analysis (see Figure 1).

¹A second database search, including the search term "well-being" in the search string, did not yield additional relevant results.

Figure 1



Note: PRISMA diagram of the identification, screening and selection of studies for the current scoping review
Adapted from: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

The characteristics of the eligible studies can be found in Table 2. Publication dates ranged from 2014 to 2022, and more than half of the studies were published in 2020 or later. Half of the studies were conducted in Europe, more specifically in Switzerland (n = 2), Poland (n = 2), Finland (n = 2), and Italy (n = 1). Moreover, four studies were conducted in Asia, namely in China, Korea, Japan and Pakistan. The remaining studies were conducted in the United States, Mexico and Australia. The majority of studies had a cross-sectional design (n = 11). Furthermore, two studies used a quasi-experimental design with a 1-month follow-up, and one had an intensive longitudinal design. Sample sizes ranged from 90 to 4803 participants (Median = 197).

Emotional well-being in menopausal women

Except for one, all studies employed at least one measure of emotional well-being, such as the SWLS, PANAS, or self-developed questionnaires. Five of these studies investigated a possible relationship between women's *menopausal stage* and emotional well-being (Bondarev et al., 2020; Brown, Bryant, Brown, et al. 2015; Castiglione et al., 2015; Falkingham et al., 2021; Sosa-Ortega et al., 2022). One study (Brown, Bryant, Brown, et al., 2015) also measured overall mental well-being with the WEMWBS. However, none of the studies could find a significant association of menopausal stage with either happiness, life satisfaction or overall mental well-being. Instead, researchers found that the post-menopausal stage, compared to pre-menopause, was significantly associated with increased depressive (Bondarev et al., 2020) and menopausal symptoms (Falkingjam et al., 2021). Moreover, compared to peri-menopausal women, post-menopausal women experienced significantly more sexual symptoms, such as loss of sexual desire (Sosa-Ortega et al., 2022).

Table 2

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
Bondarev et al. (2020)*	Finland	Examine the relation between menopausal stage, physical activity, and mental well-being	Cross-sectional	1098 women, aged 47-55 (28% pre-menopausal, 37% perimenopausal, 35% postmenopausal)	Self-reported bleeding patterns and measures of serum follicle-stimulating hormone concentrations were used to assess menopausal stage according to the STRAW criteria	Emotional well-being: PANAS-SF, SWLS	<p>No significant associations between menopausal stage and life satisfaction, positive affect, or negative affect were found.</p> <p>Women with high physical activity had significantly more positive affect than women with low physical activity.</p> <p>Women with high and medium physical activity had significantly more life satisfaction than women with low physical activity.</p>
Bondarev et al. (2021)*	Finland	Examine the relation between physical performance (independent of physical activity) and mental well-being	Cross-sectional	909 women, aged 47-55 (25% pre-menopausal, 43% perimenopausal, 32% postmenopausal)	Self-reported bleeding patterns and measures of serum follicle-stimulating hormone concentrations were used to assess menopausal stage according to the STRAW criteria	Emotional well-being: PANAS-SF, SWLS	<p>Independent of physical activity, greater aerobic capacity (6-minute walking distance) was significantly associated with more positive affect and higher life satisfaction. Other physical performance measures were not associated with positive affect or life satisfaction.</p> <p>Women with high and medium physical activity had significantly more life satisfaction than women with low physical activity.</p>

Table 2 (continued)

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
(Brown, Bryant, Brown, et al., 2015)	Australia	Model how menopausal stage, HFNS frequency and interference, beliefs about menopause, and self-compassion influence mental well-being	Cross-sectional	206 women experiencing HFNS, aged 40-60 (15% pre-menopausal, 13% perimenopausal, 72% post-menopausal)	Self-reported bleeding patterns were used to assess menopausal stage according to the STRAW criteria	Emotional well-being: PANAS, SWLS Overall mental well-being: WEMWBS	<p><i>Model 1:</i> Higher HFNS interference ratings significantly predicted lower levels of happiness, life satisfaction, and overall mental well-being.</p> <p>Positive beliefs about one's control of menopausal symptoms significantly predicted higher levels of happiness, life satisfaction, and overall mental well-being, while negative beliefs about menopausal symptoms significantly predicted lower overall mental well-being.</p> <p><i>Model 2 (including self-compassion):</i> A weak but significant negative association between HFNS interference ratings and happiness was found</p> <p>Positive beliefs about one's control of menopausal symptoms still significantly predicted higher levels of happiness, life satisfaction, and overall mental well-being, but the associations were weakened compared to Model 1.</p> <p>Greater self-compassion significantly predicted higher levels of happiness, life satisfaction, and overall mental well-being.</p> <p>Menopausal stage did not significantly predict any of the variables in either Model 1 or Model 2.</p>

Table 2 (continued)

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
Castiglione et al. (2015)	Italy	Examine the relation between menopausal stage and actual and future life satisfaction	Cross-sectional	188 women, aged 45-55, (48% pre-menopausal, 52% peri-menopausal)	Menopausal stage was self-reported by the participants	Emotional well-being: Self-developed 2-item questionnaire (scale ranging from 0 to 100) to measure actual and future life satisfaction	No significant associations between menopausal stage and actual or future life satisfaction were found. Higher actual life satisfaction was significantly associated with higher future life satisfaction.
Falkingham et al. (2021)	China	Examine the relation between menopausal stage, lifestyle activities, social participation, and mental well-being	Cross-sectional	4803 women, aged 45-59***	Menopausal stage (pre- or early post-menopause) was self-reported by the participants	Emotional well-being: Survey about negative mood and positive emotions from the China Health and Retirement Longitudinal Study	There was no significant association between menopausal stage and negative mood or positive emotions. Participating in social activities or providing care for a family member were significantly associated with more positive emotions but not with negative mood.
Gacek (2014)	Poland	Examine the relation between life satisfaction and dietary intake of soy products and legumes in menopausal women	Cross-sectional	320 peri-menopausal women, aged 45-55	Information could not be retrieved	Emotional well-being: SWLS	The frequency of soy products and legume consumption was significantly positively associated with levels of life satisfaction.

Table 2 (continued)

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
Hania et al. (2022)	Pakistan	Examine the effectiveness of a CBT- and gardening-based stress-management program in increasing women's ability to cope with stress, thereby decreasing menopausal symptoms and mental illness and increasing mental well-being	Quasi-experimental, 1-month follow-up	95 women, aged 43-56, experiencing more than 1 menopausal symptom (intervention group: n=54, control group: n=41)	Only the number of experienced menopausal symptoms was assessed (self-reported)	Emotional well-being: 1-item happiness scale from Iloka & Komatsu (2015) Psychological well-being: Personal growth and self-acceptance subscales of the PWBS	In the intervention group, compared to the control group, happiness, personal growth, and self-acceptance were significantly improved at post-test. Only the improvement in self-acceptance was still present at 1-month follow-up. In the intervention group, compared to the control group, depressive symptoms were significantly reduced at post-test. No significant improvements were found for symptoms of anxiety and menopausal symptoms. At post-test and 1-month follow-up, the intervention group, compared to the control group, had significantly more knowledge of menopause and stress management.
Iloka & Komatsu (2015)	Japan	Examine the effectiveness of a CBT-based stress-management program in increasing women's ability to cope with stress, thereby increasing their mental well-being and decreasing symptoms of mental illness	Quasi-experimental, 1-month follow-up	95 women, aged 40-59, experiencing at least 1 menopausal symptom (intervention group: n=54, control group: n=41)	Only the number of experienced menopausal symptoms was assessed (self-reported)	Emotional well-being: Self-developed 1-item happiness questionnaire (scale ranging from 100 = extremely happy to 0 = extremely unhappy) Psychological well-being: Personal growth and self-acceptance subscales of the PWBS	In the intervention group, compared to the control group, happiness, personal growth, and self-acceptance were significantly improved at post-test. Only the improvement in self-acceptance was still present at 1-month follow-up. In the intervention group, compared to the control group, depressive symptoms and sweating were significantly reduced at post-test. Sweating was also significantly reduced at 1-month follow-up. No significant improvements were found for symptoms of anxiety. At post-test and 1-month follow-up, the intervention group, compared to the control group, had significantly greater knowledge of menopause and stress management.

Table 2 (continued)

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
Kishida & Elavsky (2017)	USA	Identify relevant inter- and intra-individual factors (among physical (in)activity, neuroticism, and menopausal symptoms) associated with daily life satisfaction in menopausal women	Intensive longitudinal (21 days)	103 women, aged 40-60, experiencing at least 1 menopausal symptom	Only menopausal symptoms were assessed with the Greene Climacteric Scale (Greene 1998)	Emotional well-being: One item from the SWLS ("I was satisfied with my life today")	<p>A positive within-person association between physical activity and life satisfaction was found.</p> <p>Negative within-person associations between sedentary behaviour and life satisfaction, as well as menopausal symptom burden and life satisfaction, were found.</p> <p>No between-person effects of physical activity, sedentary behaviour and menopausal symptom burden on life satisfaction were found.</p> <p>A significant interaction effect emerged between neuroticism and daily symptom burden. Higher levels of neuroticism were associated with lower life satisfaction, especially on days with increased symptom burden.</p>
Lee & Lee (2022)	Korea	Establish a structural equation model of the relationships between menopausal symptoms, menopausal management activities, perceived stress, self-efficacy and self-compassion, and mental well-being	Cross-sectional	300 women, aged 45-60 (29% late pre-menopausal, 16% peri-menopausal, 55% post-menopausal)	Self-reported bleeding patterns were used to assess menopausal stage according to the STRAW criteria	Psychological well-being: PWBS-SF	<p>Self-efficacy, perceived stress, menopausal management activities, menopausal symptoms, and self-compassion explained 79.5% of the variance in psychological well-being.</p> <p>Self-efficacy was positively associated with psychological well-being via 3 different pathways: (1) mediated by menopausal symptoms, (2) mediated by perceived stress, menopausal management activities, and menopausal symptoms, and (3) mediated by perceived stress and self-compassion.</p> <p>Self-compassion had a significant and positive association with psychological well-being.</p>

Table 2 (continued)

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
Mandal & Sitko-Dominik (2017)	Poland	Examine the relation between perceptions of menopause and life satisfaction in physical (in)active menopausal women	Cross-sectional	90 peri-menopausal women (45 women exercising once a week, 45 women avoiding physical exercise), aged 45-55	Information could not be retrieved	Emotional well-being: SWLS (Polish version (Juczyński, 1999))	There was no significant difference in the levels of life satisfaction between physically inactive and physically active women. Physically active women evaluated their menopause significantly more positively than physically inactive women.
Sosa-Ortega et al. (2022)	Mexico	Examine the relation between menopausal symptoms and life satisfaction.	Cross-sectional	342 women, aged 45-55 (74% peri-menopausal, 26% post-menopausal)	Menopausal stage was self-reported by the participants	Emotional well-being: SWLS	Significant negative associations were found between life satisfaction and psychological, somatic, and sexual menopausal symptoms.
Süss et al. (2021a)**	Switzerland	Detect psycho-social variables which contribute to resilience in menopausal women and investigate their relation with mental health	Cross-sectional	135 peri-menopausal women, aged 40-56 years	Menopausal stage was assessed using the STRAW criteria	Emotional well-being: SWLS (German version (Glaesmer et al., 2011))	Optimism, emotional stability, emotional regulation, self-compassion, and self-esteem were detected as variables contributing to one common resilience factor in menopausal women. Higher scores on the resilience factor were significantly associated with higher life satisfaction. Higher scores on the resilience factor were significantly associated with lower perceived stress, lower psychological distress, less depression, and less severe menopausal symptoms.

Table 2 (continued)

Reference	Country	Study Aim	Study Design	Participants	Measure of Menopausal Stage	Measure of Mental Well-being	Main Findings
Süss et al. (2021b)**	Switzerland	Investigate whether declining estradiol (E2) and progesterone (P4) levels are biomarkers for high resilience in menopausal women and whether they are associated with mental health	Cross-sectional	129 peri-menopausal women, aged 40-56 years	Menopausal stage was assessed using the STRAW criteria	Emotional well-being: SWLS (German version (Glaesmer et al., 2011))	Higher minimum P4 levels were significantly associated with higher life satisfaction. Higher minimum P4 levels were significantly associated with lower perceived stress and fewer depressive symptoms. No significant results were found for E2 levels.

Note: CBT = Cognitive-Behavioural Therapy; HFNS = hot flushes and night sweats; PANAS = Positive and Negative Affect Schedule; PANAS-SF =

Positive and Negative Affect Schedule Short-Form; PWBS = Psychological Well-Being Scale, PWBS-SF = Psychological Well-Being Scale Short-Form;

STRAW = Stages of Reproductive Aging Workshop (Harlow et al., 2012), SWLS = Satisfaction with Life Scale; WEMWBS = Warwick-Edinburgh

Mental Well-being Scale

* both studies use data from the Estrogenic Regulation of Muscle Apoptosis study

** both studies use data from the Swiss Peri-menopause Study

*** Information on participants' menopausal stage could not be retrieved

Three studies examined how *menopausal symptoms* could be related to emotional well-being (Brown, Bryant, Brown, et al., 2015; Kishida & Elavsky, 2017; Sosa-Ortega et al., 2022). In their cross-sectional study, Sosa-Ortega et al. (2022) found that higher levels of somatic, sexual and psychological menopausal symptoms were significantly associated with lower life satisfaction. In line with this, Brown, Bryant, Brown et al. (2015) found that stronger perceived interference of hot flushes and night sweats predicted lower levels of happiness, life satisfaction and overall mental well-being. However, when the variable self-compassion was added to the model, symptom interference ratings were no longer significantly associated with life satisfaction or overall mental well-being and were only weakly associated with happiness.

Similarly, in an intensive longitudinal study, Kishida and Elavsky (2017) could not find a significant between-person association between menopausal symptom burden and life satisfaction. Thus, women who generally experienced more burden from their menopausal symptoms did not have lower average life satisfaction than women with less menopausal symptom burden. However, the researchers found a significant within-person association suggesting that on days on which a woman experienced more burden from her menopausal symptoms, her life satisfaction was lower than on days she experienced less menopausal symptom burden. Furthermore, Kishida and Elavsky (2017) discovered that women scoring high on neuroticism seem more vulnerable to this possible adverse effect of symptom burden on life satisfaction.

Psychological factors related to emotional well-being in menopausal women

Next to menopausal factors, several studies investigated how psychological factors, such as *self-compassion*, relate to menopausal women's mental well-being. In the model of Brown, Bryant, Brown et al. (2015), a higher level of self-compassion was a strong and significant predictor for higher levels of emotional well-being and overall mental well-being.

Moreover, in two studies using cross-sectional data from the Swiss Peri-menopause Study, Süss and colleagues (2021a, 2021b) found that self-compassion, together with optimism, emotional stability, emotional regulation, and self-esteem, formed a psychological resilience factor predicting women's mental health throughout their menopausal transition. Higher scores on the resilience factor were significantly associated with more life satisfaction, as well as lower perceived stress and fewer depressive symptoms. Interestingly, the steepness of the decrease in progesterone (i.e., one of the hormones affected by menopause) was found to be a biomarker of the psychological resilience factor and could successfully predict menopausal women's levels of life satisfaction, perceived stress and depressive symptoms.

Another relevant psychological factor may be women's *beliefs and appraisals* of their menopause. For example, Brown, Bryant, Brown et al. (2015) found that having positive beliefs about one's ability to control menopausal symptoms was significantly associated with increased life satisfaction, happiness and overall mental well-being. Conversely, negative beliefs about menopausal symptoms significantly predicted lower overall mental well-being. Only beliefs about the expected time frame or consequences of menopausal symptoms were not found to be related to the women's well-being. Furthermore, Castiglione and colleagues (2015) found a significant association between actual and future life satisfaction. More specifically, women who rated their current life satisfaction as high also expected to continue to have high life satisfaction throughout and after their menopause.

Lifestyle factors related to emotional well-being in menopausal women

Finally, lifestyle factors, such as *physical activity*, may contribute to women's mental well-being throughout their menopause. In two studies using cross-sectional data from the Estrogenic Regulation of Muscle Apoptosis study, Bondarev et al. (2020, 2021) found that physically active menopausal women had significantly higher positive affect and life satisfaction than women who were not active. Although *physical performance* was a less

strong predictor of mental health, Bondarev et al. (2021) found that aerobic capacity (measured as six-minute walking distance) was associated with positive affect and life satisfaction, independent of physical activity levels.

On the contrary, Mandal and Sitko-Dominik (2017) found no difference in life satisfaction between physically active and physically inactive menopausal women. The authors only observed that physically active women did evaluate their menopause significantly more positively than physically inactive women. Moreover, in an intensive longitudinal study by Kishida and Elavsky (2017), no significant between-person association between physical activity and life satisfaction could be found. In the study, more physically active women did not generally have greater life satisfaction than their less active counterparts. However, the researchers found a significant within-person association between physical activity and life satisfaction. More specifically, on days on which a woman was more active and engaged less in sedentary behaviour, her life satisfaction was significantly enhanced.

Few studies investigated how other lifestyle factors were related to emotional well-being. For example, one paper examined the relationship between *diet* and life satisfaction during menopause. Gacek (2014) found that the dietary intake of soy products and legumes in menopausal women was generally very low. But women with high life satisfaction consumed significantly more soy products and legumes than women with low life satisfaction. This finding is relevant as the phytoestrogens in these foods play an important role in preventing menopausal-related disorders, such as osteoporosis and cardiovascular diseases. Another study examined how *participation in social and lifestyle activities* was related to positive affect. The researchers found that activities such as caring for a family member, interacting with friends, or visiting a sport or social club were significantly associated with more positive affect (Falkingham et al., 2021).

Social and psychological well-being in menopausal women

In contrast to the relatively large number of studies on emotional well-being, no studies were found regarding social well-being, and only one paper investigated psychological well-being in menopausal women. Lee and Lee (2022) used structural equation modelling to evaluate how *self-efficacy*, *menopausal symptoms*, *menopausal management activities*, *perceived stress*, and *self-compassion* relate to psychological well-being in menopausal women. Their model was based on cross-sectional data gathered via online surveys from 300 Korean middle-aged women. Psychological well-being was measured using the PWBS-SF.

The researchers found that the women's levels of self-efficacy, menopausal symptoms, menopausal management activities, perceived stress, and self-compassion explained almost 80% of the variance in their psychological well-being scores. Self-efficacy was significantly and positively associated with psychological well-being, mediated by perceived stress, menopausal management activities, menopausal symptoms and self-compassion. Furthermore, self-compassion had a strong direct effect on psychological well-being. The authors conclude that interventions targeted at increasing self-efficacy could be effective in improving psychological well-being in menopausal women as they may increase their self-compassion and reduce menopausal symptoms and perceived stress. Interventions to increase self-compassion might also be beneficial to directly increase psychological well-being in menopausal women.

Interventions to improve mental well-being in menopausal women

Finally, two quasi-experimental studies that tested *CBT-based intervention programs* for menopausal women were found. Both studies aimed to assess whether such intervention programs could enhance menopausal women's ability to cope with stress, thereby improving

their mental well-being and reducing symptoms of mental illness (Hania et al., 2022; Iloka & Komatsu, 2015).

Hania et al. (2022) employed a 4-week stress-management program with a particular focus on gardening activities. The intervention group received two 1-hour sessions of the program each week. These sessions encompassed informative lectures about the mechanism, symptoms and treatments of menopause. Moreover, psycho-education on stress, cognitive restructuring exercises, and social skills training were included. Finally, the sessions involved group-based gardening activities. The control group got a four-part booklet which covered information on menopause and stress in the form of a self-guided stress management program.

Directly after the intervention, as well as at the 1-month follow-up, the women in the intervention group had significantly greater knowledge of menopause and stress management than the women in the control group. Moreover, after the program, the intervention group scored significantly higher on happiness, personal growth and self-acceptance and significantly lower on depressive symptoms than the control group. However, at the 1-month follow-up, a significant difference between groups could only be detected for self-acceptance levels. Moreover, no significant improvements were found for symptoms of anxiety and menopausal symptoms.

Iloka and Komatsu (2015) employed a 3-week stress management program. The intervention group got a 2-hour session of the program every week. These sessions included lectures and group discussions about the mechanisms, symptoms, treatment, and meaning of menopause. Furthermore, the participants were given information about stress management and personal stress responses, and social skills training and cognitive restructuring exercises were conducted. Finally, hands-on relaxation exercises were performed with the intervention group. The control group received a three-part booklet covering the lecture information.

The intervention group participants evaluated the CBT-based program very positively concerning understandability, satisfaction and enjoyment, usefulness and self-efficacy.

Similar to the results of Hania et al. (2022), the researchers also found a significant improvement in participants' knowledge of the menopausal transition and stress management directly after the intervention program. Moreover, happiness, personal growth and self-acceptance were significantly increased in the intervention group compared to the control group, while depressive symptoms and menopausal sweating were significantly reduced. However, only the improvements in knowledge, self-acceptance and menopausal sweating remained at the 1-month follow-up. Furthermore, no decrease in anxiety symptoms was detected.

Discussion

The present study aimed to give an overview of current scientific knowledge on emotional, social and psychological well-being in menopausal women. Overall, research on this topic is still limited. In the past nine years, several studies have investigated the relationship between the menopausal stage and emotional well-being (Bondarev et al., 2020; Brown, Bryant, Brown, et al. 2015; Castiglione et al., 2015; Falkingham et al., 2021; Sosa-Ortega et al., 2022). Evidence from these studies suggests that emotional well-being is not negatively affected by the menopausal transition. Moreover, while some studies found that menopausal symptoms were associated with decreased emotional, psychological and overall mental well-being (Brown, Bryant, Brown, et al., 2015; Kishida & Elavsky, 2017; Lee & Lee, 2022; Sosa-Ortega et al., 2022), these relationships were mostly weakened or disappeared when other factors were considered too. However, only Brown, Bryant, and Brown (2015) focused on overall-mental well-being and Lee and Lee (2022) on psychological well-being. Furthermore, research on the relationship between the menopausal

transition and social well-being is still lacking. Therefore, conclusions about general mental well-being in menopausal women cannot yet be drawn.

Nevertheless, the results from the current review corroborate Brown, Bryant and Judd's (2015) conclusion that the menopause does not impair emotional well-being. On the one hand, this may be surprising. Previous studies repeatedly found that women are significantly more vulnerable to mental illness during the menopausal transition (Bromberger et al., 2007, 2011; Cohen et al., 2006; Delam & Bazrafshan, 2020; Li et al., 2016; Schmidt et al., 2004). Since mental illness and mental well-being are two related continua (Keyes, 2007), it could have been expected that mental well-being would also decrease during this time. On the other hand, the current results may indicate that distinct underlying factors could influence mental illness and well-being in menopausal women.

For example, previous studies found that the increased risk for mental illness in menopausal women is related to biological correlates of the menopausal transition, such as a decrease in the hormone estradiol from the pre- to post-menopausal stage (Grigoriadis & Kennedy, 2002; Newhouse & Albert, 2015). Mental well-being, on the other hand, has often been associated with more general psycho-social and socio-economic factors (Bojanowska & Urbańska, 2021; S. Grant et al., 2009; Heinsch et al., 2020; Kaplan et al., 2008; Rothert et al., 2020). This dissociation could explain why several studies in this review demonstrated strong relationships between psychological and lifestyle factors and emotional, psychological and overall mental well-being in menopausal women. Nevertheless, experimental research is needed to verify that these factors can actually influence mental well-being throughout the menopause.

In the present review, self-compassion was discovered as a psychological factor that may benefit emotional, psychological, and overall mental well-being. In line with this finding, prior studies have consistently shown an association between self-compassion and

increased mental well-being and even flourishing in the general population (Mróz, 2022; Neff et al., 2007). Being self-compassionate involves being kind to oneself in times of pain or failure, viewing one's imperfections or negative experiences as part of common humanity, and being mindful of the present moment instead of over-identifying with negative aspects of one's life (Neff, 2011). Thereby, self-compassion could be used as a way of emotion-focused coping with adverse events such as painful menopausal symptoms (Lee & Lee, 2022). Thus, it may be valuable for menopausal women to further develop their self-compassion with programs like 'Compassionate Mind Training' (CMT) (Gilbert, 2010) or Mindful Self-Compassion (MSC) (Germer & Salzberg, 2009). However, further research would be needed to test if these programs could actually enhance aspects of mental well-being throughout the menopausal transition.

Similar to the findings of Brown, Byrant and Judd (2015), evidence from the current study also suggests that physical activity is related to improved emotional well-being (Bondarev et al., 2020, 2021; Kishida & Elavsky, 2017). It has long been known that exercise can positively influence mental health, including mental well-being, by raising endorphin levels and enabling positive feelings of mastery and self-efficacy (Fox, 1999; Mikkelsen et al., 2017). This effect can be found not only in young people but also in older adults (Windle et al., 2010). Yet, a decline in physical activity and increased sedentary behaviour have been linked to older age and the menopausal transition (Duval et al., 2013; Lovejoy et al., 2008; McPhee et al., 2016). Thus, engaging in physical activity might be a valuable strategy for menopausal women to maintain good mental well-being. Nevertheless, further research is needed to test this hypothesis, especially on the relationship between physical activity and social and psychological well-being.

Unlike Brown, Byrant and Judd (2015), the current review has identified two quasi-experimental studies that tested CBT-based stress management programs to enhance the

emotional and psychological mental well-being of menopausal women. Surprisingly, these intervention programs seemed more effective in improving mental well-being than alleviating symptoms of mental illness. This could be because the programs were not focused on mental illness but on menopause-related stress. Moreover, the positive effect on mental well-being could also have been related to the additional gardening tasks and relaxation exercises included in the intervention programs. Such activities, which are aimed at positive emotions and behaviours, may be regarded as positive psychological interventions (Sin & Lyubomirsky, 2009). Positive psychological interventions have consistently been associated with increased mental well-being in the general population and seem even more effective than classical CBT interventions for this target audience (Van Agteren et al., 2021). Yet, the efficacy of positive psychological interventions during menopause is not investigated.

Strengths and limitations

A limitation of the current study is that the main author conducted the literature search alone. The reliability of the results could have been increased by involving a second researcher during the screening process to ensure no relevant studies were missed. Another limitation may be the study's restricted scope. Due to time constraints, the researcher had to limit the literature search to studies published after the year 2000 and not previously included in the literature review of Brown, Byrant and Judd (2015). Nevertheless, the present study can fill a considerable research gap. To the researcher's knowledge, the current study is the only existing systematic review on mental well-being in menopausal women besides the review of Brown, Byrant and Judd (2015). Research in this field has been on the rise in the last three years, and the current study provides a comprehensive update on the most recent findings.

Directions for future research

In 2015, Brown, Byrant and Judd concluded that very few studies had investigated the possible association between the menopausal transition and social or psychological well-being. Since then, only three more studies considering psychological well-being and no study on social well-being in menopausal women have been published. Especially the lack of research on social well-being is surprising, as the menopausal transition is likely also a time of social transitions. For example, women's children may be leaving home, their grandchildren may be born, or their parents may become dependent on care or die (Glazer et al., 2002; Mishra & Kuh, 2006; P. P. Schmidt et al., 2004). Therefore, to enable a comprehensive overview of mental health throughout menopause, future studies should explore how menopause may relate to both social and psychological well-being and how these types of well-being could be facilitated in menopausal women.

Furthermore, the existing studies use a variety of different and sometimes not standardised tools to assess the mental well-being and menopausal stage of their participants. Therefore, the data on mental well-being in menopausal women are heterogenous, making it difficult to compare studies or draw overall conclusions. Future research could prevent this issue by using standardised and comprehensive measurement tools, such as the MHC-SF (Keyes, 2005) for mental well-being and the Stages of Reproductive Aging Workshop (STRAW) criteria for menopausal status (Harlow et al., 2012).

In addition, most studies included in the current review had cross-sectional designs, which limits causal inferences. Therefore, it cannot be concluded that the factors that were found to be associated with high mental well-being can also increase mental well-being. Moreover, the search strategy of the current review was aimed at finding studies on the relationship between menopause and mental well-being. Therefore, further studies on self-compassion, physical exercise, or other psychological and lifestyle factors influencing mental

well-being in menopausal women may have been missed. Thus, a systematic review of psycho-social factors relating to mental well-being in menopausal women should be conducted to enable a comprehensive overview of this topic.

Finally, it may be interesting to investigate the effect of positive psychology interventions targeting areas like positive affect or self-compassion in menopausal women. If those interventions were effective in menopausal women, they might be an easy-to-implement and cost-effective way to improve mental well-being throughout the menopause, thereby strengthening the women's recovery from and resilience against mental illness (Schotanus-Dijkstra et al., 2016, 2019).

Conclusion

The current scoping review provides a comprehensive overview of the scientific research on emotional, social and psychological well-being in menopausal women from 2014 until 2022. In line with a previous review from Brown, Byrant and Judd (2015), the present study indicates that mental well-being does not seem to be negatively affected by the menopausal transition or menopausal symptoms. Instead, psychological and lifestyle factors such as women's levels of self-compassion or physical activity seem to relate to their mental well-being throughout the menopausal years. However, most research has been conducted on emotional well-being. Thus, further research is needed to gain a complete picture of mental well-being in menopausal women, including further insights on their social and psychological well-being.

References

- Bojanowska, A., & Urbańska, B. (2021). Individual values and well-being: The moderating role of personality traits. *International Journal of Psychology, 56*(5), 698–709. <https://doi.org/10.1002/ijop.12751>
- Bondarev, D., Sipilä, S., Finni, T., Kujala, U. M., Aukee, P., Kovanen, V., Laakkonen, E. K., & Kokko, K. (2021). Associations of physical performance and physical activity with mental well-being in middle-aged women. *BMC Public Health, 21*(1). <https://doi.org/10.1186/s12889-021-11485-2>
- Bondarev, D., Sipilä, S., Finni, T., Kujala, U. M., Aukee, P., Laakkonen, E. K., Kovanen, V., & Kokko, K. (2020). The role of physical activity in the link between menopausal status and mental well-being. *Menopause, 27*(4), 398–409. <https://doi.org/10.1097/gme.0000000000001490>
- Bromberger, J. T., Kravitz, H. M., Chang, Y. F., Cyranowski, J. M., Brown, C., & Matthews, K. A. (2011). Major depression during and after the menopausal transition: Study of Women's Health Across the Nation (SWAN). *Psychological Medicine, 41*(9), 1879–1888. <https://doi.org/10.1017/s003329171100016x>
- Bromberger, J. T., Matthews, K. A., Schott, L. L., Brockwell, S., Avis, N. E., Kravitz, H. M., Everson-Rose, S. A., Gold, E. B., Sowers, M., & Randolph, J. F. (2007). Depressive symptoms during the menopausal transition: The Study of Women's Health Across the Nation (SWAN). *Journal of Affective Disorders, 103*(1–3), 267–272. <https://doi.org/10.1016/j.jad.2007.01.034>
- Brown, L., Bryant, C., Brown, V., Bei, B., & Judd, F. (2015). Investigating how menopausal factors and self-compassion shape well-being: An exploratory path analysis. *Maturitas, 81*(2), 293–299. <https://doi.org/10.1016/j.maturitas.2015.03.001>

Brown, L., Bryant, C., & Judd, F. K. (2015). Positive well-being during the menopausal transition: a systematic review. *Climacteric*, *18*(4), 456–469.

<https://doi.org/10.3109/13697137.2014.989827>

Castiglione, C., Licciardello, O., & Rampullo, A. (2015). Possible future changes in menopausal women. *Life Span and Disability*, *18*(2), 189–205.

<https://doi.org/10.1037/t51447-000>

Cohen, L. S., Soares, C. N., Vitonis, A. F., Otto, M. W., & Harlow, B. L. (2006). Risk for New Onset of Depression During the Menopausal Transition. *Archives of General Psychiatry*, *63*(4), 385. <https://doi.org/10.1001/archpsyc.63.4.385>

Craig, M. C. (2015). Memory and mood in the menopause. In *Managing the Menopause: 21st Century Solutions* (pp. 91–100). Cambridge University Press.

Delam, H., & Bazrafshan, M. R. (2020). Correlations between severity of menopausal complications, depression, and anxiety. *Journal of Health Sciences and Surveillance System*, *8*(1), 16–21. <https://doi.org/10.30476/JHSS.2020.85823.1077>

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, *49*(1), 71–75.

https://doi.org/10.1207/s15327752jpa4901_13

Duval, K., Prud'homme, D., Rabasa-Lhoret, R., Strychar, I., Brochu, M., Lavoie, J. M., & Doucet, É. (2013). Effects of the menopausal transition on energy expenditure: a MONET Group Study. *European Journal of Clinical Nutrition*, *67*(4), 407–411.

<https://doi.org/10.1038/ejcn.2013.33>

Falkingham, J., Evandrou, M., Qin, M., & Vlachantoni, A. (2021). Chinese women's health and wellbeing in middle life: Unpacking the influence of menopause, lifestyle activities and social participation. *Maturitas*, *143*, 145–150.

<https://doi.org/10.1016/j.maturitas.2020.10.008>

- Fox, K. R. (1999). The influence of physical activity on mental well-being. *Public Health Nutrition*, 2(3a), 411–418. <https://doi.org/10.1017/s1368980099000567>
- Freeman, E. W. (2010). Associations of depression with the transition to menopause. *Menopause*, 17(4), 823–827. <https://doi.org/10.1097/gme.0b013e3181db9f8b>
- Gacek, M. (2014). Soy and legume seeds as sources of isoflavones: selected individual determinants of their consumption in a group of perimenopausal women. *Menopausal Review*, 1, 27–31. <https://doi.org/10.5114/pm.2014.41081>
- Germer, C. K., & Salzberg, S. (2009). *The Mindful Path to Self-Compassion: Freeing Yourself from Destructive Thoughts and Emotions*. Guilford Publications.
- Gilbert, P. (2010). *The Compassionate Mind: A New Approach to Life's Challenges*. New Harbinger Publications.
- Glaesmer, H., Grande, G., Braehler, E., & Roth, M. (2011). The German Version of the Satisfaction With Life Scale (SWLS). *European Journal of Psychological Assessment*, 27(2), 127–132. <https://doi.org/10.1027/1015-5759/a000058>
- Glazer, G., Zeller, R. A., Delumba, L., Kalinyak, C., Hobfoll, S., Winchell, J., & Hartman, P. A. (2002). THE OHIO MIDLIFE WOMEN'S STUDY. *Health Care for Women International*, 23(6–7), 612–630. <https://doi.org/10.1080/07399330290107377>
- Grant, S., Langan-Fox, J., & Anglim, J. (2009). The Big Five Traits as Predictors of Subjective and Psychological Well-Being. *Psychological Reports*, 105(1), 205–231. <https://doi.org/10.2466/pr0.105.1.205-231>
- Greene, J. (1998). Constructing a standard climacteric scale. *Maturitas*, 29(1), 25–31. [https://doi.org/10.1016/s0378-5122\(98\)00025-5](https://doi.org/10.1016/s0378-5122(98)00025-5)
- Greenspoon, P. J., & Saklofske, D. H. (2001). Toward an intergration of subjective well-being and psychopathology. *Social Indicators Research*, 54(1), 81–108. <https://doi.org/10.1023/a:1007219227883>

Grigoriadis, S., & Kennedy, S. H. (2002). Role of Estrogen in the Treatment of Depression. *American Journal of Therapeutics*, *9*(6), 503–509.

<https://doi.org/10.1097/00045391-200211000-00008>

Hania, A., Wang, Z., Shahid, A., & Khaliq, A. A. (2022). Greening the brain: A horticultural stress management program for perimenopausal symptoms. *Health Care for Women International*, 1–21. <https://doi.org/10.1080/07399332.2022.2119238>

Harlow, S. D., Gass, M., Hall, J. E., Lobo, R., Maki, P., Rebar, R. W., Sherman, S., Sluss, P. M., & De Villiers, T. J. (2012). Executive summary of the Stages of Reproductive Aging Workshop + 10. *Menopause*, *19*(4), 387–395.

<https://doi.org/10.1097/gme.0b013e31824d8f40>

Heinsch, M., Wells, H. C., Sampson, D., Wootten, A., Cupples, M., Sutton, C., & Kay-Lambkin, F. (2020). Protective factors for mental and psychological wellbeing in Australian adults: A review. *Mental Health & Prevention*, *25*, 200192.

<https://doi.org/10.1016/j.mhp.2020.200192>

Hone, L. C., Jarden, A., Schofield, G. M., & Duncan, S. (2014). Measuring flourishing: The impact of operational definitions on the prevalence of high levels of wellbeing. *International Journal of Wellbeing*, *4*(1), 62–90. <https://doi.org/10.5502/ijw.v4i1.4>

Iasiello, M., Van Agteren, J., & Cochrane, E. M. (2020). Mental Health and/or Mental Illness: A Scoping Review of the Evidence and Implications of the Dual-Continua Model of Mental Health. *Evidence Base*, *2020*(1), 1–45. <https://doi.org/10.21307/eb-2020-001>

Iloka, Y., & Komatsu, H. (2015). Effectiveness of a stress management program to enhance perimenopausal women's ability to cope with stress. *Japan Journal of Nursing Science*, *12*, 1–17. <https://doi.org/10.1111/jjns.12036>

Joshanloo, M. (2017). Factorial/Discriminant Validity and Longitudinal Measurement Invariance of MHC-SF in Korean Young Adults. *Current Psychology, 39*(1), 51–57.

<https://doi.org/10.1007/s12144-017-9742-1>

Joshanloo, M. (2018). The structure of the MHC-SF in a large American sample: contributions of multidimensional scaling. *Journal of Mental Health, 29*(2), 139–143.

<https://doi.org/10.1080/09638237.2018.1466044>

Juczyński, Z. (1999). Narzędzia pomiaru w psychologii zdrowia. *Przegląd Psychologiczny, 42*(4), 43–56.

Kaplan, G. A., Shema, S. J., & Leite, C. M. A. (2008). Socioeconomic Determinants of Psychological Well-Being: The Role of Income, Income Change, and Income Sources During the Course of 29 Years. *Annals of Epidemiology, 18*(7), 531–537.

<https://doi.org/10.1016/j.annepidem.2008.03.006>

Keyes, C. L. M. (1998). Social Well-Being. *Social Psychology Quarterly, 61*(2), 121.

<https://doi.org/10.2307/2787065>

Keyes, C. L. M. (2002). The Mental Health Continuum: From Languishing to Flourishing in Life. *Journal of Health and Social Behavior, 43*(2), 207.

<https://doi.org/10.2307/3090197>

Keyes, C. L. M. (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. <https://doi.org/10.1037/0022-006x.73.3.539>

Keyes, C. L. M. (2006). Mental health in adolescence: Is America's youth flourishing? *American Journal of Orthopsychiatry, 76*(3), 395–402.

<https://doi.org/10.1037/0002-9432.76.3.395>

Keyes, C. L. M. (2007). Promoting and protecting mental health as flourishing: A complementary strategy for improving national mental health. *American Psychologist*, *62*(2), 95–108. <https://doi.org/10.1037/0003-066x.62.2.95>

Keyes, C. L. M., Dhingra, S. S., & Simoes, E. J. (2010). Change in Level of Positive Mental Health as a Predictor of Future Risk of Mental Illness. *American Journal of Public Health*, *100*(12), 2366–2371. <https://doi.org/10.2105/ajph.2010.192245>

Keyes, C. L. M., Wissing, M., Potgieter, J. P., Temane, M., Kruger, A., & Van Rooy, S. (2008). Evaluation of the mental health continuum–short form (MHC–SF) in setswana-speaking South Africans. *Clinical Psychology & Psychotherapy*, *15*(3), 181–192. <https://doi.org/10.1002/cpp.572>

Keyes, C. L., & Simoes, E. J. (2012). To Flourish or Not: Positive Mental Health and All-Cause Mortality. *American Journal of Public Health*, *102*(11), 2164–2172. <https://doi.org/10.2105/ajph.2012.300918>

Khumalo, I. P., Appiah, R., & Wilson Fadiji, A. (2022). Measuring Positive Mental Health and Depression in Africa: A Variable-Based and Person-Centred Analysis of the Dual-Continua Model. *Frontiers in Psychology*, *13*. <https://doi.org/10.3389/fpsyg.2022.885278>

Kishida, M., & Elavsky, S. (2017). A Daily Process Approach to Depict Satisfaction with Life during the Menopausal Transition: Physical (In)activity, Symptoms, and Neuroticism. *Journal of Happiness Studies*, *18*(3), 631–645. <https://doi.org/10.1007/s10902-016-9743-z>

Lamers, S. M., Westerhof, G. J., Bohlmeijer, E. T., Ten Klooster, P. M., & Keyes, C. L. (2010). Evaluating the psychometric properties of the mental health Continuum-Short Form (MHC-SF). *Journal of Clinical Psychology*, *67*(1), 99–110. <https://doi.org/10.1002/jclp.20741>

Lee, J., & Lee, J. (2022). Psychological well-being of midlife women: a structural equation modeling approach. *Menopause*, 29(4), 440–449.

Li, R. X., Ma, M., Xiao, X. R., Xu, Y., Chen, X. Y., & Li, B. (2016). Perimenopausal syndrome and mood disorders in perimenopause. *Medicine*, 95(32), e4466.

<https://doi.org/10.1097/md.0000000000004466>

Llaneza, P., García-Portilla, M. P., Llaneza-Suárez, D., Armott, B., & Pérez-López, F. R. (2012). Depressive disorders and the menopause transition. *Maturitas*, 71(2), 120–130.

<https://doi.org/10.1016/j.maturitas.2011.11.017>

Lovejoy, J. C., Champagne, C. M., De Jonge, L., Xie, H., & Smith, S. R. (2008). Increased visceral fat and decreased energy expenditure during the menopausal transition.

International Journal of Obesity, 32(6), 949–958. <https://doi.org/10.1038/ijo.2008.25>

Mandal, E., & Sitko-Dominik, M. (2016). Physical activity, evaluation of menopause, life satisfaction and influence tactics in marriage of perimenopausal women. *Health*

Psychology Report, 5(1), 48–54. <https://doi.org/10.5114/hpr.2017.62709>

McPhee, J. S., French, D. P., Jackson, D., Nazroo, J., Pendleton, N., & Degens, H. (2016). Physical activity in older age: perspectives for healthy ageing and frailty.

Biogerontology, 17(3), 567–580. <https://doi.org/10.1007/s10522-016-9641-0>

Menopause. (2022, June 15). NHS Inform. Retrieved September 21, 2022, from <https://www.nhsinform.scot/healthy-living/womens-health/later-years-around-50-years-and-over/menopause-and-post-menopause-health/menopause>

Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas*, 106, 48–56.

<https://doi.org/10.1016/j.maturitas.2017.09.003>

Mishra, G. D., & Kuh, D. (2006). Perceived change in quality of life during the menopause. *Social Science & Medicine*, 62(1), 93–102.

<https://doi.org/10.1016/j.socscimed.2005.05.015>

Mróz, J. (2022). Forgiveness and Flourishing: The Mediating and Moderating Role of Self-Compassion. *International Journal of Environmental Research and Public Health*, 20(1), 666. <https://doi.org/10.3390/ijerph20010666>

Nappi, R. E., Chedraui, P., Lambrinoudaki, I., & Simoncini, T. (2022). Menopause: a cardiometabolic transition. *The Lancet Diabetes & Endocrinology*, 10(6), 442–456.

[https://doi.org/10.1016/s2213-8587\(22\)00076-6](https://doi.org/10.1016/s2213-8587(22)00076-6)

Neff, K. D. (2011). Self-Compassion, Self-Esteem, and Well-Being. *Social and Personality Psychology Compass*, 5(1), 1–12. <https://doi.org/10.1111/j.1751-9004.2010.00330.x>

Neff, K. D., Kirkpatrick, K. L., & Rude, S. S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality*, 41(1), 139–154.

<https://doi.org/10.1016/j.jrp.2006.03.004>

Newhouse, P., & Albert, K. (2015). Estrogen, Stress, and Depression. *JAMA Psychiatry*, 72(7), 727. <https://doi.org/10.1001/jamapsychiatry.2015.0487>

Rothert, J., VanDerwerken, D., & White, E. (2020). Socioeconomic factors and happiness: evidence from self-reported mental health data. *Empirical Economics*, 58(6), 3101–3123. <https://doi.org/10.1007/s00181-019-01655-y>

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069–1081.

<https://doi.org/10.1037/0022-3514.57.6.1069>

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, *69*(4), 719–727.

<https://doi.org/10.1037/0022-3514.69.4.719>

Salama-Younes, M. (2011). Validation of the Mental Health Continuum Short Form and Subjective Vitality Scale with Egyptian Adolescent Athletes. *The Human Pursuit of Well-Being*, 221–234. https://doi.org/10.1007/978-94-007-1375-8_19

Santoro, N., Epperson, C. N., & Mathews, S. B. (2015). Menopausal Symptoms and Their Management. *Endocrinology and Metabolism Clinics of North America*, *44*(3), 497–515. <https://doi.org/10.1016/j.ecl.2015.05.001>

Schmidt, P. J., Haq, N., & Rubinow, D. R. (2004). A Longitudinal Evaluation of the Relationship Between Reproductive Status and Mood in Perimenopausal Women. *American Journal of Psychiatry*, *161*(12), 2238–2244. <https://doi.org/10.1176/appi.ajp.161.12.2238>

Schmidt, P., Murphy, J. B., Haq, N., Rubinow, D. R., & Danaceau, M. A. (2004). Stressful life events, personal losses, and perimenopause-related depression. *Archives of Women's Mental Health*, *7*(1), 19–26. <https://doi.org/10.1007/s00737-003-0036-2>

Schotanus-Dijkstra, M., Keyes, C. L., De Graaf, R., & Ten Have, M. (2019). Recovery from mood and anxiety disorders: The influence of positive mental health. *Journal of Affective Disorders*, *252*, 107–113. <https://doi.org/10.1016/j.jad.2019.04.051>

Schotanus-Dijkstra, M., Ten Have, M., Lamers, S. M. A., De Graaf, R., & Bohlmeijer, E. T. (2016). The longitudinal relationship between flourishing mental health and incident mood, anxiety and substance use disorders. *The European Journal of Public Health*, ckw202. <https://doi.org/10.1093/eurpub/ckw202>

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: a practice-friendly meta-analysis. *Journal of Clinical Psychology*, *65*(5), 467–487. <https://doi.org/10.1002/jclp.20593>

Sosa-Ortega, M., Lagunes-Córdoba, R., Martínez-Garduño, M. D., & Marván, M. L. (2022). Menopause-related symptoms, meaninglessness, and life satisfaction in Mexican women. *Health Care for Women International*, *43*(10–11), 1247–1258.

<https://doi.org/10.1080/07399332.2021.2024833>

Süss, H., Willi, J., Grub, J., & Ehlert, U. (2021a). Psychosocial factors promoting resilience during the menopausal transition. *Archives of Women's Mental Health*, *24*(2), 231–241. <https://doi.org/10.1007/s00737-020-01055-7>

Süss, H., Willi, J., Grub, J., & Ehlert, U. (2021b). Estradiol and progesterone as resilience markers? – Findings from the Swiss Perimenopause Study.

Psychoneuroendocrinology, *127*, 105177. <https://doi.org/10.1016/j.psyneuen.2021.105177>

Taechakraichana, N., Jaisamrarn, U., Panyakhamlerd, K., Chaikittisilpa, S., & Limpaphayom, K. (2002). Climacteric: Concept, consequence and care. *Journal of the Medical Association of Thailand*, *85*(Suppl 1), 1–15.

<https://pubmed.ncbi.nlm.nih.gov/12188398/>

Takahashi, T. A., & Johnson, K. M. (2015). Menopause. *Medical Clinics of North America*, *99*(3), 521–534. <https://doi.org/10.1016/j.mcna.2015.01.006>

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 and Quality of Life Outcomes*, *5*(1).

<https://doi.org/10.1186/1477-7525-5-63>

Thompson, E. R. (2007). Development and Validation of an Internationally Reliable Short-Form of the Positive and Negative Affect Schedule (PANAS). *Journal of Cross-Cultural Psychology*, *38*(2), 227–242. <https://doi.org/10.1177/0022022106297301>

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J.,

Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., . . . Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, *169*(7), 467–473. <https://doi.org/10.7326/m18-0850>

Utian, W. H. (2004). Menopause-related definitions. *International Congress Series*, *1266*, 133–138. <https://doi.org/10.1016/j.ics.2004.01.102>

Van Agteren, J., Iasiello, M., Lo, L., Bartholomaeus, J., Kopsaftis, Z., Carey, M. E., & Kyrios, M. (2021). A systematic review and meta-analysis of psychological interventions to improve mental wellbeing. *Nature Human Behaviour*, *5*(5), 631–652. <https://doi.org/10.1038/s41562-021-01093-w>

Vivian-Taylor, J., & Hickey, M. (2014). Menopause and depression: Is there a link? *Maturitas*, *79*(2), 142–146. <https://doi.org/10.1016/j.maturitas.2014.05.014>

Warming, L. (2002, February 1). *Changes in Bone Mineral Density with Age in Men and Women: A Longitudinal Study*. SpringerLink. Retrieved October 3, 2022, from https://link.springer.com/article/10.1007/s001980200001?error=cookies_not_supported&code=9acfb77-af94-46ac-b346-9001b38f9a36

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>

Westerhof, G. J. (2012). The Complete Mental Health Model: The Social Distribution of Mental Health and Mental Illness in the Dutch Population. *Mental Well-Being*, 51–70. https://doi.org/10.1007/978-94-007-5195-8_3

Windle, G., Hughes, D., Linck, P., Russell, I., & Woods, B. (2010). Is exercise effective in promoting mental well-being in older age? A systematic review. *Aging & Mental Health*, *14*(6), 652–669. <https://doi.org/10.1080/13607861003713232>