

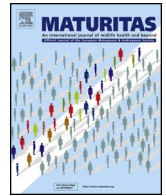


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Review

## Psychosocial interventions in perimenopausal and postmenopausal women: A systematic review of randomised and non-randomised trials and non-controlled studies

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### ABSTRACT

Women's care during perimenopause and postmenopause is taking new paths to help women cope with both somatic manifestations and changes related to psychological and social factors. An updated, systematic review was conducted on non-pharmacological psychosocial interventions with regard to peri- and postmenopause. Several databases complemented with reference lists and reviews were used to perform a literature search of any relevant article. Studies were selected if they included psychoeducational programmes, health education and promotion and cognitive-behavioural techniques applied to peri- or postmenopausal women, independently of study design, main outcomes and intervention comparators. A total of 33 reports and 3 relevant reviews published between 1987 and 2013 were included. Psychosocial options are promising intervention options for self-management and self-care, as they provide multiple benefits with no side effects. Moreover, these options are recommended for women in clinical, subclinical and asymptomatic groups, as they offer women the agency and skills necessary to manage and relieve menopausal symptoms, as well as provide information and alternatives to prevent menopausal symptoms and to have a more positive experience during these life stages. These options do more than reduce distress and complaints, as they allow women in any condition to enjoy enhanced health, well-being and quality of life. Moreover, these options are accompanied by important cost reductions in pharmaceutical investment and healthcare. Nevertheless, several issues remain controversial or have scarcely been investigated, and additional high-quality research should address these issues properly in the future. Despite these limitations and the weaknesses of the review, the findings of this review are interesting and positive. Thus, we encourage women-focused institutions and policies (e.g., healthcare centres, public organisations and women's associations) to offer psychosocial interventions to peri- and postmenopausal women within a comprehensive healthcare paradigm.

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1. Introduction

Natural menopause is a universal process experienced by all middle-aged women [1]. At the beginning of the third millennium, females' life expectancy has been extended to 80–85 years old in developed nations [2]. Consequently, women spend an average of half of their adult lives and about a third of their whole lives in the postmenopausal stage [3,4]. Yet, having a longer life expectancy does not necessarily mean having an increased quality of life. The extension of longevity that has occurred in the last century has motivated shifts in women's healthcare in new directions, as this field has to address issues related to ageing and the changes that women experience with a pace of life that has not previously considered. In the last hundred years, women have survived menopausal age, experienced the consequences of hormonal changes and suffered the impact of age-related diseases, including cancer, osteoporosis, cardiovascular diseases and dementia. Most healthcare attention and spending is currently invested and will be devoted in the future to the female population that has passed the age of menopause. It is important to emphasise that menopause and postmenopause are complex physiological processes that are accompanied by the influences of ageing, socio-cultural backgrounds, psychosocial factors and adjustment to new life roles.

There has also been increasing recognition of the importance of women's issues and health [1,5–10]. Menopause and postmenopause are periods of females' lives that are associated with great change, and many women express a particular interest in their health, well-being and quality of life at these moments. In fact, a large number of women (from 40% to 75%) seek professional help for the management and relief of menopausal manifestations (i.e., changes, experiences and symptoms), primarily vasomotor symptoms [11–13]. Whether menopause should be treated and, if so, how are controversial issues with regard to women's health [1]. Currently, experts consider menopause and postmenopause as natural events; therefore, these events are not necessarily considered medical conditions that require drug therapy, and in most cases the recommendation is alternatives to hormone therapy (HT) [1,14,15]. Indeed, many women consider alternatives to HT among the wide range of available therapeutic options [12,15–18]. Moreover, manifestations and personal experiences of menopause and postmenopause depend on physiological processes and on psychosocial and sociocultural factors. As noted by Liao and Hunter [19], focusing only on the biomedical aspects of menopause and postmenopause may not be clinically useful. They recommend comprehensive interventions that consider psychological, social and physiological correlates. Thus, peri- and postmenopause should be approached holistically and not just as something exclusively organic. Doing so

will improve the care provided to women by offering them more options besides the medicalisation of these conditions.

In recent decades, attention to women who are in the stages of menopause and postmenopause has shifted from focusing almost exclusively on treating the biological manifestations to encouraging women to have positive and healthy experiences that are based on responsible decisions and on self-managing and self-caring actions. To do this, it is necessary to incorporate interventions focusing on the modifiable factors that influence health and well-being, which include knowledge, beliefs, attitudes, values, motives, emotions, decisions and behaviours. These factors are psychosocial in nature and can be effectively modified through a wide range of psychological strategies. It is important to stress that these interventions should be based on women's own experiences, resources and needs. Additionally, it is worth noting that not all women will require some type of intervention, which contradicts the conventional view of menopause and postmenopause as *turbulent* stages, during which women are "unbalanced", "overwhelmed" and "sick" and therefore require a medical intervention to "win the battle".

The need for comprehensive care for middle-aged women: The importance of positive health, psychosocial and behavioural aspects and women's agency.

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Currently, the management of menopause and postmenopause is focused on women's medical histories, health risks and needs [20]. It has been stressed [14] that a comprehensive plan of care includes, in the initial years, the evaluation of changes in menstruation, complaints and symptoms and the prevention of weight gain and obesity, cardiovascular, neoplastic and bone complications and other disorders by reducing risk factors. HT for menopausal symptoms or for specific risks can be considered in some cases [21,22], but changes in health-related behaviours and lifestyles should be emphasised. In the long-term, secondary and tertiary prevention of disorders that may compromise healthy ageing should continue, yet, at this moment, the central role of behavioural factors is even greater, given that HT is inadvisable due to its derived higher risk as age increases or when its use is more prolonged. Extending this proposal, beyond diseases and risks, the protection and promotion of women's health, well-being and quality of life should be considered in both the short- and long-term.

Alternative or complementary (to HT) actions should promote healthy resources and lifestyles (e.g., regular exercise, healthy eating, emotional self-regulation, social support and creative leisure) to protect and enhance health, well-being and quality of life. These actions should also eliminate or control risk factors and behaviours (e.g., prevention of sedentary behaviour, smoking cessation, alcohol

consumption reduction, control of negative emotions and moods and isolation) to prevent potential problems, such as overweight and obesity, hypertension and cardiovascular diseases, diabetes, musculoskeletal and neuromuscular problems, pain, emotional problems and more. These interventions are also justified based on the nature of the factors related to the events and experiences of menopause and beyond, some of which can be changed through efforts that focus on behavioural changes (i.e., adoption of healthy behaviours, including both preventive and health behaviours and cessation of risk behaviours). Further, strategies for health promotion and disease prevention are useful and interesting for any group of women, given their objectives of protecting and increasing health, well-being and quality of life and reducing potential risks that may decrease any indicator of positive well-being and functioning. Middle-age is a good time to encourage women to think about their habits, diseases and risk factors and to develop preventive efforts as well as a “healthy living plan” for the years to come, which may include healthy eating, regular exercising and family-centred social, active and productive lives [23].

Women’s care during menopause and postmenopause should address somatic manifestations and issues related to psychological and behavioural factors. There is growing interest in the psychological and sociocultural components of menopause and postmenopause, and increased understanding that non-hormonal treatments should be available [24]. Given the multifactorial nature of the manifestations associated with these life periods, it is essential to have effective and safe alternatives to address the many changes linked to menopause and postmenopause, particularly for women who prefer or require a non-medical option [12,19,25,26].

The holistic approach to women’s health that we support involves the necessary integration of specialists from various health disciplines to form multidisciplinary teams. Critically, a paradigm shift is required to offer this type of comprehensive care to women. The core vector of this new paradigm is to view women as responsible and active agents relative to their health, well-being and quality of life. This is accomplished through the prism of their own needs, desires, experiences, meanings and voices by offering an intervention that is “like a dress made for each woman” [27] (p. 63). Women should be able to choose the alternatives that best fit their specific needs, preferences and experiences [1].

As discussed, menopausal and postmenopausal phenomena can be approached from an integrative perspective by including health education, the promotion of healthy lifestyles, the reduction or elimination of risk behaviours [28] and cognitive-behavioural interventions to improve women’s agency and to manage psychological distress and menopause-related manifestations [29]. To date, there have been three reviews regarding psychosocial interventions to our knowledge, one examining psychosocial interventions in menopause [30], one focusing on healthy habits during perimenopause [31] and one dealing with cognitive-behavioural therapy (CBT) for menopausal manifestations [32]. All of the reviews are limited, focusing in one kind of intervention and reviewing a reduced number of studies, and out-of-date. Therefore, an exhaustive review is needed to gain a comprehensive understanding of the potential benefits (and limitations) of psychosocial interventions. Professionals in the health-care system who care of peri- and postmenopausal women, individual women and health policy responsables may benefit from an update and detailed revision and synthesis of the current state of knowledge, and its limitations, on psychosocial interventions in peri- and postmenopause. This review focuses on (1) psychoeducational, health education and health promotion interventions, (2) decision-making support and (3) CBT as examples of psychosocial components of peri- and postmenopausal women’s comprehensive care that covers all of the aims we have previously mentioned in the background section. Current psychological interventions seek

to address behavioural components (e.g., lifestyle modifications, symptom management and interactions with the healthcare system) and cognitive, emotional and motivational (e.g., knowledge, attitudes, beliefs, motives and moods) components. In many cases, these interventions also include a social perspective, such as health education at the group or community level [30]. In most cases, they incorporate several components, such as simultaneously pursuing an improvement in menopause symptoms, an increase in the awareness of intervention options, decision-making and adherence to treatments and an enhancement of healthy behaviours and positive attitudes towards menopause [30]. This review embraces a wide range of study designs, including non-controlled (NCS) and controlled studies, both randomised (RCT) and non-randomised trials (Non-RCT), some of them including a comparison to HT, in order to have a complete figure on the issues and procedures incorporated in women’s care. It also covers several outcomes regarding health and quality of life during peri- and postmenopause. The focus is not as much on specific outcomes and study quality as on procedures and their efficacy in enhancing women’s agency for self-caring and self-management of menopausal manifestations and (post)menopause-related and age-derived risks.

## 2. Methods

A systematic literature search was conducted to identify articles containing information on psychosocial interventions in peri- and postmenopausal women. We followed PRISMA guidelines for systematic reviews of studies evaluating health care interventions [33,34] ([www.prisma-statement.org](http://www.prisma-statement.org)). PICOS (population, interventions, comparators, outcomes, studies design) criteria were formulated a priori to guide the review’s scope and the searching, selection and synthesis of the literature. Two authors independently conducted the search and screened studies for inclusion; four authors independently extracted data and two of them then checked the extracted data (it was necessary to review full texts up to three times); two authors synthesised the findings. Four authors independently determined the adequacy of the studies design and main methodological characteristics in order to ascertain the validity of eligible research. Disagreements were resolved by discussion and consensus. When duplicates of a study were found, we selected that which was more detailed or pieced together data from the multiple reports indicating the corresponding references.

### 2.1. Search strategy

Studies were identified by searching electronic databases and scanning reference lists of articles. ProQuest, OvidSP and EBSCO-HOST databases, which included main resources, such as MEDLINE, PSYArticles, PsycINFO, LWW, SportDISCUS and CINAHL, as well as The Cochrane Library, were used for a literature search during March and April of 2012, with an update conducted in July of 2013. Search terms were “menopaus\*” and “intervention” cross-linked with “psycholog\*”, “psychosocial”, “education\*”, “support\*”, “health education”, “health promotion”, “cognitive-behav\*”, “CBT” and “psychotherap\*”. No limitations based on date, type, nation or language of publication were introduced during the search, but a restriction was made for human females when possible. All of the reports had to be peer-reviewed (i.e., no dissertations, conference abstract books, recensions or grey literature were included). We identified 1279 publications. Abstracts for reports that seem to be related to the topic of interest by their title were reviewed and promising papers were screened against the protocol inclusion criteria. Full articles that met the inclusion criteria were reviewed in detail. Only one paper was excluded due to language (i.e., Persian). We were unable to find four papers, so they were excluded from this review.

The obtained citations were supplemented with selected references from articles and reviews on non-pharmacological interventions for menopause and postmenopause. These publications were screened against the protocol inclusion criteria, and those that met the eligibility criteria were reviewed in detail.

Data items to be considered were discussed by the review authors and appears in [Table 1](#). When some of this information was not available or clear, we treated it as missing data.

## 2.2. Inclusion criteria

Papers were included in this review if (1) they described or reported the outcomes (i.e., any health- or quality of life-related outcome) derived from any type of psychosocial intervention aimed at menopausal or postmenopausal women, (2) they described the intervention in detail, to ensure its psychosocial nature, and (3) they used an intervention that focused on menopausal and postmenopausal health-related issues. Reports included RCTs Non-RCTs NCS and reviews. Papers that did not focus on menopausal-related manifestations or those that only focused on other health-related issues in (post)menopausal women (e.g., distress in postmenopausal cancer patients, women with premature menopause or depression treatments in middle-aged women) were excluded. Studies including comparisons with HT were accepted. It is important to note that, among the non-hormonal strategies, the promotion of exercise has been encouraged. For the purposes of extension, this review did not focus on exercise adoption, which requires a specific review. Consequently, papers that included participation in a planned, supervised exercise programme were excluded, whereas those that recommended adopting this healthy behaviour as part of a health education and promotion principle were included.

## 2.3. Results

The current systematic review was based finally on 33 publications from 1987 to 2013 (see [Table 1](#)) involving 34 trials, with the inclusion of three relevant reviews. Other reviews on alternative or complementary interventions were found but were only used for reference list purposes. After screened for inclusion criteria, no report was excluded with the exception of papers reporting the same study (i.e., one duplicate).

The studies were included, yet the vast majority of them were methodologically limited. Some of the most relevant weaknesses in the literature regarding psychosocial interventions are due to research designs that are not rigorous enough. There are only a limited number of RCTs and longitudinal studies with long-term follow-ups that occur after the completion of the intervention (see [Table 1](#)). Information on effect sizes is often lacking. In many studies, the sample sizes are small and no information regarding power calculations to estimate the appropriate sample size is available. Further, samples are sometimes constructed on an age range basis or have recruited general populations of peri- or postmenopausal women without considering their actual conditions, symptoms or complaints. Outcome measures are diverse, which makes comparing findings difficult. Although components of combined interventions are usually described in detail, generally analyses of component-specific, separated effects are not reported. Moreover, often outcomes are not reported with regard to the statistical significance of the changes. Nevertheless, the reports included in this review demonstrated potentially effective interventions.

Because the study designs, participants, interventions and reported outcome measures varied markedly, we focused on

describing the studies, their main characteristics and results, and on qualitative synthesis rather than meta-analysis.

## 3. Results

### 3.1. Psychoeducation, health education and health promotion

The vast majority of women want to be informed about menopause, for example, through discussions with health professionals, workshops and specific materials, as well as about how to enjoy a better quality of life at this stage of their lives [35–37]. Unfortunately, research [38] indicates that women believe that they do not have all of the necessary information about menopause and the intervention options to make appropriate decisions. A number of studies show that the information that women receive from the healthcare system is considerably lower than it should be, estimating it as lower than half the recommended, with only one-third of women reporting that they are satisfied with the information that they have received and consider it to be of quality [39]. Thus, many women feel loneliness, confusion and discomfort, and respond that they need to be better informed [40]. When women are provided with help, for example, with a tailored information-derived, customised guide (e.g., an online resource) for interacting with their healthcare provider during a consultation on HT, there were improvements in the communication during the medical care visit, the efficacy of the consultation and the satisfaction of both the consultant and the care provider, when compared to outcomes from typical medical care visits [41].

Women need reliable unbiased timely free information to know what changes will occur within their bodies and their lives, how to make good decisions about their self-care, how to discuss their needs with their healthcare professionals and how to negotiate therapeutic strategies that are appropriate for them. Thus, they want to be appropriately informed and to become active participants in the processes of healthcare and decision-making [37,42,43]. They also want to know their health status, the impact of various factors, including menopause and postmenopause, on their health status, how to stay healthy and reduce the risk of chronic health problems and how to address health problems that may arise [42]. Women want to re-examine menopause with more realistic information and wish to actively participate in the decision-making about their health. Moreover, an appropriate education that is consistent with women's personal values and conditions and allows them to actively participate in decision-making is associated with higher adherence to the proposed recommendations [42–44]. As a result, women try to find information on their own, for example via Internet [40,45].

Therefore, interventions have been developed with the purpose of increasing women's information about menopause in general and about how to handle it, as well as addressing the beliefs and attitudes towards the changes that occur with menopause and promoting behavioural changes to face them appropriately [30,46]. [Table 1](#) shows that five RCTs, three Non-RCTs and five NCS were found addressing psychoeducation and health education and promotion strategies for the relief of hot flushes and other vasomotor and psychosocial symptoms associated to (post)menopause changes. Participants were in general middle-age, pre- to postmenopausal women reporting slight to severe complaints linked to menopause. They could have used HT or receive it as therapeutic option. Nevertheless, some studies did not include detailed information on age range, menopausal condition, associated symptoms and HT use. A few studies included clinically relevant samples (e.g., distressed or obese women). Small to large sample sizes were observed, in accordance with the high-level spread of these type of intervention. Duration and number of sessions varied, and only

**Table 1**  
Summary of the reviewed studies.

Psychoeducation, health education and health promotion Randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Liao and Hunter (1998) [19] Hunter and O'Dea (1999) [58]	N = 86 PrM 45 years old Not taking HT N = 86 PeM and PoM 50 years old	1 Psychoeducation and health education N = 34	1 N = 34	Sessions: Two 90-min sessions Components: Knowledge, beliefs and attitudes about menopause and ageing, physiological changes during menopause, health implications, HT and alternative therapies and how to be prepared physically and psychologically for menopause; health education (e.g., stress management, smoking and alcohol consumption, healthy eating and exercise); written materials regarding those issues; and an exercise on the perceived benefits and barriers and health-related goal-setting to facilitate behaviour change Group format for women to share their experiences, beliefs, values, expectations and lifestyles, as well as to facilitate group support regarding the initiation of possible behavioural changes	3 3 and 15 months 5 years	In the follow-ups, women in the intervention group showed increased knowledge about menopause and had less negative beliefs and attitudes compared to their baseline levels and the control group. They also showed a reduced willingness to use HT and a higher percentage of participants engaged in healthy behaviours, such as exercise or not smoking. In the 5-year follow-up, the intervention group showed increased knowledge regarding menopause, attributed fewer symptoms to menopause, expressed fewer complaints related to the symptoms that they experienced, and demonstrated a lower use of HT, engaged in more exercise and smoked less compared to controls. These women reported finding the intervention very useful with regard to having a more positive experience of menopause and controlling its manifestations. However, no significant differences were found between the study groups on various indicators of quality of life, except in sexual functioning, with the intervention group showing better scores compared to controls.
Forouhari et al. (2010) [67]	N = 62 PrM and PeM 44–55 years old Not using HT	1 N = 31 Psychoeducation and health education	1 N = 31	Sessions: Six 45- to 60-min sessions Components: Information in discussions on menopause, its manifestations, associated complications and strategies for handling events and risks, including relaxation training and exercise	1 3 months	It was not clear whether participants experienced any behavioural changes as a result of the intervention. At follow up, the discussion group showed significant improvement in vasomotor symptoms, psychosocial well-being, physical and sexual functioning and quality of life compared to the control group, which demonstrated declines in all of those areas. Although self-reported exercise and eating behaviours did not change in any of the groups, the lifestyle intervention group reported a significantly greater decrease in weight, BMI and abdominal circumference, and, consequently, a greater improvement in hot flushes compared with the education intervention group. No significant changes were observed in physical and mental functioning in the lifestyle intervention group, although overall blood pressure decreased but this could not explain the changes in vasomotor symptoms.
Huang et al. (2010) [75]	N = 338 PeM and PoM 53 years old in average 11% using HT Overweight or obese with at least slightly bothersome vasomotor symptoms (and incontinence)	1 Behavioural intervention & health promotion N = 226	1 Health education N = 112	Components and sessions: Weight loss intervention to decrease hot flushes in two formats: Lifestyle intervention group: 6-month intensive lifestyle change programme with weekly 1-h group sessions that provided information about nutrition and exercise and behaviour change and encouraged regular exercise and a reduced-calorie diet Education intervention group: A health education programme with general information regarding healthy behaviours and weight loss		Although self-reported exercise and eating behaviours did not change in any of the groups, the lifestyle intervention group reported a significantly greater decrease in weight, BMI and abdominal circumference, and, consequently, a greater improvement in hot flushes compared with the education intervention group. No significant changes were observed in physical and mental functioning in the lifestyle intervention group, although overall blood pressure decreased but this could not explain the changes in vasomotor symptoms.

Table 1 (Continued)

Psychoeducation, health education and health promotion Randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Yazdkhasti et al. (2012) [68]	N = 110 PoM 53 years old in average Not taking HT	1 Psychoeducation and health education N = 52	1 N = 53	Sessions: Ten 2-h weekly sessions Components: Educational support group with discussions on menopause and its manifestations (stress, memory problems, sleep problems, vasomotor symptoms, incontinence, vaginal and skin dryness, etc.), sex in menopause, social support, relaxation training, aerobic exercise and cultural issues	1 3 months	Changes in behaviour were not reported. Participants showed a decrease in vasomotor, psychosocial, physical and sexual complaints, as well as significant improvement in quality of life at post-intervention and follow-up, compared to a control group.
Psychoeducation, health education and health promotion Non-randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
García-Sánchez et al. (1998) [47]	N = 106 PeM and PoM 45–60 years old 70.5% suffered from a probable psychological health problem, with no difference between the intervention and control groups	1 Psychoeducation and health education N = 48	1 N = 40	Sessions: Ten 60-min weekly sessions over a 5-month period Components: Education on menopause and associated biological, psychological and social changes, prevention of future health risks, healthy eating, Kegel's exercises, body exercises, emotional self-regulation and relaxation. Group discussions		After the intervention, the percentage of participants classified as suffering from a probable psychological disorder decreased to 8.3% in the intervention group, whereas it increased to 82.5% in the control group. Additionally, there was a significant reduction in psychological distress in the intervention group. No information on behavioural change was offered.
Tsao and Huang (2004) [76]	N = 353 PeM 40–55 years old	1 Psychoeducation and health education N = 179	1 N = 174	Sessions: Not reported Components: A brochure with information about perimenopause and its associated changes, treatment options, self-care behaviours (including eating, exercising, preventive behaviours and mental well-being) and disease prevention with the goal of enhancing participants' self-care skills for dealing with menopausal changes and symptoms, as well as health risks. Additionally, one-on-one teaching and consultations were offered to the participants and possible phone contacts	1 3 months	A significant positive change in knowledge about perimenopause, a significantly higher frequency of self-caring behaviours and a significant reduction in perceived disturbances were found in the intervention group in the follow-up. The control group did not show these changes, but reported a significant increase in perimenopausal symptoms.
Rotem et al. (2005) [46]	N = 82 PoM 40–60 years old 25–28.1% taking HT	1 Psychoeducation and health education N = 36	1 N = 46	Sessions: Ten 2-h weekly sessions Components: Information about physiological, psychological, emotional and sociocultural processes linked to menopause, understanding menopause as a natural phase of life, its implications on daily life (e.g., family functioning and marital relationships), therapeutic options (including conventional and complementary treatments), disease prevention and health promotion (including eating, exercise and relaxation behaviours), to change their attitudes towards menopause and to establish the impact of this change on the perceived severity of the manifestations linked to menopause Group discussions to share experiences	1 3 months	A close relationship between attitudes and perceived severity of symptoms was found in that negative attitudes were associated with higher ratings of severity for physiological, psychological and social symptoms. In the 3-month post-intervention assessment, participants in the intervention group reported having significantly more positive attitudes, feeling more confident, stronger, valuable, alive, successful and necessary, and experiencing significantly fewer physiological, psychological and social symptoms when compared to baseline and a control group. All of these factors were interpreted as a resource for the participants' quality of life. Behavioural changes were not reported

Table 1 (Continued)

Psychoeducation, health education and health promotion Non-controlled studies						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Lemaire and Lenz (1995) [77]	N = 177 PrM to PoM 30–71 years old, 50 yr. old in average 63% using HT	1 Psychoeducation		Sessions: Not reported Components: Education about menopause and middle-age health issues (e.g., physiology, HT benefits and risks, breast cancer and osteoporosis risk, detection and treatment, and causes and treatment of urinary incontinence)		Participants showed significantly increased actual and perceived knowledge and reduced uncertainty regarding menopause (high at baseline).
Ueda et al. (2009) [78]	N = 23 Menopause condition not reported 59 years old in average Some women were regular exercisers	1 Psychoeducation and health education		Sessions: Six 90-min weekly sessions Components: 60-min lectures on menopause, changes and symptom management, nutritional information, cardiovascular health and other lifestyle-related diseases in middle-age, and 30-min practice sessions on exercise (aerobic, weight-bearing and stretching exercises) adapted to the contents of each session, goal-setting, self-monitoring and other skills for long-term adherence	2 6 weeks and 12 months	Participants did not manifest a significant decrease in menopausal symptoms neither after the intervention nor at follow up, yet improvements were found in quality of life, with significant changes in general health perception and physical health. Although changes in exercising were reported, only one-third of the participants maintained the practice recommendations to achieve health-related benefits after the intervention.
Trudeau et al. (2011) [79]	N = 35 Menopausal condition not reported 40–55 years old	1 Psychoeducation for decision-making		Sessions: Not reported Components: Online interactive intervention to identify the educational needs of women who had experienced menopause through focus groups and expert judgments and to provide the basis for a patient-centred psychoeducational and supportive programme designed to improve self-management of menopause and decision-making (e.g., regarding possible treatments). The intervention included individualised assessments, customised information and modelling by peers by sharing life stories. The final aim of the intervention was to empower women to make autonomous decisions regarding their healthcare		Participants indicated the information about menopause and its management that they wanted and how they accessed this information, particularly via the Internet. Participants responded that they wanted information about menopausal symptoms (e.g., manifestations and duration), symptom management (e.g., therapeutic options, alternative interventions and side effects) and interpersonal differences when experiencing menopause (e.g., real stories about personal experiences). The authors categorised these needs into the following six themes: changes during menopause, self-management and treatment options, communication with a specialist, health promotion and maintenance, what to expect and accessing support. The authors then developed an educational intervention based on these identified needs. The results demonstrated that the online intervention satisfied the educational needs of the participants, who reported that they had no other sources for this information. A significant increase in participants' knowledge was observed. In addition, 80–90% of participants and experts rated their satisfaction with the intervention as high or very high, indicating that the information provided was relevant, of a high quality and easy to understand. Both participants and experts noted that the use of this online resource could increase women's confidence regarding their self-management of menopause. Participants indicated that they would talk about this resource with other women, and experts that they would recommend it to their patients.

Table 1 (Continued)

Psychoeducation, health education and health promotion Non-controlled studies						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Esposito et al. (2012) [80]	N = 69 PoM 52 years old in average Not taking HT	2 Psychoeducation and health education Early menopause N = 32 Late menopause N = 37		Sessions: Four 2-h lecture sessions at 45-day intervals Components: Information on menopause, postmenopause, health implications, HT and other strategies' benefits and risks, psychosocial changes and health behaviours (including eating, exercise and tobacco and alcohol use). They also instructed women on walking practice and stretching exercises. During a closing session, participants were provided with feedback from evaluations in open discussions		Behavioural changes were not reported, yet participants in both groups significantly decreased in weight, BMI, abdominal circumference and blood pressure. Moreover, menopausal symptoms were significantly reduced, and there was a significant improvement in depressive, somatic, cognitive, vasomotor and sexual symptoms. However, biochemical parameters did not change in general.
Daiss et al. (2013) [81]	N = 45 Menopausal condition not reported 50 years old in average Overweight or obese	1 Psychoeducation and health promotion		Sessions: Ten 90-min weekly sessions over a 3 month period and bi-weekly to monthly sessions during an additional 9 month period Components: A "small-changes" intervention aimed at promoting behavioural changes and reducing hot flushes and other menopausal symptoms. The sessions focused on education regarding weight loss (e.g., nutrition, eating, physical activity, body image, social support, stress reduction and negative thoughts) and group discussions were offered in addition to strategies for behavioural change. Participants determined their own small changes, which were weekly, specific, achievable and relevant goals to reach regarding eating and exercising. Active problem solving and coping strategies were also discussed during sessions. Group format	3, 6 and 12 months	Behavioural changes were not reported, but a weight loss of up to 6.9% was attained. Participants significantly reduced their weight and BMI and maintained this change at the follow-ups. Moreover, menopausal symptoms were not related to weight or BMI at baseline, but they were after the intervention and at the follow-ups, with a significant decrease observed across the 12-month period of the study in association with the magnitude of the BMI reduction.
Decision-making support for starting, stopping or continuing HT use and other health-related issues Randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Rothert et al. (1997) [42]	N = 252 PrM, PeM and PoM 40–65 years old	2 Guided discussion N = 80 Personalised guided decision-making N = 83	1 Standard education materials N = 89	Sessions: Three 90-min sessions Components: Personalised guided decision interventions: Personalised, active decision intervention with personalised information similar to that offered in the brochure, decision-making support (i.e., decision analysis and making) and skills for a positive interaction with the health care system Guided discussion: Lecture/discussion combined with question-and-answer format addressing the same contents that education brochure Education materials: Brochure addressing menopause and derived risks, the pros and cons of HT, communication with health care professionals and self-care strategies	6 and 12 months	All of the outcomes, including women's level of knowledge, degree of comfort with their decision (in terms of decisional conflict and satisfaction with the decision), transference of the decision into action (in terms of self-reported adherence to action plans in relation to exercise, calcium intake and use of HT) and quality of their interaction with the healthcare system (in terms of perceived efficacy and satisfaction with their interaction with a specialist) increased for all of the groups after the intervention, with changes maintained at follow-ups.



Table 1 (Continued)

Decision-making support for starting, stopping or continuing HT use and other health-related issues Randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
O'Connor et al. (1998) [61]	N = 165 PoM 50–69 years old Not taking HT	1 Active information and decision-making N = 81	1 Standard education materials N = 84	Components: Decision-making support: A self-paced, active, written and audio-taped customised decision task with personally tailored information and help with decision-making. Information was provided on HT and customised decision support was conducted Written materials: An informative pamphlet on HT, its benefits and risks and likely beneficiaries in general terms		Although acquired knowledge did not differ between the groups, the decision-aid group showed decreased levels of decisional conflict and more realistic expectations after the intervention.
Murray et al. (2001) [62]	N = 205 PeM 51 years old in average	1 Interactive multimedia video-based decision aid N = 102	1 Standard clinical care N = 102	Components: A 90-min educational video on menopause, changes and health risks, as well as HT benefits and risks. It was offered with a printed booklet and a summary	2 3 and 9 months	Compared to the control group, levels of decisional conflict were significantly lower in the intervention group both 3 and 9 months after the intervention. Indecision levels were significantly lower at post-intervention, and a higher percentage of participants decided against using HT. Clinicians perceived that patients' autonomy with regard to decision-making was higher in the intervention than the control group.
Col et al. (2007) [63]	N = 145 PeM and PoM 45–65 years old	2 Computer-based decision-support intervention without additional assistance N = 45 Computer-based decision-support intervention with additional assistance N = 50	1 Standard education materials N = 50	Components: Decision-making aid: Individualised information about menopause, symptoms, individual risks based on scientific data, treatment options, benefits and risks with regard to HT and tailored suggestions regarding lifestyle choices, preventive exams and clinical care, as well as a summary report for both the patient and clinician. Educational intervention: pamphlets on menopause and HT. All these resources were used two weeks before a clinical appointment. The additional assistance offered 20 min of coaching in a review of the computer-based information just before the clinical appointment	1 2 weeks	Both the assisted and non-assisted interventions resulted in a significant decrease in levels of decisional conflict and greater knowledge and satisfaction compared to those who read the pamphlets. Although the assisted decision support increased participants' knowledge to a greater extent than the non-assisted support did, the latter was associated with higher satisfaction levels and decreases in levels of decisional conflict.
Schapira et al. (2007) [64]	N = 177 PoM 45–74 years old	1 Computer-based decision-support intervention N = 89	1 Standard education materials N = 88	Components: Information on menopause and HT, risks and benefits of HT, tailored risk estimates for osteoporotic fractures, cardiac disease and breast cancer. Time estimated: 35 min. Education materials: Printed pamphlets Interventions were provided 3 weeks before a clinical appointment	1 3 months	Although knowledge tended to increase after interventions, there were no differences between the intervention and control groups in knowledge, satisfaction, decisional conflicts or HT use decisions.
Saver et al. (2007) 2 trials [65]	N = 409 PeM and PoM 45–75 years old	1 Web-based decision-support intervention N = 229	Trial 1 1 Standard education materials N = 205 Trial 2 1 Standard clinical care N = 24	Components: Web including written information (i.e., HT use, symptom management and bone and cardiovascular risk prevention), forums and discussion groups and decisional support to help in making health-related decisions Trial 1: The participants had no upcoming clinic appointment Trial 2: The participants had scheduled an upcoming clinic appointment		Knowledge significantly increased after the intervention compared to both the brochure and typical care conditions, yet decisional satisfaction was greater for the intervention group only when compared to the typical care group. Comparing findings from both trials, the authors concluded that the effectiveness and utility of online resources was influenced by the urgency of the decision-making (i.e., for an upcoming clinic appointment).

Table 1 (Continued)

CBT Randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Hunter and Liao (1995) [73]	N=20 PeM and PoM 45–55 years old Stressed or depressed patients	1 N=10	1 N=10	Sessions: Four 90-min sessions over a 6 week period Components: Information about menopause and training in stress management and problem-solving skills: The participants discussed their distress symptoms associated to menopause, their causes and the available management options	1 8 weeks	The participants in the intervention group showed lower levels of depression and anxiety after de intervention, fewer sleep problems after the intervention and at follow up, and their life satisfaction was higher at follow-up. In the control group, no changes were observed in depressed mood, sleep problems and life satisfaction but there was a significant change in anxiety.
Ayers et al. (2012) [82]	N=140 PeM and PoM 47–60 years old (23–35% with a history of HT) Experiencing problematic hot flushes	2 CBT N=46 Self-help CBT N=40	1 N=43	Sessions: Four 2-h weekly sessions Components: CBT intervention: Psychoeducation, stress management, pace breathing, individual goal-setting and homework Self-help CBT: A self-help book that women had to complete during the 4-week period and two contacts with a clinical psychologist at the beginning and at two weeks into treatment	2 6 and 26 weeks	The CBT and self-help CBT groups showed a decrease in problem rating for hot flushes and night sweats. When compared to the control group, the differences for both the CBT and self-help CBT groups were significant. Both treatment groups experienced a significant reduction in the frequency of night sweats at 6- and 26-week follow-ups. Moreover, there were improvements in mood and quality of life at the 6-week follow-up and improved emotional and physical functioning for the CBT group at the 26-week follow-up.
CBT Non-randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Hunter and Liao (1996) [25]	N=52 PoM 35–71 years old	2 CBT N=24 HT N=12 Immediate and delayed treatment in both groups	1 N=16	Sessions: Six 1-h sessions Components: Psychoeducation regarding hot flushes and their precipitating and exacerbating factors, relaxation (muscular training, paced breathing), cognitive restructuring and stress management for the relief of hot flushes (frequency and associated distress)	1 3 months	HT and CBT group showed a significant decrease in the frequency of the hot flushes, whereas CBT group showed significantly reduced anxiety, depressed mood, problem rating and negative self-perceptions of hot flushes and improved self-efficacy for coping with hot flushes and mood. The effects were maintained at the follow-up except for depressed mood. Compared to HT and control groups, women in the intervention group considered hot flushes less of a problem
Larroy and Gutiérrez (2009) [83] Gutiérrez and Larroy (2009) [84]	N=53 Menopausal condition not reported 42–56 years old Not taking HT Moderate to severe menopausal symptoms	1 N=28	1 N=25	Sessions: Eight 120-min weekly sessions Components: Information, healthy habits promotion, relaxation, Kegel's exercises, problem solving and cognitive restructuring	1 6 months	The intervention group showed a significant improvement in knowledge about menopause, depression and anxiety symptoms and quality of life, as well as a significant amelioration of hot flushes, melancholy and myalgia after the intervention. A six-month follow-up demonstrated the maintenance of the improvements with regard to depression, anxiety and quality of life. Women also noted improvements in social and family support, and in their sexual and marital relationships. The control group did not experience any of those changes.

Table 1 (Continued)

CBT Non-randomised controlled trials						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Senba and Matsuo (2010) [85]	N = 52 PeM and PoM 45–65 years old Not taking HT	1 N = 22	1 N = 30	Sessions: Six 2-h monthly sessions Components: Information about healthcare during menopause, coping techniques for physical and psychological symptoms, relaxation, imagery and stress management to improve their ability to control their physical and psychological health and to solve health-related problems	1 12 months	The intervention group showed significant improvements in their general and physical menopausal symptoms at post-intervention and at the follow-ups. Anxiety decreased and general mental well-being increased. Perceptions of quality of life at the post-intervention significantly improved, and role physical/role emotional dimensions significantly improved at the follow-ups. Self-reported changes were significant for both the intervention and the control groups, whereas post-intervention anxiety about the future and about health improved only for the intervention group. Compared to the control group, the intervention group experienced a significant decrease in the frequency and intensity of vasomotor, somatic and psychological symptoms. Attitudes towards menopause were more positive, with women reporting that they considered menopause as a new phase in life, felt more in control over it and perceived the menopause transition as a relief from burdens. In general, women began perceiving this period as less negative than they did before the intervention.
Ambroziak and Bielawska-Batorowicz (2011) [86]	N = 60 Menopausal condition not reported 48–54 years old 26.7% Taking HT	1 N = 30	1 N = 30	Sessions: One 6.5-h intensive session Components: Information on the hormonal mechanism for the menopausal transition, menopausal symptoms and their impact on health, discussions about individual experiences and ideas related to menopause, exercises aimed to recognise bodily sensations and control them, visualisation and elements of yoga. At the beginning, women were offered training on stress management and relaxation techniques		
CBT Non-controlled studies						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Greene and Hart (1987) [87]	N = 24 PeM and PoM 42–55 years old Taking HT for vasomotor symptoms but experiencing also psychological symptoms	1		Sessions: Six 45–60 min sessions, 3–4 weeks intervals Components: Information/education on the influence of psychosocial factors on menopause manifestations, counselling for current problems and concerns, and cognitive-behavioural strategies to manage anxiety and depression		A significant reduction in general symptoms, particularly psychological symptoms, and an improvement in subjective adaptation was observed. Outcomes seem to depend on the nature of the main complaint. Those women with anxiety as main symptoms improved the most, followed by those with depressive complaints. Women with psychosomatic complaints or loss of libido as the main complaint showed little or no response to treatment.

Table 1 (Continued)

CBT Non-controlled studies						
Author(s) (year)	Sample (N, menopausal condition, age, other characteristics)	Intervention group(s)	Control group(s)	Intervention (number of sessions, duration, programme duration, contents)	Follow up(s)	Main findings
Anarte et al. (1998) [66]	N=73 Menopausal condition not reported 45–55 years old	2 HT + CBT N=37 HT N=36		Sessions: Ten to sixteen 30-min sessions over a six month period Components: An educational component on the influence of psychosocial factors during menopause and the advantages and disadvantages of HT, counselling, problem-solving and skills training and CBT		The group receiving the combination of therapies significantly improved in psychological symptoms (i.e., anxiety, depression, insomnia, nervousness, melancholy, fatigue and weakness) as well as in palpitations, dizziness and vasomotor symptoms. In the HT group, significant improvements were observed only in vasomotor symptoms. Participants showed a significant decrease in anxiety and depression, and reported experiencing a non-significant increase in their quality of life.
Sueiro et al. (1999) [88]	N=8 PoM 45–55 years old Taking HT Depressed patients with symptoms not remitting after 1½ years HT treatment	1		Sessions: Eleven 90-min weekly sessions Components: Anxiety control techniques, relaxation, communication and problem-solving skills training and reinforcement of patient social networks		Participants showed a significant decrease in anxiety and depression, and reported experiencing a non-significant increase in their quality of life.
Camuñas et al. (2001) [89]	N=10 PeM and PoM 46–57 years old Hypertensive patients	1		Sessions: Fifteen 90-min weekly sessions Components: Information, psychophysiological techniques, healthy behaviours, problem-solving training and anger management for reducing blood pressure by managing anxiety and improving anger control and expression, and for modifying unhealthy lifestyles	1 5 months	Significant decreases in anxiety, trait anger and systolic and diastolic blood pressure were evident, and six participants were able to stop taking their prescribed antihypertensive medication.
Larroy et al. (2004) [69]	N=30 Menopausal condition not reported 42–55 years old Not taking HT Experiencing slightly to highly bothersome menopausal symptoms including anxiety, depression and physical complaints	2 Clinical group N=13 Subclinical group N=17		Sessions: Ten 90-min weekly sessions Components: Information, healthy habits promotion, relaxation, Kegel's exercises, problem solving and cognitive restructuring		Participants showed significantly reduced physical and psychological symptoms. Fatigue, headaches, palpitations, feelings of melancholy, myalgia and nervousness significantly decreased, and there was a non-significant improvement in quality of life. A significant improvement in knowledge was also evident.
Keefer and Blanchard (2005) [90]	N=29 PeM and PoM M=51 years old in average Experiencing hot flushes	2 Never used HT N=17: Immediate intervention (N=11) Delayed intervention (N=6) [Using HT N=10 Not included in analyses]		Sessions: Eight 90-min weekly sessions Components: Relaxation training, cognitive restructuring and a psychoeducation component including shared discussions regarding experiences and beliefs about menopausal symptoms and the role of stress in the perception of these symptoms. All women were instructed to maintain their current health practices		The immediate intervention group showed a significant reduction in the frequency, interference and discomfort associated with hot flushes. The delayed treatment group showed less improvements than the immediate intervention group.
Alder et al. (2006) [91]	N=29 PeM and PoM 42–65 years old (Hormonal condition not assessed) 40% Taking HT	1		Sessions: Seven 90-min weekly sessions Components: Psychoeducation, progressive muscle relaxation and cognitive restructuring to detect and change dysfunctional thoughts regarding menopause and sexuality. Group format		The intervention group showed a significant improvement from pre- to post-intervention for hot flushes and other menopausal symptoms, cardiac complaints and joint and muscle pain. Anxiety and depressive symptoms decreased. Sexuality, tenderness and overall satisfaction with partners improved after the intervention.

Note: PrM: Premenopausal women; PeM: Perimenopausal women; PoM: Postmenopausal women; HT: Hormone Therapy; CBT: Cognitive Behavioural Therapy.

a few reports informed on the duration of the intervention. The interventions offered to women addressed several issues, such as information on menopause and related issues, derived health and daily life changes, therapeutic options and health behaviour change, particularly related to exercise, diet and smoking habits. Some of them included behaviour change self-regulation support to fill the gap between knowledge and action (i.e., goal setting, planning, behaviour change self-management) for a more successful adoption of health-related behaviours. Some studies also included training other skills such as emotional self-regulation and relaxation practice. Control groups were mainly no intervention groups. Outcomes and outcome measures varied, but included indicators of both physical and psychological health. Studies including follow-ups were scarce, with 15 months as the longest period for conducting the long-term assessment and a study with a 5-year follow up period.

Providing women with tailored information helps them to have a better understanding of what happens and how they can manage the changes. Results demonstrate that educating women in menopause-derived changes and how to handle them help females to understand more appropriately this life stage, with increased knowledge and less negative attitudes, which derives in a more positive and enriching experience. This type of intervention also makes it easier to modify risk behaviours (such as smoking or unhealthy dieting) and to adopt new healthy behaviours (such as exercise), allowing women to manage the hard process of behaviour change more effectively. As a consequence of the outcomes derived from these interventions (including having more positive attitudes and expectations and lowering BMI and blood pressure, for example), women report lower frequency and intensity of vasomotor, physical and psychological symptoms and lower complaints related to menopausal manifestations. In sum, better understanding and attitudes to menopause allow women to have a more positive experience of menopause and controlling its manifestations with more effective self-caring actions. Although some findings do not support significant changes in terms of quality of life, evidence reveals that these interventions promote women's psychosocial and physical well-being. One study [47] combined psychoeducation, health promotion and CBT strategies for the improvement of women's emotional well-being.

A review examining the promotion of health behaviours with perimenopausal women by Lange-Collett and Schumann [31] concluded that the transition into perimenopause helps women to increase their health awareness and presents an opportunity to address modifiable risk factors and integrate healthy behaviours, such as regular exercise and healthy eating, to support a positive menopause transition and long-term health. The review focused on phytoestrogens intake, such as soy products, in high calcium, VitD and fibre, low fat diets and participating in regular physical activity with aerobic, muscle and stretching training for the relief of vasomotor symptoms, weight control and the prevention of cardiovascular diseases and osteoporosis. The authors included a number of recommendations to facilitate the implementation of changes during an individualised intervention.

We also found some studies discussing the effectiveness of health education and behavioural interventions for approaching specific behaviours and risks (these were not included in the Review and Table 1 because the interventions intended to target (post)menopause-related changes beyond (post)menopausal manifestations such as vasomotor symptoms or women's well-being). For example, four studies (two RCTs and two NCS) focused on promoting healthy eating behaviours through health education interventions among pre- to postmenopausal women. The interventions' efficacy was demonstrated with regard to participants' gaining weight control and reducing their cardiovascular, metabolic or bone risks [48–51]. One RCT [52] offered peri- and

postmenopausal women a health education intervention to change their lifestyle with regard to smoking, nutrition, water intake exercise behaviours, as this would lower their cardiovascular risk during postmenopause. After the intervention, participants exercised more and smoked less, and demonstrated better cardiovascular profiles (i.e., weight, BMI, waist-to-hip ratio and blood pressure). Two 5-year prospective RCTs [53] demonstrated the efficacy of a lifestyle change intervention that encouraged weight loss through exercise and diet modification to reduce women's cardiovascular risks during and after menopause. The Women's Healthy Lifestyle Project (WHLPP) consisted of a 6-month intervention with the goal of changing lifestyles related to eating and exercise behaviours in healthy 44- to 50-year-old premenopausal women. The lifestyle intervention effectively changed the targeted behaviours and reduced weight and cardiovascular risks in women when they reached the peri- and early postmenopausal stages. The Women on the Move through Activity and Nutrition (WOMAN) study compared the efficacy of a health education programme with that of a 6-month health promotion (i.e., lifestyle change) intervention with regard to reducing cardiovascular risk related to discontinuing HT among postmenopausal women. Compared to the health education intervention, the health promotion intervention, which focused on eating and exercising behaviours, demonstrated a greater efficacy for reducing several structural (i.e., weight, BMI and waist circumference), blood (i.e., total cholesterol and LDL-C) and behavioural (i.e., fat intake and lack of leisurely physical activity) cardiovascular risks factors, and it reduced the cardiovascular risks linked to HT discontinuation. One RCT [54] focused on diabetes prevention with pre- to postmenopausal women through a lifestyle change intervention, by targeting diet and exercise behaviours. Considering only the natural postmenopause group, findings indicated that the incidence of diabetes was 60% lower in the lifestyle intervention group compared to a non-intervention group. Further, after controlling for relevant risk factors, natural menopause was not related either to a greater risk of diabetes, independent of HT use, nor to effects of prevention intervention types. Three further studies (two NCS and one Non-RCT) focused on increasing pre- to postmenopausal women's awareness on osteoporosis and risk factors through a health education intervention and on lifestyle modification (e.g., diet, exercise, clinical behaviours) for successfully reducing the risk of suffering from bone diseases in the future [55–57].

In conclusion, women wish and expect to be informed on their condition and health-derived consequences, and find psychoeducation and health promotion as satisfying complementary interventions for self-management during (post)menopause. Although the findings are encouraging, more robust evidence supporting the effectiveness of these strategies for the improvement of vasomotor symptoms is needed, while its benefits for other physical and psychological issues are conclusive. Unfortunately, the vast majority of the research does not include information on behavioural changes attained. Moreover, many studies do not detail the intervention for behaviour change, but implicitly authors acknowledge that education is insufficient for action. Nonetheless, the reviewed research shows that women in menopause and postmenopause who participate in psychoeducational and health promotion programmes have more accurate knowledge, more positive attitudes regarding menopause, less discomfort associated with changes at these stages, more frequent engagement in healthy habits and better health status and well-being levels than women who do not participate in these programmes. Providing women with tailored information helps them gain a better understanding of what happens so that they can manage the changes. It also allows them to have more realistic expectations, to know and properly estimate the manifestations of menopause and even experience them with less frequency or intensity, to feel less stigmatised by their condition, to make better decisions regarding their self-care

behaviours and to increase their perceptions of control and self-efficacy [58]. This translates into better decisions regarding what they need or want [30,59]. These types of interventions also increase adherence to HT when prescribed. A patient-education intervention [44] aimed at increasing adherence to HT among postmenopausal women with a prescription demonstrated that educating participants about menopause and the benefits of HT increased the likelihood of compliance with the treatment compared to those who did not receiving this type of intervention. Thus, psychoeducational programmes help women to be more prepared and have more positive experience of menopause. Therefore, psychoeducational interventions should be used in combined, comprehensive interventions with this population.

Many of the previously discussed interventions (and those reviewed next) have used discussion and a supportive group format. This format, which is conducted either face-to-face or online, allows women to share their experiences and questions regarding menopause and to learn more about this condition to help make more informed decisions regarding their health [60]. Boggs and Rosenthal [60] suggested that women should be offered information about menopause and all of its related issues and that support groups should be created to support their adoption of positive attitudes, beliefs and health behaviours. Presenting and discussing their knowledge and personal experiences helps all of those involved and promotes responsibility and active participation regarding their own well-being. Women can use these resources to discuss issues related to their health, age and self-care. They can also use these forums to openly and honestly share their experiences, knowledge, perceptions, needs and doubts. Sharing experiences and beliefs within a group contributes to their normalisation and demonstrates to participants that other women have faced the same difficulties. It further allows them to exchange and increase their knowledge, provide and obtain feedback, promote their critical thinking and diverse skills and relieve their stress [46].

### 3.2. Decision-making support

Other interventions have been conducted with the goal of helping women during the decision-making process. We found six reports including RCT design on decision-making support for helping women when making decisions related to HT use and other health-related issues (see Table 1). One study included two trials. Participants were middle-age to older, pre- to postmenopausal women, with studies not offering detailed information on menopause symptoms and previous HT use. Sample sizes varied, but generally were small in order to offer women a tailored intervention. Duration and number of sessions also varied, from one to three interactions with the decision-making aids. Decision-making was usually based on previous complete information on menopause and HT and took into account the participants' individual conditions, and sometimes included other guidelines on healthcare during this life stage. Outcomes and outcome measures also varied, but indicators of decisional conflict and satisfaction, knowledge and quality of the interaction with their clinicians were included. Studies including follow-ups were scarce, with 12 months as the longest period for conducting the long-term assessment.

Of particular interest is a proposal by Rother and colleagues [42] involving a collaborative participatory active patient-care model that is based on the concepts of self-care, empowerment and helping patients with decision-making. The proposal includes the processes of (a) information, (b) clarification of patients' values, (c) promotion of decision-making by patients, and (d) helping patients develop personal plans to implement their decisions regarding their healthcare. With these foundations, the authors developed a decision-support intervention with regard to menopause, HT and health-related decisions with the goal of helping women to

make informed decisions that are consistent with their values and then act on their decisions. Women who participated received either (1) a purely educational intervention in which they were provided with written materials about menopause and its manifestations, health risks and management strategies, including HT and its benefits and risks and a section where they could reflect on their experiences, beliefs and doubts; (2) a guided discussion intervention with three 90-min sessions consisting of the same contents as the educational intervention but provided in a talk-and-discussion group format; or (3) a personalised guided-decision intervention, in which participants were offered the same information in the same number of sessions as the guided discussion intervention, but this condition emphasised their active participation in decision-making. In the latter group, the authors conducted exercises during which the women expressed their personal values and evaluated their own risks during decision-making. Decision-making was conducted based on the information provided, the consideration of probabilities (i.e., risks) and utilities (i.e., benefits and values) to establish a personal risk compared to normative data, and the likelihood of personally relevant problems (e.g., in relation to the consequences of using HT). The decision-making process involved considering alternatives, identifying possible consequences and establishing the probability of these consequences at a personal level. In addition, the women were encouraged to discuss the possibility of taking HT with their healthcare supporter and to interact positively with the healthcare system. Therefore, the intervention aimed to inform women of the issues that they considered necessary and helpful for making decisions that they considered relevant to their own lives by providing them with the knowledge and skills they needed and taking into account their personal values. Findings were encouraging. Moreover, no differences between the groups at any time points were found, which suggests that correct and complete information that is tailored to individual needs is adequate for making good decisions with or without external guidance regarding decision-making. However, the authors stressed that previous research with chronic patients shows that information plus education regarding decision-making, action-planning and transference of decisions into actions is more effective for behavioural changes, adherence to changes and the outcomes of behavioural changes of what this study showed.

Others [61] have also compared an active, tailored, written&audio-taped-based decision aid with standard written materials to determine which would be more helpful when deciding whether to use HT, obtaining support for better outcomes in the decision-aid group. Other studies using audio-visual resources with the goal of improving decision-making with regard to HT-related decisions discuss the usefulness of these interventions compared to standard clinical care (e.g., [62]). Two studies [63,64] assessed the efficacy of a computerised intervention with regard to the decision to start, stop or continue HT use compared to an education materials-based intervention. One study [65] used a web-based intervention and compared its effectiveness with standard printed materials or clinical care.

Results support the usefulness of training women in decision-making skills for enhancing their efficacy in decisional tasks. Independently of the outcome regarding HT use, women made decisions based on reliable and tailored information, used appropriate skills and obtained better results in terms of easiness of the decisional process, satisfaction with the decision and adherence to behaviour changes regarding HT, health-related actions and interaction with the health-care system. The decisional aids demonstrated to help women in a higher degree than standard written materials or clinical care. Thus, decisional support might also reveal useful when deciding on other health-related issues, such as healthy behaviours for an improved well-being and quality of life during (post)menopause. On the other hand, based on

the available evidence (e.g., [65]), decisional support seem to be particularly useful when women have to make a clinically relevant decision in the short-term (for example, they have an upcoming clinic appointment).

In order to obtain greater benefits, decisional tasks must include tailored, individualised information and train women in decisional skills and behaviour self-regulation (i.e., behaviour planning, translating plans to actions and adherence-enhancing skills, self-efficacy for behaviour change). Moreover, they should be benefit-cost effective, with shorter, easier and self-decided interaction interventions being more promising. Resources that may allow women to share information and experiences would probably promote derived outcomes and enrich women's satisfaction. In addition, patients perceive multimedia- and computer-based interventions as easy, useful and helpful, and they believe that these interventions promote their involvement in the decision-making process. Additionally, web-based technology reduces the costs of interventions. Investigating whether this type of intervention is more effective is necessary, although it requires Internet access and web-use skills.

### 3.3. Cognitive-behavioural therapy (CBT)

CBT interventions are another available option for improving well-being during menopause. More than half (59%) of women who seek help for the relief of their symptoms prefer this type of intervention to pharmacological therapy [11].

In a review by Tremblay et al. [32], including fourteen studies involving 475 women, on different CBT interventions for the management of vasomotor symptoms, such as psychoeducation, counselling, relaxation strategies, mindfulness training, problem-solving, coping skills and cognitive restructuring, in combination with HT or alone, it was demonstrated that these types of interventions are effective for the management and reduction of symptoms when compared to baseline and control groups. Although CBT has no additional benefits for the management of vasomotor symptoms compared to HT, the combination of the two interventions may be more beneficial for psychological complaints. Thus, this type of intervention is an effective option for addressing hot flushes that are associated with feelings of discomfort and anxiety, as well as for women who do not want to be or cannot be treated with HT. A group format seems to be particularly effective.

As can be seen in Table 1, we found two RCTs, four Non-RCTs and seven NCS addressing the effectiveness of CBT techniques for the relief of hot flushes and night sweats, other vasomotor symptoms and psychological distress associated to (post)menopause changes. Participants were middle-age, peri- and postmenopausal women reporting slight to severe complaints linked to menopause. They could have used HT or receive it as therapeutic option. Nevertheless, some studies did not include detailed information on menopausal condition, associated symptoms and HT use. A few studies included patients (e.g., depressed or hypertensive samples). Sample sizes varied, but generally were small in order to offer women a suitable intervention. Duration and number of sessions varied, and only a few reports informed on the duration of the intervention. The interventions offered to women involved usually combined strategies, with CBT techniques along with patient education and health promotion strategies. Some of them used a group format. Control groups were no intervention groups. Outcomes and outcome measures also varied, but included indicators of both physical and psychological complaints. Studies including follow-ups were scarce, with 12 months as the longest period for conducting the long-term assessment.

Results support the conclusions made by Tremblay et al. [32] and reveal the effectiveness of CBT techniques for the improvement of physical and psychological complaints related to menopausal

changes. CBT demonstrated to be particularly effective for the relief of psychological distress that peri- and postmenopausal women may experience. Although their benefits on vasomotor symptoms compared to HT warrant further research, the evidence reveals that psychosocial interventions including CBT help women to experience them less frequently and intensely, more positively and with lower associated discomfort and distress. CBT seems to be differently effective for vasomotor and other somatic symptoms, demonstrating greater benefits for symptoms for which a psychological dimension may have a relevance, such as insomnia, fatigue, dizziness, palpitations, pain or sexual impairments. All these outcomes translate in women's perceptions of improved well-being and quality of life.

A few studies compared CBT and HT therapies (e.g., [25]), warrant further evidence. Some research examining whether HT is more effective for the management of menopausal symptoms with or without a psychological intervention (e.g., [66]) also reveal the benefits of CBT with regard to psychological manifestations which some women suffer from, and show that a combined, psychological and hormonal intervention is more effective than a hormone-only intervention, as the psychological benefits accompany the hormone-derived outcomes.

Nevertheless, none of the reviewed studies compared the effects of different CBT techniques in isolation, impeding us to understand their specific benefits. Relaxation techniques have been included in the vast majority of the reviewed studies. Other research has also demonstrated their efficacy for reducing hot flushes and other (post)menopause-related manifestations [46,47,67,68].

In summary, although the findings are encouraging, there still insufficient robust evidence supporting the effectiveness of CBT alone for the improvement of vasomotor symptoms, while its benefits for psychological issues are unquestionable, even when non significant effects are reported. A non-significant result does not demonstrate that a treatment is ineffective. Thus, psychologists should decide which strategies better suit the needs of their patients for an enhanced effectiveness of the interventions administered. As some authors have stated (e.g., [69]), the participants may benefit in the near future from the knowledge and skills they acquired after the CBT intervention, which may have helped them to control the intensity and frequency of the menopausal changes and manifestations.

## 4. Limitations and conclusions

To date, psychosocial interventions have demonstrated that they are promising options for preparing women for menopause and postmenopause, as they enhance women's agency with regard to adopting more agentic roles in their management practices and women's empowerment with regard to training them on successful skills for decisions and actions. Nevertheless, several issues remain controversial or unknown, and future research should properly address them. Additionally, the quality of the studies varied. There are important methodological deficiencies in the current research, with few RCTs with long-term follow-ups, a limited number of available reviews and a lack of published meta-analyses. Trembay et al. [32] expressed their concern regarding the methodological quality of some of the reviewed studies on CBT and recommended considering these studies' findings as tentative and the interventions as potentially effective. Others have recommended establishing greater support for interventions [70], as high-quality research is necessary to make evidence-based conclusions regarding the effectiveness of psychosocial interventions. This is also necessary to have sufficient evidence to guide clinical practices (i.e., the types of intervention used, their components and duration). In addition to our reservations regarding the quality

of the research included here and commented in Results subsections, our review also suffers from several limitations. The most important limitation refers to the exclusion of reports due to the document type (e.g., non-peer-reviewed reports) or to their conditions (e.g., language, unavailability) and due to the clinical conditions of the samples (e.g., middle-aged female cancer patients or women with natural or induced premature menopause). There are too few interventions with older women who are in late postmenopause. All of these conditions require a specialised revision due to concomitant factors, such as illness management, derived distress or the added effects of ageing. Studies often provided insufficient descriptions of the participants' menopausal stages, their HT use or other conditions, such as chronic illness, obesity and so forth, which limits our comprehensive presentation of their findings. With a few exceptions (e.g., [64,65]), studies conducted close to the dates of the research questioning HT safety and effectiveness do not indicate whether they offered updated information on HT. Moreover, studies conducted in developing nations or with minority populations were included in this review; however, possible confounding conditions in these studies were not controlled for. Thus, poor or incomplete reporting of study designs, populations and interventions are an important shortcoming which may hamper interpretation and synthesis of the available evidence. Further, it is necessary to detail behaviour change as derived from interventions, due to the indirect relationship between the intervention and its benefits derived from behaviour changes.

It is important to discuss the role of self-efficacy beliefs with regard to managing menopause and menopause-related issues [30,71], including self-efficacy for self-caring and healthy behaviours. It has been indicated [72] that, as women experience perimenopause, their personal efficacy beliefs increase, suggesting that they adapt and learn to manage the health challenges associated with menopause. However, only a few of the reviewed studies [25,42,50,73] included this core correlate of agency and behaviour change.

Psychosocial interventions are promising therapeutic options for self-management and self-care. They are therapeutic, preventive and have been shown to be useful both in clinical and subclinical groups. Psychosocial approaches involve new forms of intervention that provide a comprehensive approach to menopause, have multiple benefits with no side effects and are recommended for all women. These approaches offer women the ability to manage and relieve menopausal symptoms, as well as provide information and alternatives for preventing these symptoms. Additionally, these approaches are interesting, effective strategies for promoting health, well-being and quality of life, and they support positive personal experiences of menopause and ageing. In the face of medical interventions, psychosocial options, such as psychoeducational programmes, health education and promotion and CBT, have two important advantages [74]. First, their effects tend to accumulate over time and are independent and complementary to biomedical interventions, such that the outcomes of the combination of both therapeutic perspectives are greater than those of each individual intervention. Second, these interventions are catalysts for behavioural changes, which have long-term effects on health, regardless that derivative from medication. As proposed by Berga [74], "the sum is greater than the whole of the parts" (p. 229), with synergistic effects of multiple variables interacting. Moreover, psychosocial interventions are accompanied by important cost reductions in pharmaceutical investments and healthcare [69].

Therefore, we encourage female-centred institutions and policies (e.g., healthcare centres, public organisations and women's associations) to offer psychosocial interventions for menopausal and postmenopausal women within a comprehensive healthcare paradigm.

## Contributors

D. Godoy, M. Vélez were involved in the conception and design of the idea, data interpretation and preparation of manuscript.

All authors participated in the statement and approved the final version of the manuscript.

## Competing interest

None declared.

## Provenance and peer review

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