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## A qualitative assessment of health behaviors and experiences during menopause: a cross-sectional, observational study

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### Abstract

**Objectives:** A qualitative research study was performed to assess health and lifestyle behaviors of middle-age women during the menopause transition, as well as inform the development of future interventions designed to combat menopause symptoms and improve quality of life during and after menopause.

**Study Design:** Data were collected from 1,611 women via a 21-item questionnaire distributed electronically. Only women who self-reported age  $\geq$  40 years and were either peri-menopausal or post-menopausal were included in the analyses

**Outcome Measures:** Women responded to questions about their health behaviors and experiences during menopause, including use of hormone replacement therapy (HRT); symptom ratings; and use of diet/lifestyle, exercise, and holistic remedies to relieve menopause symptoms.

**Results:** More than 80% of women were interested in a structured lifestyle program to alleviate menopause symptoms, with 72% of these women wanting targeted strategies for weight loss or weight maintenance. Insomnia and hot flashes were the most severe symptoms reported. Although HRT is a well-established treatment to relieve symptoms, more than 60% of women denied use of HRT citing that they ‘never considered HRT’ as a treatment option or ‘preferred to not take HRT’. Most women (65%) did not feel prepared for menopause.

**Conclusions:** Women do not feel prepared for menopause and report interest in a structured lifestyle program containing weight loss and weight maintenance strategies to combat menopause symptoms.

### Keywords

menopause; questionnaire; symptoms; lifestyle; exercise; holistic

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**Data Availability:** The dataset pertaining to the current study is available from the corresponding authors in accordance with appropriate data use agreements and IRB approvals for secondary analyses.

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## 1. INTRODUCTION

Menopause is a natural biological process of reproduction when a woman's menstrual cycle permanently ceases and estrogen levels decline as the result of progressive ovarian failure. Natural menopause occurs at an average age of 51 years, varying widely from 40 to 58 years [1]. During the transition through menopause (i.e., peri-menopause) and in the years after menopause (i.e., post-menopause), there is a diverse range of metabolic impairments as well as physical and emotional symptoms that can negatively impact a woman's overall quality of life. Common metabolic impairments include weight gain, increased visceral and subcutaneous abdominal adiposity, impaired glucose tolerance, hyperinsulinemia, and hypertension [2–5]. Additionally, physical and emotional symptoms often include vasomotor symptoms (VMS, or “hot flashes”), sleep disturbances, fatigue, and sexual complaints [1]. With the increase in life expectancy, women who reach menopause are expected to live another 30 years in a potential state of disrupted cardiometabolic health and decreased quality of life due to some of these derangements.

While recommendations for clinical care of midlife women exist [1], women are often left to navigate the menopause transition on their own. Hormone replacement therapy (HRT) is the most effective treatment for VMS [6]; however, concerns surrounding its potential health risk still remain [7–9]. Conversely, non-pharmacologic, physician-recommended care often includes adopting a healthy lifestyle (e.g., healthier eating, increased physical activity) primarily to mitigate metabolic impairments and secondarily to curb menopausal symptoms [1,10]. Despite these recommendations, there is a gap in knowledge surrounding the actual health behaviors and experiences of women during the menopause transition. While some studies exist, data are often limited or specific to one form of therapy (e.g., HRT, alternative therapy) [11,12].

The objective of this qualitative research study was, therefore, two-fold: (1) to assess health and lifestyle behaviors of women who were currently transitioning, or had previously transitioned, through menopause; and (2) to understand what tools or programs women use to combat menopause symptoms and improve quality of life. The use of such participatory research strategies will better inform the planning and conduct of future interventions *with* the knowledge of those women impacted by the menopause transition.

## 2. METHODS

### 2.1 Study design and setting

This was a cross-sectional, qualitative research study. Women who were currently transitioning, or had previously transitioned, through menopause were targeted to complete an open, voluntary 21-item questionnaire specifically developed for this study. Women could be either symptomatic or asymptomatic for menopause-related symptoms.

The questionnaire and data capture was managed using the Research Electronic Data Capture (REDCap) tool hosted at the Pennington Biomedical Research Center (PBRC) [13]. The questionnaire was tested for functionality and usability before launch and was accessible for three months (September - December 2017). After providing electronic

consent to participate, participants proceeded to the remaining questions (17–21 total; range due to conditional logic). Estimated time needed to complete the questionnaire was 10–15 minutes. There was no provision to review or change responses after submission. Completeness checks were not used, and no measures were used for prevention of multiple entries from the same individual.

The study was approved by the PBRC Institutional Review Board and participants acknowledged consent by initiating the questionnaire and submitting responses. All procedures were in accordance with the 1964 Declaration of Helsinki.

## 2.2 Recruitment

Individuals were offered the opportunity to participate in this qualitative research study through targeted advertisements on Facebook, or via an email to a managed listserv operated by Pennington Biomedical staff who were part of the study recruitment team. Individuals were directed via an electronic link to the secure REDCap web application. Only those individuals who identified as female were allowed to participate in the research study. No incentives were offered for participation.

## 2.3 Participants

The study was open to 2,500 women of all races and ethnicities. Women were included in response to two compulsory questions: (1) age category; and (2) presence/absence of menopausal symptoms and details surrounding menstrual cycle variability. Women were also asked to self-report weight, height, age at menarche, and history of full/partial hysterectomy and bilateral oophorectomy. Women were then classified into 5 menopause categories based on the STRAW+10 criteria [14]: (1) pre-menopause; (2) peri-menopause [early phase]; (3) perimenopause [late phase]; (4) post-menopause [symptomatic]; and (5) post-menopause [asymptomatic]. Specifically, women were asked to self-classify themselves into 1 of these 5 menopause categories based on the provided description:

| MENOPAUSE STAGE               | DESCRIPTION   |
|-------------------------------|---|
| Pre-Menopause                 | <i>"I do not have menopausal symptoms yet, and I continue to have regular or variable periods."</i>   |
| Peri-menopause – Early Phase  | <i>"I am currently experiencing menopausal symptoms. I have regular monthly periods, but the length or flow of each period varies."</i>                       |
| Peri-Menopause – Late Phase   | <i>"I am experiencing menopausal symptoms and have not gone 12 months in a row without a period, but I sometimes have more than 60 days between periods."</i> |
| Post-Menopause – Symptomatic  | <i>"I haven't had my period in over 12 months, but I continue to have menopausal symptoms."</i>   |
| Post-Menopause – Asymptomatic | <i>"I haven't had my period in over 12 months, and I no longer have (or never had) menopausal symptoms."</i>  |

Women who self-classified as pre-menopause were excluded at the first question and did not complete the questionnaire. Women who self-classified as post-menopause [asymptomatic] were asked to recall their symptoms and experiences during the menopause transition

## 2.4 Variables

The survey instrument is provided as supplemental material. Symptom severity was assessed using a modified Kupperman Index rating scale [Q9]. Women were asked to rate their experience over the last 1 month with each menopausal symptom with respect to symptom presence. Symptom ratings were scored (unweighted) and were used to both rank those individual symptoms that were the most severe, as well as to generate an overall index (raw total) of symptom presence. Symptom interference with normal daily activities was also polled [Q10]. Use of HRT, or reasons for not using HRT (if applicable), were asked in Q11 & Q11a. Women were asked about use of the following tactics to combat their menopause symptoms: (1) diet/lifestyle modifications [Q13], including exercise mode/frequency [Q14 & Q14a]; (2) holistic remedies [Q15 & Q15a]; or (3) any other remedies [Q12 & Q12a]. General interest surrounding participation in a structured lifestyle program to help minimize their menopausal symptoms [Q16 & Q19], as well as what components of a lifestyle program would be most important to them [Q17] were also queried. As a follow-up, women were asked two free response questions to: 1) highlight elements of a lifestyle program that are important but that were not mentioned [Q18]; and 2) make suggestions to other women going through the menopause transition on how to improve overall quality of life [Q21]. Finally, women were asked about their perceived preparedness for the menopause transition [Q20]

## 2.5 Statistical analysis

All analyses were performed using SAS v9.4 software (SAS Institute, Inc.) with a significance level of  $\alpha=0.05$ . Overall participant characteristics are expressed as mean  $\pm$  standard deviation (SD). Chi-square analyses were used to compare differences in frequency distribution between menopause groups. Ranking of symptoms, exercise preferences, holistic remedies, and important components of a lifestyle program were treated as continuous measures and modeled using the least-squares means (LSM). T-tests constructed from LSM were used to compare differences between menopause groups for all continuous variable assessments. For the two open-ended questions, thematic analysis was used to develop coding schemes using NVivo 11 Plus (QSR International, Melbourne, Australia). In all analyses, we did not adjust for age due to the presence of a high association (goodness of fit;  $X^2=696$ ,  $p<0.0001$ ) between age categories and menopause stage.

## 3. RESULTS

### 3.1 Participants

A total of 1,874 women consented to participate in this qualitative study and initiated the questionnaire. Of these, 91 women self-reported as pre-menopausal, 159 women either did not report menopause stage or completed an insufficient number of required questions, and 13 women were younger than 40 years of age (indicative of premature ovarian insufficiency), and were excluded. The final sample comprised of 1,611 peri-menopausal and post-menopausal women. Of these, 126 (8%) were peri-menopause [early phase], 173 (11%) were perimenopause [late phase], 692 (43%) were post-menopause [symptomatic], and 620 (38%) were post-menopause [asymptomatic].

Given our study objective was to assess potential tools or programs used by women to combat menopause symptoms and improve quality of life, participants were grouped based on differences in modified Kupperman Index (raw total) score (as a proxy indicator of menopause symptom severity). Peri-menopausal [early phase] women had a similar modified Kupperman Index score as peri-menopausal [late phase] women [ $20.0 \pm 0.9$  vs.  $21.4 \pm 0.8$ ,  $p=0.21$ ], respectively. As a result, both early phase ( $n=126$ ) and late phase ( $n=173$ ) peri-menopause groups were combined to create one peri-menopause group ( $n=299$ ). Thus, all reported analyses moving forward compared the responses among 3 menopause groups: perimenopause, post-menopause [symptomatic], and post-menopause [asymptomatic]. The perimenopause, post-menopause [symptomatic], and post-menopause [asymptomatic] groups had significantly different modified Kupperman Index scores of  $20.8 \pm 0.5$ ,  $23.4 \pm 0.4$ , and  $18.8 \pm 0.4$ , respectively (all comparisons  $p < 0.01$ ) (Table 1). Majority of women were post-menopausal [symptomatic or asymptomatic] ( $n=1,312$ , or 81%); older than age 50 years ( $n=1,393$ , or 86%); and reported never having undergone a full/partial hysterectomy (64%) or bilateral oophorectomy (79%). Women had an average BMI indicative of borderline obesity [ $29.8 \pm 0.2 \text{ kg/m}^2$ ], with 11 self-reporting as underweight [BMI  $< 18.5 \text{ kg/m}^2$ ], 374 as normal weight [18.5 BMI,  $\text{kg/m}^2 < 25$ ], 427 as overweight [25 BMI,  $\text{kg/m}^2 < 30$ ], and 549 as obese [BMI  $> 30 \text{ kg/m}^2$ ].

### 3.2 Attitudes toward hormone replacement therapy

Majority of women (63%) did not currently/previously use HRT; however, a higher proportion of women who were post-menopausal [symptomatic and asymptomatic] reported taking HRT compared to peri-menopausal women (both  $p < 0.0001$ ) (Table 2). Of the women who reported a reason for not taking HRT, majority cited ‘never considered HRT’ or ‘prefer not to take HRT’. While similar reasons for not taking HRT were reported for peri-menopausal and post-menopausal [asymptomatic] women, a higher proportion of post-menopausal [symptomatic] women cited ‘prefer not to take HRT’ or were ‘not a suitable candidate for HRT’ (both  $p < 0.0001$ ) (Table 2).

### 3.3 Symptom rating, and interference with normal daily activities

The modified Kupperman Index score was significantly different between BMI categories, with higher menopause symptom scores with increasing BMI category. Specifically, the symptom scores for underweight/normal, overweight, and obese women were  $18.6 \pm 0.5$ ,  $21.3 \pm 0.5$ , and  $22.8 \pm 0.4$ , respectively (all comparisons,  $p < 0.05$ ). Removing the 11 underweight women did not change these symptom scores

Overall, women reported the following symptoms as being the most severe (in rank order): (1) insomnia, (2) sex drive, (3) hot flashes, (4) night sweats, and (5) fatigue. Of the top 3 overall symptoms (insomnia, sex drive, and hot flashes), the percentages of women who rated these symptoms as mild, moderate, and severe within each menopause stage are provided (Table 2). Furthermore, and specific to each menopause group, the top 3 symptoms reported were – peri-menopause (insomnia, sex drive, and fatigue); post-menopause [symptomatic] (hot flashes, insomnia, and sex drive); and post-menopause [asymptomatic] (hot flashes, insomnia, and vaginal dryness). All of the top 3 symptoms had more than a 50% chance of a subject reporting moderate or severe rating. Additionally, 55% and 40% of

women reported that symptoms ‘sometimes’ or ‘never’ interfered with normal daily activities, respectively (Table 2). A higher proportion of post-menopausal [asymptomatic] women reported that symptoms ‘never’ interfered with normal daily activities compared to both perimenopausal and post-menopausal [symptomatic] women (both  $p < 0.0001$ ).

### 3.4 Diet and lifestyle modification, and exercise preferences

All 3 menopause groups were equally distributed regarding their opinions on whether diet or lifestyle modifications alleviated symptoms; 42% reporting that they ‘haven’t tried’ using diet/lifestyle changes to manage symptoms. For exercise frequency, 33% and 32% of women reported exercising ‘occasionally’ or ‘at least 3 times per week’, respectively, and was similar between peri-menopause and post-menopause [symptomatic] groups (Table 2). The overall proportion of exercise frequency did vary between the post-menopause [symptomatic] and post-menopause [asymptomatic] groups, with most of the difference arising from those reporting ‘never’ or ‘almost daily’ ( $p < 0.01$ ).

Of women who report some level of exercise, women preferred to exercise the following ways (in rank order): (1) walk, (2) resistance training (weights, resistance bands, etc.), (3) bike/cycle, (4) exercise class (gym aerobics), and (5) yoga. Importantly, women that reported lower exercise frequency (i.e., ‘rarely’ or ‘occasionally’) had a higher modified Kupperman Index score (by ~3.5 to 4 units) compared to women that reported higher exercise frequency (i.e., ‘at least 3 times per week’ or ‘almost daily’) ( $p < 0.0001$ ).

### 3.5 Holistic habits

The majority of women (72%) reported not using holistic remedies (of the mind, body, spirit, and emotions) to combat menopause symptoms, with women tending to utilize holistic remedies less to combat symptoms with increasing menopause progression (Table 2). Of women who reported performing holistic remedies, they preferred to perform the following (in rank order): (1) meditation/relaxation, (2) mindfulness, (3) breathing exercises, (4) massage, and (5) chiropractic care/spinal manipulations. Additionally, of women who report using any sort of remedies to combat menopause symptoms, they rated the following activities as being the most effective (in rank order): (1) physical activity/exercise, (2) sleep aids, (3) meditation/relaxation, (4) massage, and (5) chiropractic care/spinal manipulations.

### 3.6 Interest in lifestyle modification program and menopause preparedness

The vast majority of women (83%) reported being interested in a structured lifestyle program to help minimize menopausal symptoms, with interest only differing between postmenopausal [symptomatic] and post-menopausal [asymptomatic] women ( $p = 0.02$ ) (Table 2). Furthermore, more than 75% of women were interested in participating in a lifestyle program with other women like themselves. Of those women who were interested in a structured lifestyle program, the following program components were the most important to them (in rank order): (1) weight maintenance, (2) weight loss, (3) physical activity sessions, (4) menopause education information, (5) holistic exercises, and (6) yoga/Pilates. Importantly, weight loss and weight maintenance were the top 2 program components preferred across all 3 menopause groups by far, with more than 72% of women desiring these components (and postmenopausal [symptomatic] women desiring these

components the most). Holistic exercises and yoga/Pilates were the 2 least important components to women across all 3 menopause groups. Additionally, the majority (65%) of women did not feel prepared for menopause, with preparedness only differing between post-menopausal [symptomatic] and post-menopausal [asymptomatic] women ( $p < 0.0001$ ).

When offered the opportunity to share elements of a lifestyle program that were important to them (but that were not mentioned), as well as provide suggestions for other women going through menopause on how to improve overall quality of life, common themes became evident (Table 3). First, women shared that dietary guidance and modifications including what foods to eat and avoid, as well as engaging in regular exercise throughout menopause was important. Social engagement and support from friends, family, or other women going through menopause was also important so that women could share their experiences and learn from one another. Importantly, the need for clearer educational tools and resources surrounding the menopause transition became obvious as women frequently expressed wanting more information on: symptom management; available drug therapies; mental health management; techniques to mitigate sleep disturbance; and how to deal with changes in sexual health. Specifically, women suggested that “educating yourself,” “asking more questions,” and “seeking professional help” was critical to becoming more informed about menopause before it happens. Finally, religious faith, getting more sleep, reducing stress, and weight control were also important to women.

#### 4. DISCUSSION

The objective of this study was to assess health and lifestyle behaviors of women, as well as assess potential tools or programs to combat menopause symptoms and improve overall quality of life during the menopause transition. In the present study, women across all menopause groups reported insomnia, sex drive, and VMS as the most severe symptoms they experienced. While self-reported changes in diet or lifestyle did seem to improve these symptoms in 33% of women, more women (42%) reported never altering their diet or lifestyle to minimize menopausal symptoms. More than 80% of women were interested in a structured lifestyle program to help minimize symptoms during menopause, with more than 75% of women interested in participating in the program alongside other women. Importantly, women considered weight loss and weight maintenance to be the most critical components of a lifestyle program, with most women (65%) citing they did not feel prepared for menopause. To our knowledge, this is the first study to utilize participatory research strategies to comprehensively assess the actual health behaviors and experiences of women during the menopause transition.

The use of participatory research models to inform the design of future interventions is not new to health-related research [15]. Indeed, taking a ‘bottom-up’ approach to first learn about patient-defined priorities and perspectives allows researchers to more effectively design future interventions (e.g., methodologies, selection of patient-drive outcomes, etc.) *with* the knowledge of those women impacted by menopause. Within just a few short months, a large number of women were willing to provide insight into their experiences of menopause. The level of receptivity among women to speak about their menopause experiences implies that women may have more questions about the menopause transition

than they have answers, and that more health-related guidance during this critical period of a woman's life is warranted.

Certainly, an important finding of the present study was that women rated weight loss and weight maintenance as the most critical components of a lifestyle program. Furthermore, women suggest that diet and exercise were important lifestyle components during the menopause transition. The following observations are especially relevant as a recent largescale intervention centered on the menopause transition was designed based on symptom relief as the primary endpoint [16] and without emphasis on weight loss or weight maintenance. Indeed, in the 2 to 4 years leading up to menopause, women experience weight gain and a redistribution of body fat to the abdominal depot [1,4]. Women also report greater body image dissatisfaction [17], which may be related to the desire for weight loss or weight maintenance. Additionally, increased body weight — specifically subcutaneous adipose tissue — is associated with more adverse health conditions and more severe VMS during the menopause transition [18]. Women with higher BMI reported more severe symptoms in the present study. To date, only a few randomized controlled trials (RCTs) have focused on weight loss during the menopause transition [19–22] with more RCTs conducted during postmenopause [23,24]. To our knowledge, no studies have focused on weight maintenance.

The mechanisms surrounding the relationship between worsening symptoms and cardiometabolic risk factors such as increased BMI and adiposity are unclear. Despite this, mounting evidence supports that menopause symptom severity (especially VMS) is indicative of the clinical manifestation of one or several underlying pathophysiological processes [25]. Furthermore, hormone dysregulation during the menopause transition is thought to lead to a narrowing of the thermoneutral zone, resulting in increased VMS severity and thereby increased episodes of insomnia. While exercise interventions may arguably widen the thermoneutral zone or increase the sensitivity to temperature changes during VMS [26], existing multi-center exercise interventions have failed to demonstrate improvements in VMS [27,28]. In the present study, women who reported higher exercise frequency had modestly less severe menopause-related symptoms. Nonetheless, the reliance on subjective, selfreporting of VMS as a primary endpoint and the lack of valid, objective methods to assess VMS dynamics has limited research progress [25,29].

Another important finding that has been previously reported surrounds the perception of HRT [11]. Despite HRT being an effective treatment option to manage symptoms [6], the abrupt halt of the Women's Health Initiative in 2002 instilled confusion (and fear) surrounding the link between HRT use and risk of coronary heart disease events, stroke, and breast cancer [7–9]. Specifically, the use of HRT has declined from 44% of U.S. women using or having used HRT in 1988–1994 to 4.7% of women in 2010 [8,9]. As risk factors change over time, and overall usage guidelines updated, HRT prescription should be carefully evaluated.

Qualitative research is limited by potential recall bias and possible selection bias. For example, post-menopausal women who are asymptomatic now were asked to recall their experience during the menopause transition which may not accurately reflect actual symptom frequency and severity. Efforts were taken, however, to separate this potential



recall bias with menopause group stratification, as well as separate analyses of just symptomatic women. The nature of this qualitative study being a set of structured questions and use of standardized responses made it unable to capture all the feeling and experiences of women during the menopause transition. Specifically, the study is unable to decipher how each symptom interfered with normal daily activities or delve into a woman’s feelings or perceptions outside of specified responses such as ‘yes’ or ‘no’ answer choices. While we cannot overcome the inability to draw conclusions surrounding any inter-individual or temporal variability, we did allow participants a more open-ended (less restrictive) format for two questions which addressed the primary study objectives. Race was not gathered in this study; therefore, potential race differences could not be examined. Previous observational studies have reported an increase in symptom severity in African-Americans and Hispanics compared to Caucasians [30]. Finally, perception of menopausal symptoms and priorities surrounding overall quality of life vary by country and, therefore, findings from this study cannot be generalized for all women experiencing menopause.

## 5. CONCLUSION

Considering the opinions of menopausal women, a lifestyle modification program targeting weight loss or weight maintenance warrants consideration to both mitigate metabolic impairments and curb symptoms during the menopause transition as a potential alternative to HRT. Additionally, intervening during peri-menopause — when many metabolic derangements are occurring [4] — may be a timelier and more prevention-based approach versus intervening post-menopause. The potential benefits of a comprehensive, lifestyle program remain a potential powerful management tool to improve the metabolic health and overall quality of life of women during the menopause transition — and importantly, for the many years that follow. The continued involvement of menopausal women in the development of future interventions is important to ensure patient-centered research outcomes are emphasized.

### Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## ABBREVIATIONS

|            |                             |
|------------|-----------------------------|
| <b>HRT</b> | Hormone replacement therapy |
| <b>RCT</b> | Randomized controlled trial |
| <b>VMS</b> | Vasomotor symptoms          |

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Table 1.

Demographic characteristics reported by women during the menopause transition<sup>1</sup>

|  | EVERYONE N=1,611 | Peri-Menopause [Early/Late Phase] n=299 | Post-Menopause (Symptomatic) n=692 | Post-Menopause [Asymptomatic] n=620 | Between-Group Differences (p-value) |                       |                            |
|--|------------------|---|------------------------------------|-------------------------------------|-------------------------------------|-----------------------|----------------------------|
|  |                  |   |                                    |                                     | Peri- vs. Post-Sympt                | Peri- vs. Post-Asympt | Post-Sympt vs. Post-Asympt |
| <i>Age Category, n (%) (n=1,611) [Q4]</i>              |                  |   |                                    |                                     |                                     |                       |                            |
| 40 to 44 y   | 29 (2%)          | 15 (5%)                                 | 13 (2%)                            | 1 (0%)                              | <0.0001                             | <0.0001               | <0.0001                    |
| 45-49 y  | 189 (12%)        | 114 (38%)                               | 55 (8%)                            | 20 (3%)                             |                                     |                       |                            |
| 60+ y  | 534 (33%)        | 3 (1%)                                  | 174 (25%)                          | 357 (58%)                           |                                     |                       |                            |
| <i>Weight, kg (n=1,556) [Q2]</i>                       | 79.9 ± 0.5       | 82.1 ± 1.4                              | 79.4 ± 0.7                         | 79.3 ± 0.8                          | 0.05                                | 0.05                  | 0.98                       |
| <i>BMI, kg/m<sup>2</sup> (n=1,538)</i>                 | 29.8 ± 0.2       | 30.2 ± 0.5                              | 29.7 ± 0.3                         | 29.5 ± 0.3                          | 0.34                                | 0.19                  | 0.61                       |
| <i>Age at menarche, y (n=1,524) [Q5]</i>               | 12.6 ± 0.0       | 12.61 ± 0.09                            | 12.59 ± 0.06                       | 12.59 ± 0.07                        | 0.81                                | 0.87                  | 0.93                       |
| <i>Kupperman Index (Raw Total) (n=1,425) [Q9]</i>      | 21.2 ± 0.3       | 20.8 ± 0.5                              | 23.4 ± 0.4                         | 18.8 ± 0.4                          | <0.0001                             | <0.01                 | <0.0001                    |
| <i>Full/partial hysterectomy, n (%) (n=1,609) [Q6]</i> |                  |   |                                    |                                     |                                     |                       |                            |
| Yes  | 577 (36%)        | 43 (14%)                                | 300 (43%)                          | 234 (38%)                           | <0.0001                             | <0.0001               | 0.04                       |
| No   | 1032 (64%)       | 256 (86%)                               | 391 (57%)                          | 385 (62%)                           |                                     |                       |                            |
| <i>Bilateral oophorectomy, n (%) (n=1,602) [Q7]</i>    |                  |   |                                    |                                     |                                     |                       |                            |
| Yes  | 331 (21%)        | 4 (1%)                                  | 167 (24%)                          | 160 (26%)                           | <0.0001                             | <0.0001               | 0.46                       |
| No   | 1271 (79%)       | 294 (99%)                               | 522 (76%)                          | 455 (74%)                           |                                     |                       |                            |

<sup>1</sup> Values for all participants (everyone; n=1,611) are expressed as either mean±SD, or n (%). All menopause group values are reported as leastsquares means±SEM, or n (%). Data is presented from select questions [Q#]

**Table 2.**

Health behaviors and experiences reported by women during the menopause transition

|  | EVERYONE N=1,611 | Peri-Menopause [Early/Late Phase] n=299 | Post-Menopause [Symptomatic] n=692 | Post-Menopause [Asymptomatic] n=620 | Between-Group Differences (p-value) |                      |                            |
|--|------------------|---|------------------------------------|-------------------------------------|-------------------------------------|----------------------|----------------------------|
|  |                  |   |                                    |                                     | Peri-vs. Post-Sympt                 | Peri-vs. Post-Asympt | Post-Sympt vs. Post-Asympt |
| <b>Taking (or have taken) HRT for menopause symptoms (n=1,599) [Q11]</b>     |                  |   |                                    |                                     |                                     |                      |                            |
| Yes  | 585 (37%)        | 39 (13%)                                | 296 (43%)                          | 250 (41%)                           | <0.0001                             | <0.0001              | 0.43                       |
| No   | 1014 (63%)       | 256 (87%)                               | 394 (57%)                          | 364 (59%)                           |                                     |                      |                            |
| <b>Reasons for not taking HRT (n=896) [Q11a]</b>                             |                  |   |                                    |                                     |                                     |                      |                            |
| Never considered HRT   | 310 (35%)        | 91 (42%)                                | 88 (25%)                           | 131 (39%)                           |                                     | 0.13                 | <0.0001                    |
| Not a suitable candidate for HRT   | 111 (12%)        | 12 (6%)                                 | 61 (17%)                           | 38 (12%)                            |                                     |                      |                            |
| Prefer to not take HRT   | 419 (47%)        | 98 (46%)                                | 180 (52%)                          | 141 (42%)                           |                                     |                      |                            |
| Other remedies help  | 56 (6%)          | 13 (6%)                                 | 20 (6%)                            | 23 (7%)                             |                                     |                      |                            |
| <b>Top 3 overall symptom ranking (mild, moderate, severe) (n=1,611) [Q9]</b> |                  |   |                                    |                                     |                                     |                      |                            |
| Insomnia   | 28%, 39%, 20%    | 32%, 45%, 13%                           | 33%, 41%, 21%                      | 31%, 35%, 18%                       | ---                                 | ---                  | ---                        |
| Sex drive  | 30%, 30%, 24%    | 33%, 27%, 20%                           | 26%, 44%, 22%                      | 29%, 32%, 20%                       |                                     |                      |                            |
| Hot flashes  | 34%, 37%, 19%    | 41%, 34%, 13%                           | 29%, 31%, 29%                      | 30%, 28%, 22%                       |                                     |                      |                            |
| <b>Symptom interference with normal daily activities (n=1,578) [Q10]</b>     |                  |   |                                    |                                     |                                     |                      |                            |
| Always   | 84 (5%)          | 12 (4%)                                 | 49 (7%)                            | 23 (4%)                             |                                     | 0.18                 | <0.0001                    |
| Sometimes  | 862 (55%)        | 182 (63%)                               | 425 (62%)                          | 255 (42%)                           |                                     |                      |                            |
| Never  | 632 (40%)        | 97 (33%)                                | 210 (31%)                          | 325 (54%)                           |                                     |                      |                            |
| <b>Whether diet/lifestyle changes help decrease symptoms (n=1,403) [Q13]</b> |                  |   |                                    |                                     |                                     |                      |                            |
| Yes  | 456 (33%)        | 98 (39%)                                | 220 (36%)                          | 138 (25%)                           |                                     | <0.0001              | <0.0001                    |
| No   | 355 (25%)        | 50 (20%)                                | 160 (26%)                          | 145 (27%)                           |                                     |                      |                            |
| I haven't tried  | 592 (42%)        | 102 (41%)                               | 230 (38%)                          | 260 (48%)                           |                                     |                      |                            |
| <b>Exercise frequency (n=1,555) [Q14]</b>                                    |                  |   |                                    |                                     |                                     |                      |                            |
| Never  | 66 (4%)          | 8 (3%)                                  | 17 (3%)                            | 41 (7%)                             |                                     | 0.98                 | <0.01                      |
| Rarely   | 254 (16%)        | 47 (16%)                                | 107 (16%)                          | 100 (17%)                           |                                     |                      |                            |
| Occasionally   | 511 (33%)        | 94 (32%)                                | 229 (34%)                          | 188 (32%)                           |                                     |                      |                            |
| At least 3 times per week  | 490 (32%)        | 95 (33%)                                | 209 (31%)                          | 186 (31%)                           |                                     |                      |                            |
| Almost daily   | 234 (15%)        | 48 (16%)                                | 108 (16%)                          | 78 (13%)                            |                                     |                      |                            |

|  | EVERYONE N=1,611 | Peri-Menopause [Early/Late Phase] n=299 | Post-Menopause [Symptomatic] n=692 | Post-Menopause [Asymptomatic] n=620 | Between-Group Differences (p-value) |                      |                            |
|--|------------------|---|------------------------------------|-------------------------------------|-------------------------------------|----------------------|----------------------------|
|  |                  |   |                                    |                                     | Peri-vs. Post-Sympt                 | Peri-vs. Post-Asympt | Post-Sympt vs. Post-Asympt |
| <b>Perform holistic remedies (n=1,525) [Q15]</b>   |                  |   |                                    |                                     |                                     |                      |                            |
| Yes  | 420 (28%)        | 101 (36%)                               | 182 (28%)                          | 136 (23%)                           |                                     |                      | 0.03                       |
| No   | 1,105 (72%)      | 182 (64%)                               | 463 (72%)                          | 460 (77%)                           |                                     |                      |                            |
| <b>Interest in a structured lifestyle program to minimize menopause symptoms (n=1,393) [Q16]</b>   |                  |   |                                    |                                     |                                     |                      |                            |
| Yes  | 1,161 (83%)      | 219 (87%)                               | 513 (86%)                          | 429 (79%)                           |                                     |                      | <0.001                     |
| No   | 232 (17%)        | 32 (13%)                                | 84 (14%)                           | 116 (21%)                           |                                     |                      |                            |
| <b>Desire to participate in lifestyle program with other women (n=1,226 total responses) [Q19]</b> |                  |   |                                    |                                     |                                     |                      |                            |
| Yes  | 939 (77%)        | 163 (77%)                               | 417 (80%)                          | 359 (73%)                           |                                     | 0.25                 | 0.02                       |
| No   | 287 (23%)        | 48 (23%)                                | 107 (20%)                          | 132 (27%)                           |                                     |                      |                            |
| <b>Felt prepared for menopause (n=1,442 total responses) [Q20]</b>                                 |                  |   |                                    |                                     |                                     |                      |                            |
| Yes  | 503 (35%)        | 91 (37%)                                | 178 (29%)                          | 234 (41%)                           |                                     | 0.23                 | <0.0001                    |
| No   | 939 (65%)        | 158 (63%)                               | 445 (71%)                          | 336 (59%)                           |                                     |                      |                            |

Values reported as n (%). Data is presented from select questions [Q#].

**Table 3**

. List of Coding Themes &amp; Generalized Comments

| <b>Please note any elements of a lifestyle program that you believe are important, but we did not mention. [Q418]</b>   |  |
|---|--|
| 1. Diet   | Dietary guidance (e.g., balance of carbohydrate, fat, protein, vitamins)   |
|   | Avoidance of certain foods (e.g., caffeine, alcohol).  |
|   | Drink more water.  |
| 2. Exercise   | Regular exercise (e.g., walking, biking, yoga, and just keep moving).  |
|   | Want exercises designed for women going through menopause (e.g., non-impact, swimming, osteoporosis, obesity).   |
| 3. Social Support   | Encouragement and support from partner or significant other.   |
|   | Small group sessions to build social connections.  |
|   | Build fellowship with women also going through menopause.  |
| 4. Education Information  | Need education resources (e.g., what to expect, what is normal, and how to prepare myself and my family for my transition) on how to navigate menopause.                                       |
|   | <i>Symptom Management:</i> Need more information (e.g., hot flashes, insomnia, anxiety, stress, fatigue, etc.).  |
|   | <i>Available Therapies:</i> Information on types of drug therapies (e.g., HRT, estrogen, testosterone, bio-identical hormones, antidepressants, etc.) or alternative therapies (e.g., herbal). |
|   | <i>Mental Health:</i> How to manage mood changes (e.g., anger, stress, depression, etc.).  |
|   | <i>Sleep:</i> Need helpful information for sleep disturbance problems. Ways to cope with trouble sleeping (e.g., cold gel pillow).   |
| 5. Religious Faith  | <i>Sexual Complaints:</i> Need information on how to combat vaginal dryness, painful intercourse, low sex drive, etc.  |
|   | Regular prayer, spirituality, and fellowship.  |
| <b>Knowing what you know now about transitioning through menopause, what would you suggest to someone else going through the menopause transition? How would you suggest she improve her quality of life through this transition? [Q21]</b> |  |
| 1. Stay Active  | Exercise regularly; Keep moving; Spend time outside; Stay physically fit.  |
|   | Exercise and sweating helps with insomnia, stress, depression, etc.  |
| 2. Change Your Diet   | Eat healthy; avoid/limit alcohol, caffeine, and sugar; avoid processed foods; low carbohydrate or fat diet.  |
|   | Drink more (cold) water. Keep ice around   |
| 3. Educate Yourself   | Be informed of menopause before it happens; be aware and read about helpful guidance (e.g., symptom management, hormone therapy).  |
|   | Don't be afraid to ask questions or ask for help.  |
|   | Stay open to suggestions and find what works for you.  |
| 4. Encouraging Thoughts   | Be kind to yourself and take time for yourself. Be patient and positive.   |
|   | Be mindful of your feelings (self-aware).  |
| 5. Seek a Physician / Help  | Talk to your doctor. Find a doctor that is right for you and that will listen to (and not dismiss) your concerns in dealing with menopause.  |
| 6. Use (or Don't Use) Drug Therapy  | Suggestions to use (or not use) drug therapy (e.g., HRT, antidepressants, estrogen replacement, etc.).   |
| 7. Have a Support System  | Talk to friends/other women who have gone through menopause.   |
|   | Communicate with your partner/family what you are going through.   |
| 8. Get More Sleep / Rest  | Get enough sleep; take naps; try a "cool pillow" for night sweats  |



| Please note any elements of a lifestyle program that you believe are important, but we did not mention. [Q418] |  |
|--|--|
| 9. Reduce Stress   | Stay calm; reduce/remove stressors in your life. |
| 10. Control Your Weight  | Get ahead of weight gain. Keep the weight off.   |

Data is presented from select questions [Q#].

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