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Menopause hormone therapy and complementary alternative medicine, quality of life, and racial/ethnic differences: The Study of Women's Health Across the Nation (SWAN)

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Abstract

Objective: We hypothesized that, among midlife women with vasomotor and/or genitourinary symptoms of menopause, (1) hormone therapy (HT) compared to complementary and alternative (CAM) will be associated with higher quality of life (QoL), and (2) race/ethnicity would modify associations of HT and CAM with QoL.

Methods: Cross-sectional and longitudinal analyses of QoL in The Study of Women's Health Across the Nation participants using HT, CAM or both. Women (n=2514) completed a CAM use questionnaire and QoL assessments at baseline and every 1-2 years from 2002 to 2013. Associations between QoL and treatment, adjusted for covariates, and race/ethnicity-by-treatment interactions, were analyzed using linear and mixed effects regression models.

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Conflict of Interests:

Dr. Janssen, Dr. Kravitz and Dr. Upchurch each reports no relevant financial disclosures. Dr. Christmas reports Board of Trustees for the North American Menopause Society (NAMS), NAMS Scientific Program Committee, NAMS Editorial Board, Steering Committee for Core OutcoMes in MenopAuse (COMMA), Speaker Alliance Chicago and FDA Bone, Reproductive and Urologic Division (BRUDAC) Committee. Dr. Joffe receives grant support from the National Institutes of Health, Merck and Pfizer. She serves/has served as a consultant to Bayer, Jazz and Eisai. Her spouse is an employee at Arsenal Biosciences and has equity in Merck. Dr. Santoro reports Advisory Board Member for Astellas, Que Oncology, amazon (Ember), Consultant for Ansh Labs, NAMS Program Committee, Past President Society for Reproductive Investigation, and Nominating Committee Endocrine Society.

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Abstract Poster North American Menopause Society (NAMS) Annual Meeting. Race/Ethnic Variation in Treatment of Menopausal Symptoms: A Longitudinal Analysis of the Initiation, Duration, and Quality of Life in the Study of Women's Health Across the Nation (SWAN), October 4, 2018, San Diego, CA.

Results: During 7.8 (SD 2.9) years follow-up, 732 women (29%) reported HT 2.4 (SD 1.7) years and 798 women (32%) reported CAM use 2.1 (SD 1.4) years. Overall, neither HT nor CAM was associated with QoL. However, the treatment by race/ethnicity interaction was significant for Self-Reported QoL ($p=0.034$ at baseline, $p=0.044$ longitudinal). Among White women, Self-Reported QoL was higher in HT only users than in those who used neither ($p=0.030$, $d=0.11$, 95% CI [0.01-0.21]). In contrast, Black women using HT only had lower Self-Reported QoL compared to Black women using neither ($p=0.027$, $d=-0.21$, 95% CI [-0.40 - -0.02]).

Conclusion: Comparisons between treatment type within each racial/ethnic group yielded significant differences in Self-Reported QoL. Clinicians should be aware of racial/ethnic differences in treatment preferences when counseling patients on menopausal symptoms treatment options in order to provide optimal care.

Brief summary of study:

Overall neither CAM nor HT use was associated with QoL measures. However, within racial/ethnic groups significant differences in SRQoL were found between the group using HT only compared with the group using neither HT nor CAM..

Keywords

complementary alternative medicine; integrative medicine; hormone therapy; vasomotor symptoms; vaginal dryness; quality of life

Introduction

Menopause is characterized by symptoms that can have a detrimental impact on a woman's quality of life (QoL)^{1,2}. The duration and severity of these symptoms and treatment preferences vary by individual and along racial/ethnic lines^{1,3}. Whereas scientific evidence suggests that hormone therapy (HT) improves vasomotor symptoms (VMS; hot flashes and night sweats) and genitourinary syndrome of menopause (GSM; vulvovaginal dryness/itching/irritation, dyspareunia, dysuria, urgency and frequent urinary tract infections),⁴⁻⁶ similar benefits for complementary alternative medicine (CAM), also referred to as "Integrative Medicine", treatment of menopausal symptoms have not been demonstrated⁷⁻⁹. Nevertheless, women seeking to ease the menopause transition spend millions of dollars each year on CAM¹⁰. Despite evidence that HT is a safe and effective treatment option, many women are reluctant to use HT, viewing CAM therapies as more congruent with good health¹¹.

A prior Study of Women's Health Across the Nation (SWAN) analysis found that HT use by women who reported frequent menopausal symptoms was associated with improvement in vitality, as measured by health-related quality of life (HRQoL)¹². Women who took HT were more likely to be White, well educated, and of higher socioeconomic status. Similarly, studies analyzing CAM use within the SWAN cohort showed a higher uptake of CAM among women with higher levels of education and higher socioeconomic status^{13,14}. Although studies have evaluated efficacy and safety of CAM use, the association with QoL has not been assessed^{5,8,12}.

We explored the perceived benefit of HT and CAM use on QoL in symptomatic menopausal women participating in SWAN. Specifically, we examined 2 hypotheses. (1) Among women with VMS and/or GSM, higher QoL will be associated with HT when compared to CAM use. (2) Associations of HT and CAM with QoL will vary according to race/ethnicity.

Methods

Study Design and Participants:

SWAN is a multi-site, multi-racial/ethnic study of midlife women's health during the menopausal transition. Participants were recruited at 7 sites across the United States between 1996 and 1997, and 3302 women, aged 42-52 years old, were enrolled. Each site enrolled a community-based sample of White women and women from a specified non-white racial/ethnic group: Boston, Chicago, Southeast Michigan, and Pittsburgh (Black), Los Angeles (Japanese), Newark, New Jersey (Hispanic), and Oakland, CA area (Chinese). Women who were eligible to participate in SWAN were 42-52 years, premenopausal or early perimenopausal, had an intact uterus and at least 1 ovary, had at least 1 menstrual period in the previous 3 months, and were not pregnant/lactating or using any sex steroid hormones in the 3 months preceding the baseline interview. A comprehensive summary of the SWAN study design has been published¹⁵.

The sample for both the cross-sectional and longitudinal components for this analysis included all women who reported menopausal symptoms of VMS (hot flashes, night sweats) and/or GSM (vaginal dryness), and subsequently completed at least 1 CAM use questionnaire and at least 2 QoL assessments. Although, many organizations have updated the term 'CAM' to "Integrative Medicine", we maintained the term 'CAM' for consistency, as SWAN questionnaires and prior studies used the terminology 'CAM'. Women who never reported menopausal symptoms or did not complete the CAM questionnaire or QoL assessments were excluded. After exclusions, data from 2514 women were included in the analyses (Figure 1).

The study was approved by the institutional review boards (IRB) at each SWAN study site and by the lead author's institution, the University of Chicago. Written informed consent was obtained from all study participants at every study visit.

Procedures and Measures:

Baseline for the cross-sectional analysis was defined as the first visit that the comprehensive CAM questionnaire was completed, which typically occurred at visit 6, between 2002 and 2003. Follow-up assessments for the longitudinal analyses were conducted every 1-2 years from 2003 through 2013.

Symptoms and treatment type, along with medical history, demographics, and QoL were assessed with both self- and interviewer-administered surveys at baseline and at follow-up visits. Menopausal status was defined by bleeding criteria using a nine-level categorical variable: (1) bilateral salpingo-oophorectomy (BSO) not on HT, (2) BSO on HT, (3) post-menopausal not on HT, (4) post-menopausal on HT, (5) late peri-menopausal (had a menstrual cycle > 3 months ago, but < 12 months ago), (6) early peri-menopausal

(menstrual period in the previous 3 months with change in regularity of menstrual cycles), (7) pre-menopausal (no change in regularity of menstrual cycles), (8) undetermined due to HT (pre- or perimenopausal at previous visit), (9) undetermined due to hysterectomy (pre- or perimenopausal, without BSO and not on HT)^{1,15}.

Dependent variables were QoL assessments, the Short Form-36 version 1 (SF36) and a self-reported QoL measure. The SF-36 questionnaire was developed and validated for assessing HRQoL in the clinical and research setting^{16,17}. The SF-36 includes 36 questions that are used to determine a mental component score (SF36 MCS) and a physical component score (SF36 PCS). The Self-Reported QoL (SRQoL) was measured with 1 question on a scale of 1-10 with 10 as the highest quality¹⁸⁻²⁰.

Independent variables were CAM use for menopausal symptoms and HT. The CAM questionnaire asked women to “specify CAM modalities they used specifically to treat menopausal symptoms”, listed 21 modalities¹³, many of which are not traditionally accepted categories of CAM such as diet, exercise, self-help groups, prayer, and multivitamins. For this reason, these CAM modalities were excluded. The 16 CAM modalities included were acupuncture, black cohosh, dehydroepiandrosterone, dong quai, energy healing, flaxseed, ginko biloba, ginseng, glucosamine, Mexican yam/progesterone cream, methyl-sulfonyl-methane, S-adenosyl-L-methionine, soy supplements, St. John’s wort, tai chi, and yoga. Self-reported HT use included any estrogen and progestogen treatment alone or in combination.

Covariates assessed at baseline included race/ethnicity, age, education (high school or less versus more), which were not time-varying, and financial strain (very hard or somewhat hard to pay for basics versus not hard at all) and medical burden, which were time-varying^{21,22}. Medical burden was defined by having 2 or more self-reported medical conditions (diabetes, cardiovascular disease, hypertension, arthritis, hypercholesterolemia, stroke, anemia, migraines, angina, osteoporosis). These specific medical conditions were selected as they may impact HT use^{4,6,23} and were included in SWAN questionnaires.

Data Analysis:

Continuous variables were summarized as mean (SD), and race/ethnic group comparisons were conducted with analysis of variance (ANOVA). Categorical variables were summarized as N (%) and compared with chi-square tests among race/ethnic groups. Treatment groups were defined as use of both HT and CAM concurrently, HT use only, CAM use only, or none. Baseline associations between treatment groups and QoL were examined with linear models. The base model included race/ethnicity and number of menopausal symptoms as covariates. The fully adjusted model added study site, baseline age, education, financial strain, and medical burden as covariates.

Longitudinal associations were examined with mixed models, with a random intercept to allow each woman her own starting point. The base model included race/ethnicity, number of menopausal symptoms (time-varying covariate), and time since baseline. The fully adjusted model added study site, baseline age, education, financial strain (time-varying), and medical burden (time-varying). To assess whether the effect of treatment varied by

race/ethnicity, an interaction term of race/ethnicity and treatment group was included in both cross-sectional and longitudinal models. In case of an overall significant interaction (only true for SRQoL), this was followed by pairwise comparisons within each racial/ethnic group, and results of these comparisons were reported as estimates with 95% confidence intervals as well as treatment group contrasts that were significant at $\alpha=0.05$.

The New Jersey site, which included the Hispanic cohort, missed visits 7 and 8, and at visit 9 they received an abbreviated CAM use questionnaire that did not include the reasons for CAM use. The results were unchanged when analyses were conducted without the Hispanic women. The results were also unchanged when analyses were conducted without all women from the New Jersey site, and the results of the comparisons among the White women were the same. Therefore, analyses were run using all participants, but Hispanic participants, due to their small numbers, were excluded from the racial/ethnic comparisons.

Results

Baseline characteristics are presented in Table 1. Demographic characteristics were similar across all racial/ethnic groups except Hispanic women, who were older, and reported the lowest education attainment and highest financial strain. Hispanic and Black women reported a high prevalence of medical conditions. Overall, 75% of women reported at least 1 menopausal symptom at baseline, with a preponderance of Black and Hispanic women reporting all 3 menopausal symptoms (hot flashes, night sweats, vaginal dryness). The other 25% had reported experiencing at least 1 menopausal symptom before baseline.

Table 1 shows that of the 2514 women included at baseline, 14% (n=361) of women reported only CAM use, and 17% (n=422) of women reported only HT use. Concurrent HT and CAM use was reported by 4% (n=103) of all women. White women reported the highest use of HT (alone or in combination with CAM) (27%), while Black (13%) and Hispanic (4%) women reported the lowest use.

Overall, soy supplements (n=257, 10.2%) and black cohosh (n=145, 5.8%) were the most commonly reported CAM treatments for menopausal symptoms across all racial/ethnic groups at baseline (Table 2). However, Chinese women reported higher use of Dong quai (n=12, 5.6%) and Tai Chi (n=6, 2.8%), while Japanese women reported the highest use of yoga (n=13, 5.3%) for menopausal symptom management.

Baseline quality of life:

Neither CAM nor HT, used alone or in combination, was significantly associated with the SF36 PCS or MCS or the SRQoL ($p>0.05$ for all analyses). White women reported the highest SRQoL, but there was no difference in SRQoL among treatment groups. The interaction of treatment group and race/ethnicity was significant at baseline only for SRQoL ($p=0.034$). Comparisons within each racial/ethnic group at baseline showed that Chinese women who used HT only had lower SRQoL compared to Chinese women who reported use of neither ($p=0.002$, $d=-1.0$, 95% CI [-1.6 - -0.4]). SRQoL did not differ significantly across treatment groups within Black, White, or Japanese women (Table 3).

The sample size for the analyses included in Table 3 is 2378 because the Hispanic women were excluded from the comparisons.

Longitudinal quality of life:

Women were followed for an average of 7.8 (SD2.9) years. CAM use was reported by 798 women (32%) for a mean (SD) duration of 2.1 (SD 1.4) years, and HT use was reported by 732 women (29%) for 2.4 (SD 1.7) years. Overall, none of the 3 QoL measures differed by treatment group in unadjusted or adjusted models. However, similar to baseline, the interaction of treatment group and race/ethnicity was significant for SRQoL ($p=0.044$). Among White women who used HT, SRQoL was higher than in those who reported use of neither HT nor CAM ($p=0.030$, $d=0.11$, 95% CI [0.01 - 0.21]). In contrast, Black women who reported use of HT only had lower SRQoL compared to Black women who used neither ($p=0.027$, $d=-0.21$, 95% CI [-0.40 - -0.02]).

Discussion

In this analysis of SWAN participants reporting HT and/or CAM use for menopausal symptoms of VMS and/or GSM, White women had higher SRQoL than the other racial/ethnic groups. CAM was used more than HT to treat menopausal symptoms by all racial/ethnic groups except White women, who used HT more than CAM. Despite more frequent use of CAM, it was not associated with significantly higher QoL on any of the 3 measures. However, when investigating these associations within individual race/ethnic groups, there were some differences, particularly for HT. Longitudinally, among White women, SRQoL was higher in the group that used HT than in the group that reported using neither CAM nor HT. The findings were just the opposite for Chinese and Black women. HT use was associated with lower reported SRQoL at baseline in Chinese women and in Black women HT use was associated with lower SRQoL in the longitudinal analysis, both in comparison to no therapy.

Overall use of HT was low throughout the study period. Baseline analysis began at visit 6, which occurred just after the publication of the Women's Health Initiative findings in 2002, showing increased risks of breast cancer and cardiovascular disease with HT⁴. These findings may have negatively impacted prescribing patterns and patient acceptance and could explain why overall HT use was low and CAM use was higher in this cohort²⁴⁻²⁶. Use of HT has been shown to improve bothersome VMS and GSM, and has been aligned with improved QoL^{4,6,23,27}. The 2022 NAMS HT position statement specifically addresses the benefit of HT on menopause-specific quality of life, citing reduction in frequency of symptoms with HT use as the potential reason for improved QoL²³.

Black women are more likely to report having more bothersome VMS and have been shown to experience symptoms for a longer duration of time compared to other racial/ethnic groups^{3,28-30}. However, while Black women report more menopausal symptoms, which are more troubling and of longer duration, several studies have shown that use of HT is low, especially compared to White women^{12,31,32}. Discrepancies in clinician prescribing patterns and counseling around HT has been cited as factors, with some studies showing that White women were more than twice as likely to receive a prescription for HT^{33,34}. Many have

postulated that the differences in HT prescribing is due to higher associated risks and/or contraindications in Black women^{34,35}, while others cite their decreased acceptance of HT or disparate access to healthcare^{33,36,37}. Given that Black and Hispanic women, reported more medical conditions, it is plausible that lower use of HT in these women in our sample was related to higher associated risks. However, due to their small numbers, Hispanic women were excluded from race/ethnic comparisons.

Higher use of CAM in most racial/ethnic groups within the SWAN cohort is consistent with other studies showing increased popularity of CAM despite the lack of proven efficacy, safety and cost effectiveness¹¹. It is probable that the use of CAM in SWAN is even higher than what was reported. Investigators at the New Jersey site suspected use of herbal remedies was higher than what was captured on the CAM use questionnaire. At visit 13 (2011-2013), the New Jersey cohort, consisting of Hispanic and non-Hispanic white women, completed an additional 48-item survey inquiring about specific herbal remedies, attitudes and beliefs around use, and whether use was disclosed to clinicians³⁸. They found Hispanic women had much higher use of herbal remedies than what was previously reported on the CAM questionnaire and, while both groups were less likely to disclose use of CAM to clinicians, lack of disclosure was much higher among Hispanics. Notably, use of multiple herbal remedies was high even in those taking prescription medications.

In the North American Menopause Society's (NAMS) 2015 position statement on non-hormonal VMS treatment options, most CAM modalities were not recommended for treatment of VMS as they found benefit was indistinguishable from placebo⁷. A systematic review evaluating prevalence of CAM use by menopausal women worldwide found that over 50% of women reported CAM use to treat their menopausal symptoms¹¹. Of concern, many did not disclose use of CAM to their clinician and cited the internet as their primary source for knowledge. The widespread use of these unregulated products, especially in certain high risk populations, raises safety concerns regarding drug interactions, toxicity, contamination, and the potential for other life threatening adverse events³⁹.

Strengths of the SWAN database include a large, diverse, well-characterized, cohort of midlife women and a wealth of longitudinal data that allowed an average of 7.8 years of longitudinal follow-up of QoL outcomes related to menopausal symptom treatment. However, there were limitations in our analysis. For one, data were available only for the occurrence of menopausal symptoms, but not for their severity or the degree of burden caused. Moreover, SWAN assessments were conducted only every 1-2 years, which could compromise recall and determination of continuous patterns of use. As previously mentioned, the number of SWAN participants reporting HT use was small, especially within certain racial/ethnic groups. This limited interpretation of data and made it difficult to investigate differences in some groups. Due to small numbers, we only present overall average effects of treatment on SRQoL in each racial/ethnic group, not the change in treatment. A much larger sample in the treatment groups would be necessary to detect effects of change. Lastly, SWAN participants tended to have higher educational attainment and were followed for several years, showing consistency and their dedication to the research process. They may not be representative of the general population.

Acceptance of CAM by menopausal women illustrates a desire for safe alternative treatments to improve overall health and well-being and alleviate menopausal symptoms^{10,11}. Clinicians must help patients differentiate between healthy lifestyle practices and treatments known to be ineffective and possibly harmful, including education about the benefits and risks of HT and CAM to help them make informed menopause care choices. Our findings also highlight the complex relationship between racial/ethnic differences in treatment preference and QoL. Clinicians may find these data useful when counseling patients on menopausal treatment options.

Conclusion

Consistent with other reported studies, we found racial/ethnic differences in use of HT and found overall higher use of CAM modalities to treat menopausal symptoms. Overall neither CAM nor HT use was associated with QoL measures; however, within each racial/ethnic group, there were differences in SRQoL in relation to the specific menopausal treatment used. Whereas in White women use of HT seems to be positively related to SRQoL, Black and Hispanic women reported more frequent menopausal symptoms, but also had the lowest use of HT. Understanding racial/ethnic differences in menopause treatment preferences and how it impacts overall well-being is integral to optimal care of midlife women.

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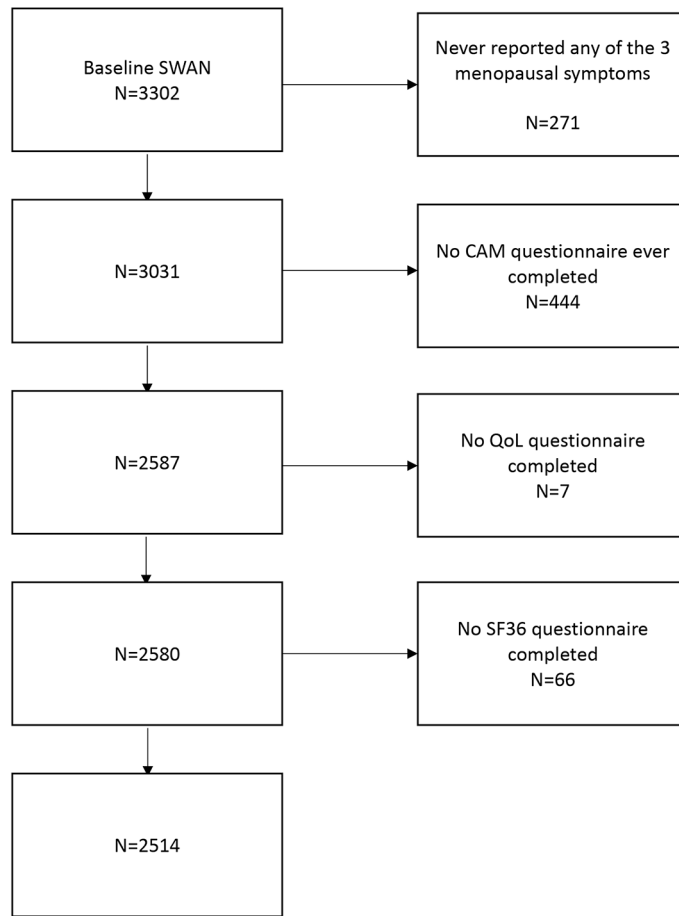


Figure 1: Sample selection

Legend: SWAN (Study of Women’s Health Across the Nation), CAM (Complementary Alternative Medicine), QoL (Quality of Life), SF36 (Short Form–36)

Table 1,

Baseline Characteristics, Overall and by Race/Ethnicity

	Total	Black	Chinese	Japanese	Hispanic	White	P-value
N (%)	2514 (100)	704 (28.0)	214 (8.5)	244 (9.7)	136 (5.4)	1216 (48.4)	
Site, N (%)							
	424 (16.4)	256 (35.5)				168 (13.5)	
Southeast Michigan							
Boston	385 (14.9)	166 (23.0)				219 (17.6)	
Chicago	343 (13.3)	177 (24.5)				166 (13.3)	
Oakland Area	379 (14.7)		214 (100)			165 (13.2)	
Los Angeles	440 (17.1)			246 (100)		194 (15.6)	
Newark	233 (9.0)				152 (100)	81 (6.5)	
Pittsburgh	376 (14.6)	123 (17.0)				253 (20.3)	
Age, mean (SD)	53.3 (3.3)	52.9 (3.1)	52.9 (2.8)	53.2 (2.8)	56.5 (5.0)	53.2 (3.3)	<0.001
Education, N (%)							
	548 (21.8)	185 (26.3)	61 (28.5)	39 (16.0)	89 (65.4)	174 (14.3)	<0.001
high school							
Some college	819 (32.6)	287 (40.8)	46 (21.5)	89 (36.5)	30 (22.1)	367 (30.2)	
College/grad degree	1128 (44.9)	233 (31.7)	107 (50.0)	116 (47.5)	13 (9.6)	669 (55.0)	
missing	19 (0.8)	9 (1.3)	0 (0.0)	0 (0.0)	4 (2.9)	6 (0.5)	
Financial strain ^a , N (%)	744 (29.6)	284 (40.3)	39 (18.2)	66 (27.0)	111 (81.6)	244 (20.1)	<0.001
Medical burden ^b	1474 (58.6)	518 (73.6)	80 (37.4)	92 (37.7)	114 (83.8)	670 (55.1)	<0.001
Menopausal status, N (%)							<0.001
	54 (2.1)	27 (3.8)	3 (1.4)	1 (0.4)	4 (2.9)	19 (1.6)	
BSO ^c , no HT ^d use							
BBO & HT use	66 (2.6)	19 (2.7)	5 (2.3)	7 (2.9)	1 (0.7)	34 (2.8)	
Post menopause, no HT	926 (36.8)	277 (39.3)	81 (37.9)	84 (34.4)	90 (66.2)	394 (32.4)	
Post menopause & HT use	249 (9.9)	49 (7.0)	14 (6.5)	25 (10.2)	2 (1.5)	159 (13.1)	
Late Peri-menopause	248 (9.9)	72 (10.2)	22 (10.3)	26 (10.7)	11 (8.1)	117 (9.6)	
Early Peri-menopause	653 (26.0)	187 (26.6)	62 (29.0)	75 (30.7)	20 (14.7)	309 (25.4)	
Pre-menopause	57 (2.3)	18 (2.6)	6 (2.8)	5 (2.0)	0 (0.0)	28 (2.3)	
Undetermined due to HT	198 (7.9)	23 (3.3)	21 (9.8)	17 (7.0)	3 (2.2)	134 (11.0)	

		Total	Black	Chinese	Japanese	Hispanic	White	P-value
	Undetermined due to Hysterectomy	63 (2.5)	32 (4.5)	0 (0.0)	4 (1.6)	5 (3.7)	22 (1.8)	
Number of Menopausal Symptoms ^c , N (%)								<0.001
	0	639 (25.4)	128 (18.2)	60 (28.0)	78 (32.0)	34 (25.0)	339 (27.9)	
	1	775 (30.8)	181 (25.7)	84 (39.3)	85 (34.8)	48 (35.3)	377 (3.0)	
	2	694 (27.6)	257 (36.5)	43 (20.1)	48 (19.7)	26 (19.1)	320 (26.3)	
	3	406 (16.1)	138 (19.6)	27 (12.6)	33 (13.5)	28 (20.6)	180 (14.8)	
Night sweats, N (%)								<0.001
	None	1387 (55.3)	305 (43.4)	148 (69.5)	162 (66.4)	78 (57.4)	694 (57.3)	
	1-5 days	733 (29.2)	263 (37.4)	49 (23.0)	57 (23.4)	35 (25.7)	329 (27.1)	
	6-8 days	140 (5.6)	50 (7.1)	2 (0.9)	7 (2.9)	10 (7.4)	71 (5.9)	
	9-13 days	82 (3.3)	21 (3.0)	6 (2.8)	4 (1.6)	3 (2.2)	48 (4.0)	
	Every day	166 (6.6)	64 (9.1)	8 (3.8)	14 (5.7)	10 (7.4)	70 (5.8)	
Hot flashes, N (%)								<0.001
	None	1130 (45.1)	217 (30.9)	110 (51.9)	127 (52.0)	87 (64.0)	589 (48.6)	
	1-5 days	771 (30.8)	261 (37.2)	68 (32.1)	67 (27.5)	22 (16.2)	353 (29.1)	
	6-8 days	190 (7.6)	68 (9.7)	17 (8.0)	14 (5.7)	10 (7.4)	81 (6.7)	
	9-13 days	145 (5.8)	50 (7.1)	5 (2.4)	16 (6.6)	5 (3.7)	69 (5.7)	
	Every day	271 (10.8)	106 (15.1)	12 (5.7)	20 (8.2)	12 (8.8)	121 (10.0)	
Vaginal dryness, N (%)								<0.001
	None	1619 (64.7)	476 (67.8)	125 (59.8)	163 (66.8)	59 (43.4)	796 (65.7)	
	1-5 days	504 (20.1)	147 (20.9)	38 (18.2)	50 (20.5)	44 (32.4)	225 (18.6)	
	6-8 days	120 (4.8)	23 (3.3)	15 (7.2)	12 (4.9)	15 (11.0)	55 (4.5)	
	9-13 days	72 (2.9)	19 (2.7)	6 (2.9)	3 (1.2)	7 (5.1)	37 (3.1)	
	Every day	187 (7.5)	37 (5.3)	25 (12.0)	16 (6.6)	11 (8.1)	98 (8.1)	
CAM/HT use, N (%)								<0.001
	Neither	1628 (64.8)	501 (71.2)	142 (66.4)	149 (61.1)	125 (91.9)	711 (58.5)	
	CAM only	361 (14.4)	108 (15.3)	32 (15.0)	45 (18.4)	5 (3.7)	171 (14.1)	
	HT only	422 (16.8)	76 (10.8)	30 (14.0)	39 (16.0)	5 (3.7)	272 (22.4)	
	Both	103 (4.1)	19 (2.7)	10 (4.7)	11 (4.5)	1 (0.7)	62 (5.1)	

	Total	Black	Chinese	Japanese	Hispanic	White	P-value
Self-reported QoL, mean (SD)	7.4 (1.7)	7.3 (1.8)	7.2 (1.5)	7.4 (1.7)	7.5 (2.0)	7.6 (1.6)	<0.001
SF36 Physical Component, mean (SD)	50.2 (9.4)	47.7 (10.7)	50.5 (7.7)	52.2 (6.4)	49.6 (9.3)	51.3 (9.1)	<0.001
SF36 Mental Component, mean (SD)	50.0 (10.0)	50.0 (10.2)	49.6 (10.0)	51.0 (9.0)	47.1 (10.5)	50.2 (9.9)	0.005

BSO: Bilateral Salpingo-oophorectomy; CAM: Complementary Alternative Medicine use for menopausal symptom relief; HT: Hormone Therapy; QoL: Quality of Life; SF36: Short Form-36.

^aFinancial strain: table entry shows number (percent) endorsing 'very hard' or 'somewhat hard' to pay for basics versus 'not hard at all'.

^bMedical burden: 2 or more medical conditions. Medical conditions include: diabetes, cardiovascular disease, hypertension, arthritis, hypercholesterolemia, stroke, anemia, migraines, angina, osteoporosis

^cNumber of symptoms reported in the previous 2 weeks

Table 2: Type of Complementary Alternative Medicine (CAM) used to treat menopausal symptoms overall and by race/ethnicity at baseline: N (%)

	Overall	Black	White	Chinese	Japanese	Hispanic
N	2514	704	1216	214	244	136
Any CAM for menopausal Symptoms	464 (18.5)	127 (18.0)	233 (19.2)	42 (19.6)	56 (23.0)	6 (4.4)
Soy supplements	257 (10.2)	73 (10.4)	123 (10.1)	26 (12.1)	32 (13.1)	3 (2.2)
Black Cohosh	145 (5.8)	54 (7.7)	77 (6.3)	3 (1.4)	10 (4.1)	1 (0.7)
Mexican Yam/Progesterone Cream	60 (2.4)	14 (2.0)	35 (2.9)	2 (0.9)	8 (3.3)	1 (0.7)
Flaxseed	58 (2.3)	17 (2.4)	33 (2.7)	4 (1.9)	4 (1.6)	0 (0.0)
Yoga	58 (2.3)	12 (1.7)	30 (2.5)	2 (0.9)	13 (5.3)	1 (0.7)
Dong Quai	40 (1.6)	13 (1.8)	9 (0.7)	12 (5.6)	5 (2.0)	1 (0.7)
Energy Healing	26 (1.0)	9 (1.3)	12 (1.0)	3 (1.4)	2 (0.8)	0 (0.0)
Glucosamine	14 (0.6)	3 (0.4)	7 (0.6)	1 (0.5)	3 (1.2)	0 (0.0)
Acupuncture	13 (0.5)	2 (0.3)	8 (0.7)	1 (0.5)	2 (0.8)	0 (0.0)
Ginseng	12 (0.5)	3 (0.4)	5 (0.4)	3 (1.4)	1 (0.4)	0 (0.0)
Tai Chi	11 (0.4)	3 (0.4)	1 (0.1)	6 (2.8)	1 (0.4)	0 (0.0)
St. John's Wort	10 (0.4)	1 (0.1)	8 (0.7)	0 (0.0)	1 (0.4)	0 (0.0)
Dehydroepiandrosterone	8 (0.3)	1 (0.1)	7 (0.6)	0 (0.0)	0 (0.0)	0 (0.0)
Ginkgo Biloba	8 (0.3)	1 (0.1)	4 (0.3)	2 (0.9)	1 (0.4)	0 (0.0)
S-adenosyl-L-methionine	4 (0.2)	1 (0.1)	3 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)
Methyl-sulfonyl-methane	3 (0.1)	3 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

TABLE 3:

Relationship of treatment of menopausal symptoms and self-reported quality of life (SRQoL score, possible range 1-10 with higher values = better QoL) within racial/ethnic groups: model-based estimates and significant contrasts with 95% confidence intervals

Baseline Analyses (N=2378)					
	Neither	CAM only	HT only	Both	Contrast, p
Black	7.5 (7.3 - 7.7) N=501	7.6 (7.3 - 8.0) N=108	7.2 (6.8 - 7.6) N=76	7.1 (6.4 - 7.9) N=19	
Chinese	7.3 (7.0 - 7.7) N=142	7.0 (6.4 - 7.6) N=32	6.3 (5.7 - 7.0) N=30	6.7 (5.7 - 7.7) N=10	HT only < Neither -1.0 (-1.6 - -0.4), p=0.002
Japanese	7.3 (6.9 - 7.6) N=149	7.4 (6.9 - 7.9) N=45	7.6 (7.0 - 8.1) N=39	7.1 (6.1 - 8.1) N=11	
White	7.5 (7.3 - 7.7) N=711	7.7 (7.4 - 8.0) N=171	7.6 (7.3 - 7.9) N=272	7.6 (7.1 - 8.0) N=62	
Longitudinal Analyses (total number of observations = 13223)					
	Neither	CAM only	HT only	Both	Contrast, p
Black	7.6 (7.4 - 7.7) n=3100	7.6 (7.3 - 7.8) n=419	7.4 (7.1 - 7.6) n=242	7.2 (6.8 - 7.6) n=43	HT only < Neither -0.21 (-0.40 - -0.02), 0.027
Chinese	7.3 (7.1 - 7.6) n=1026	7.3 (7.0 - 7.7) n=99	7.1 (6.7 - 7.4) n=111	6.9 (6.2 - 7.6) n=12	
Japanese	7.4 (7.2 - 7.6) n=1070	7.3 (7.1 - 7.6) n=206	7.4 (7.1 - 7.7) n=158	7.1 (6.6 - 7.7) n=29	
White	7.6 (7.4 - 7.7) n=4851	7.6 (7.5 - 7.8) n=694	7.7 (7.5 - 7.9) n=982	7.6 (7.4 - 7.9) n=181	HT only > Neither 0.11 (0.01 - 0.21), 0.030

CAM: Complementary Alternative Medicine use for menopausal symptom relief; HT: Hormone Therapy.

N of women = n of observations

Analyses adjusted for study site, baseline age, education, financial strain and medical burden.