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Original article

The relationship between religious affiliation and menopause symptoms and attitudes in United States women

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ABSTRACT

Objectives: This study's aim is to examine patterns of menopause symptoms and attitudes among United States women from different religious affiliations.
Study design: We used data from a national sample of midlife and older adults. For this analysis, we included only women who were postmenopausal or had undergone hysterectomy. We constructed univariate and multivariate logistic regression models to examine the relationship between religious affiliation and menopause symptoms and attitudes while adjusting for potential confounders.
Main outcome measures: Menopause symptoms (hot flashes, pain in sexual interactions, pleasure in sexual interactions, trouble falling asleep) and attitudes (relief on periods stopping, regret on periods stopping, worry about becoming less attractive) measured by self-report on Likert scales.
Results: Across denominations, 47 % of women experienced hot flashes, 48 % experienced pain in sexual interactions, 95 % experienced pleasure, and 88 % had trouble falling asleep. Regarding attitudes towards menopause and aging, 62 % felt relief in their periods stopping, while 56 % expressed worry about becoming less attractive with aging. Baptist women were more likely to experience hot flashes and trouble falling asleep compared to Catholic women. However, when adjusted for smoking status, this relationship did not persist. Unaffiliated and Spiritual women were less likely to experience trouble falling asleep and more likely to report pleasure in sexual interactions compared to Catholic women. Spiritual women were significantly more likely to feel regret on periods stopping compared to Catholics.
Conclusions: There is a relationship between religious affiliation and the menopause experience. These findings demonstrate the importance of considering social influences on women's health.

1. Introduction

Menopause a is key phase in female reproductive health and can result in bothersome symptoms. Natural menopause is defined as the permanent cessation of menstruation due to the loss of follicular activity in the ovaries, typically between the ages of 45 and 58 years [1]. Hot flashes and difficulty sleeping are commonly reported symptoms, and sexual dysfunction is a commonly reported diagnosis by women in this age group [2]. Hot flashes last an average of 7 years after natural menopause, but in some cases longer, and are characterized by a transient rise in skin temperature and heart rate [2]. Sleep difficulty and sexual dysfunction is reported in around 40 % of women [2,3]. Menopause symptoms can be a source of distress and considerably affect the quality of life in older women [4,5].

The experience of menopause is linked to sociocultural factors. For example, a woman's experience of menopause may differ significantly depending on her cultural background. Women in North America report higher rates of hot flashes than women from Asian countries, and up to a half of the female population reports hot flashes in Arab countries [6]. Additionally, women in European countries more frequently report pain during sex as compared to women in Asian countries [6]. Longitudinal data from the Study of Women's Health Across the Nation (SWAN) highlights that even within the United States, women from different racial and ethnic backgrounds experience menopause differently. For example, Black and Hispanic women, respectively, experience more hot flashes compared to White women, while Chinese and Japanese American women typically report fewer hot flashes than other groups [7]. Additionally, Japanese women report sleep difficulty at a lower

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frequency than White women [8], and overall better health compared to their American counterparts, which is associated with the even distribution of wealth in Japanese society, little poverty, public and familial investment in preventative medicine, and a traditional diet that is low in fat and high in proteins and natural estrogens. Additionally, the Japanese view aging as natural and not disease-like, and their symptom profile is different—fewer complaints of hot flashes and more of stiff shoulders [9,10]. Regardless of these cultural components, however, evidence suggests that women who already have high self-esteem will not be as susceptible to the negative stereotype of menopause prevalent in some societies, and thereby experience milder menopause symptoms [11].

A key component of culture is religion. Monotheistic religion has been shown to influence behavior in food and diet, clothing, music, and even medical care [12]. Similarly, religion can influence health conditions, including fertility [13], mental health [14], and hypertension [15]. Currently, data linking religious beliefs to menopause experiences is sparse, and religious affiliation and religiosity's association with menopause symptoms among United States (US) women is not known. Therefore, this study's aim is to examine patterns of menopause symptoms among US women from different religious affiliations. We decided to group Christian women as US Protestants and US Catholics as there are often racial and ethnic differences between the two groups; for example, US Hispanics are more likely to be Catholic than Protestant [16], while Asians are more likely to be Protestant [17]. These differences may manifest in cultural factors that affect menopausal symptoms.

2. Methods

The Study of Midlife in the United States (MIDUS) aimed to understand how various life factors impact health and well-being of Americans from early adulthood to older age. The original sample was identified in 1995–96 via random digit dialing, including over 7000 Americans aged 25 to 74, with over-sampling in select urban areas. Details about MIDUS have been previously published [18]. A second wave was collected in 2004. The third wave of this study, MIDUS 3, surveyed the remaining living longitudinal sample participants from MIDUS 1 and 2. Between May 2013 to November 2014, 3294 participants completed an initial 45-min telephone interview and 2732 completed 100-page self-administered questionnaires. For this analysis, we only included women who indicated they were postmenopausal or had hysterectomy, as these women may also experience menopausal symptoms. However, this is a limitation of the study, as we did not have information on menopausal status in the hysterectomy patients. Participants in MIDUS 3 completed informed consent, and MIDUS 3 was approved by the University of Wisconsin Institutional Review Board. The current analysis was reviewed and declared not human subjects research by the University of Pittsburgh Institutional Review Board, given the use of de-identified data.

The primary predictor for this analysis was religious affiliation (grouped into Baptist, Lutheran, Methodist, Pentecostal, Other Protestant, Catholic, Jewish, Other, Unaffiliated, and Spiritual). Religious affiliation was then condensed into four groups (Protestant, Catholic, Other, and Unaffiliated) to address categories with low numbers, therefore, increasing validity.

Primary outcomes were the presence of menopause symptoms (hot flashes, pain and pleasure in sexual interactions, trouble falling asleep) and attitudes towards menopause and aging (relief or regret about periods stopping and worry about becoming less attractive as one gets older). Hot flashes over the past month were answered through a six-option frequency scale (almost every day, several times a week, once a week, several times a month, once a month, and not at all). Similarly, trouble falling asleep was answered through a five-option frequency scale, pain and pleasure in sexual interactions and worry about attractiveness were answered with a four-option frequency scale, and relief and regret through a six-option scale from great relief to great regret. The outcomes were also examined as binary variables. Questions are included in a supplement.

Covariates examined were selected based on prior literature and clinical relevance. Race was self-reported, in which participants chose from 1) Asian, 2) Black, 3) Native American or Alaska Native Aleutian Islander, 4) Native Hawaiian or Pacific Islander, 5) White, and 6) Other. In the analysis, researchers grouped categories 3 and 4 into a larger Native American category. Age was calculated in the MIDUS 3 data and ranged from 39 to 90 years. Smoking was self-reported as well by answering yes or no to if one smokes cigarettes regularly.

First, mean values and percentages were calculated as appropriate to examine data for trends and outliers. Then, we constructed univariable logistic regression models to examine the relationship between the primary predictor (religious affiliation) and the primary outcomes (menopause symptoms). We also examined the relationship between potential confounders and menopause symptoms using univariable logistic regression models. Variables with $p < 0.05$ in univariable analysis were entered into multivariable logistic regression models to examine the relationship between religious affiliation and menopause symptoms while adjusting for potential confounders.

3. Results

3.1. Description

The mean age was 64 years. The majority (89.7 %) of the women were White, 4.0 % were Black, 1.1 % were Native American, 0.4 % were Asian, and 4.9 % identified as other (Table 1). Four percent of women were pre- or perimenopausal, 60 % postmenopausal, and 36 % had a prior hysterectomy and/or bilateral oophorectomy. Eleven percent of the women indicated they are taking female hormones currently. Of these women, 87 % are taking female hormones for hot flashes and 36 % for vaginal dryness.

Menopause symptoms were common. Forty seven percent had hot flashes in the past month, and 53 % did not. Forty eight percent experienced pain in sexual interactions, and 52 % did not. On the other hand, 96 % experienced pleasure in sexual interaction, and 4 % did not. Fifty two percent had trouble sleeping, and 48 % rarely or never did. Fifty four percent woke up during the night, and 46 % rarely or never did (Fig. 1).

Most women had positive attitudes about menopause and aging. Sixty two percent felt relief on period stopping, 13 % had mixed feelings, 3 % felt regret, and 22 % had no feeling one way or the other. Fifty three percent worry about becoming less attractive as they get older, but 47 % do not worry at all (Table 2).

In terms of religious affiliation, 13 % of women were Baptist, 8 % were Lutheran, 6 % were Methodist, 9 % were Pentecostal/Evangelical, 16 % were from other Protestant groups, 25 % were Catholic, 3 % were Jewish, 2 % were from other non-Jewish, non-Christian groups (Buddhist, Hindu, Muslim, Sikh, Jain, and other), 16 % were unaffiliated, and 2 % identified as spiritual. When grouped into 4 categories, 53 % of women were Protestant, 25 % were Catholic, 7 % were from other groups, and 15 % were Unaffiliated.

3.2. Religious affiliation and menopause symptoms

When compared to Catholics, Baptists were more likely to have hot flashes (OR 1.53, 95 % CI 1.06–2.19, $P = 0.022$). Fifty-four percent of Baptist women reported hot flashes, compared to 43 % of Catholic women (Table 3). These findings remained when controlling for age, race, and income ($P = 0.012$). However, when accounting for smoking, these findings did not remain significant ($P = 0.991$), and therefore, smoking explains these differences. Baptist women were more likely to smoke compared to Catholic women (OR 3.82, 95 % CI 1.98–7.38, $P < 0.001$), and current smokers were more likely to have hot flashes (OR 1.65, 95 % CI 1.14–2.34 $P = 0.007$).

Table 1
Demographics and menopause symptoms among women in MIDUS 3.

	N (%)
Age	
Race	
Asian American	6 (0.4 %)
Black and/or African American	61 (4.0 %)
Native American or Alaska Native Aleutian	17 (1.1 %)
White	1380 (89.7 %)
Other	75 (4.9 %)
Income (mean, SD)	($78,208, $1893)
Smoke cigarettes regularly	
Yes	159 (25 %)
No	477 (75 %)
Menopause status	
Pre- or perimenopausal	62 (4.3 %)
Postmenopausal	858 (59.8 %)
Had a hysterectomy and/or bilateral oophorectomy	516 (35.9 %)
Hot flash frequency (30 days)	
Almost every day	179 (11.6 %)
Several times a week	137 (8.8 %)
Once a week	58 (3.7 %)
Several times a month	174 (11.2 %)
Once a month	173 (11.2 %)
Not at all	829 (53.5 %)
Pain/discomfort in sexual interactions	
Never	402 (52.1 %)
Some of the time	288 (37.4 %)
Most of the time	55 (7.1 %)
Always	26 (3.4 %)
Pleasure in sexual interactions	
Never	32 (4.2 %)
Some of the time	210 (27.4 %)
Most of the time	326 (42.5 %)
Always	199 (26.0 %)
Trouble falling asleep	
Never	186 (12.02 %)
Rarely	561 (36.26 %)
Sometimes	417 (26.96 %)
Often	200 (12.93 %)
Almost always	183 (11.83 %)
Wake up during the night (frequency)	
Never	171 (11.1 %)
Rarely	533 (34.6 %)
Sometimes	462 (30.0 %)
Often	238 (15.4 %)
Almost always	137 (8.9 %)
Relief or regret menstrual periods stop	
Great relief	801 (50.7 %)
Some relief	181 (11.5 %)
Mixed feelings – both relief and regret	212 (13.4 %)
Some regret	32 (2.0 %)
Great regret	8 (0.5 %)
No particular feeling one way or the other	345 (21.9 %)
Worry about less attractive as get older	
A lot	89 (5.7 %)
Some	253 (16.3 %)
A little	484 (31.2 %)
Not at all	727 (46.8 %)
Religious preference	
Baptist	181 (13.3 %)
Lutheran	107 (7.9 %)
Methodist	88 (6.5 %)
Pentecostal	123 (9.1 %)
Other Protestant	215 (15.8 %)
Catholic	339 (24.9 %)
Jewish	36 (2.7 %)
Other	31 (2.3 %)
Unaffiliated	210 (15.5 %)
Spiritual	29 (2.1 %)
Religious preference (condensed)	
Protestant	714 (52.5 %)
Catholic	339 (24.9 %)
Other (including Jewish and Spiritual)	96 (7.1 %)
Unaffiliated	210 (15.5 %)

Pain in sexual interactions was not significantly related to religious affiliation. It is worth noting that 64 % of Jewish women reported experiencing pain, compared to only 38 % of Spiritual women. Unaffiliated (OR 0.18, 95 % CI 0.05–0.67, P = 0.01) and Spiritual groups (OR 0.09, 95 % CI 0.01–0.62, P = 0.01) were significantly less likely to experience pleasure in sexual interactions compared to Catholics. Nonetheless, among all religious groups except for Spiritual, over 91 % of women reported pleasure in sexual interactions.

Trouble falling asleep was significantly related to religious affiliation (P = 0.04). Baptists were significantly more likely to have trouble falling asleep compared to Catholics (OR 0.43, 95 % CI 0.097–0.76, P = 0.01). Higher prevalence of smoking and vasomotor symptoms in Baptists may explain these rates of insomnia. While the results are statistically significant, because the prevalence of troubled sleeping is high overall (85 %), the clinical significance may need to be attenuated.

3.3. *Religious affiliation and attitudes about menopause and aging*

Relief on periods stopping was not significantly related to religious affiliation.

Spiritual women were significantly more likely to feel regret on periods stopping compared to Catholics (OR 5.80, 95 % CI 1.23–27.32, P = 0.03). Among all groups, <20 % of women reported feeling regret. Among Jewish women, no one reported feeling regret, while 20 % of Spiritual women did. Among all religious affiliations, over 53 % of women expressed relief on their periods stopping. The lowest number of women reported relief from the Other (53.57 %) and Spiritual (53.85 %) groups, while the greatest number of women reported relief from the Methodist and Pentecostal groups (70 %).

Worry of becoming less attractive was also not significantly related to religious affiliation. On average, 56 % of women reported worry of becoming less attractive as they aged. On the higher end, 72 % of spiritual women reported this feeling, followed by 62 % of Jewish women. On the lower end, 47 % of Catholic women reported this feeling, followed by 48 % of Baptist women.

4. Discussion

Menopause symptoms were common among this national sample of midlife and older women. About half of women reported hot flashes, half reported sexual pain, and half reported trouble sleeping. This is similar to other studies of symptom prevalence among midlife women [19–22]. Baptist women were significantly more likely to experience hot flashes and trouble falling asleep than Catholic women, but these results do not hold when accounting for smoking. Baptist women were more likely to smoke, and this has been shown in other studies as well [23]. Women who smoke have been found to have more hot flashes than women who do not in other studies [24], and Baptists have the highest smoking rate among various denominations [23]. Additionally, research suggests that women who have a higher BMI are more likely to experience hot flashes [25]; Baptist women are more likely to have higher BMIs compared to other denominations [26], which may explain our findings that Baptists are significantly more likely to experience hot flashes [26].

Unaffiliated and Spiritual women were less likely to experience trouble falling asleep and more likely to report pleasure in sexual interactions compared to Catholic women, but Unaffiliated and Spiritual woman are also more likely to report worry about becoming less attractive with aging. However, the number of Spiritual women is low; therefore, this finding should be considered exploratory. Like this study's findings, another regression analysis found that higher levels of spiritual strength are related to decreased levels of menopausal symptoms, perhaps because it provides coping skills during stressful situations [27]. A study with >10,000 adults in the United Kingdom has found that more religious people have higher levels of sex life satisfaction [28]. This phenomenon can be explained by sociologist Robert Menton's notion of normative reference groups, which provide a set of standards for the

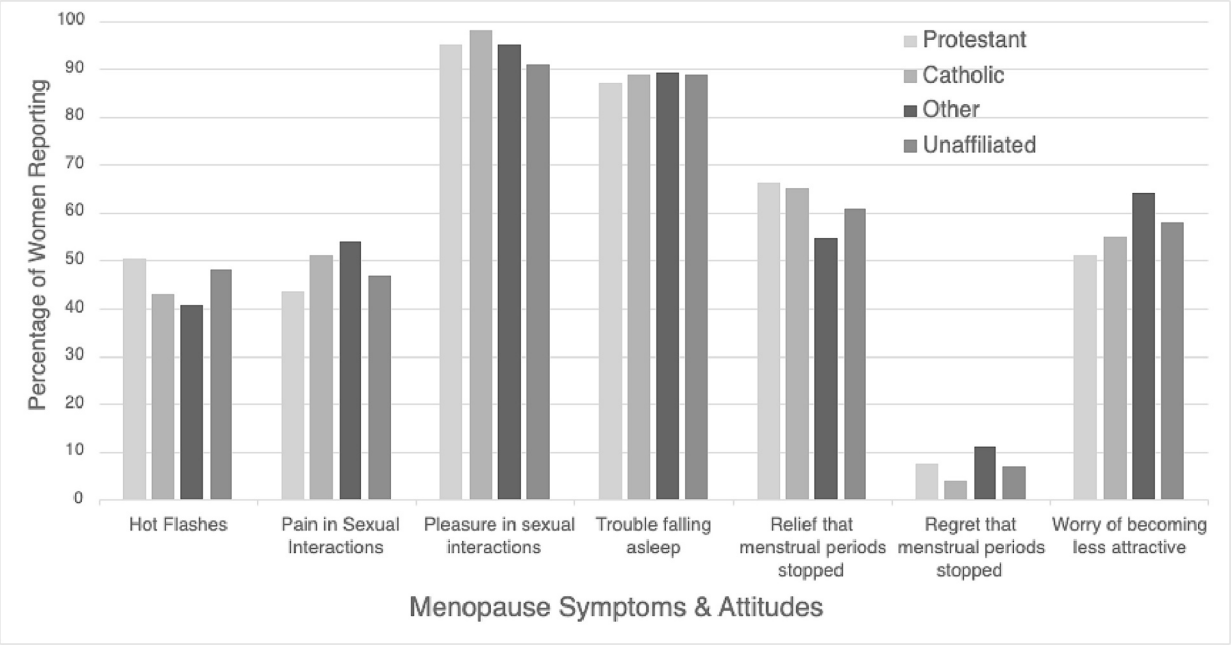

Fig. 1. Percentages of women from different religious affiliations experiencing various menopause symptoms and attitudes across MIDUS 3.

Table 2
Relationship between different menopause symptoms/attitudes and religious affiliation among women in MIDUS 3.

	Hot flashes			Pain in sexual interaction			Pleasure in sexual interactions			Trouble falling asleep			Regret on periods stopping			Relief on periods stopping			Worry about becoming older		
	OR	P-value	Overall P	OR	P-value	Overall P	OR	P-value	Overall P	OR	P-value	Overall P	OR	P-value	Overall P	OR	P-value	Overall P	OR	P-value	Overall P
Baptist	1.53	0.02	0.34	0.77	0.32	0.70	0.33	0.15	0.11	1.54	0.01	0.04	0.75	0.73	0.30	0.97	0.86	0.53	1.18	0.36	0.21
Lutheran	1.25	0.32		0.68	0.22		0.90	0.93		0.77	0.19		2.38	0.21		0.86	0.52		1.29	0.25	
Methodist	1.00	0.99		0.81	0.54		0.22	0.07		0.87	0.51		0.89	0.92		1.27	0.36		1.33	0.21	
Pentecostal	1.39	0.12		0.77	0.39		0.31	0.16		0.81	0.27		3.31	0.07		1.29	0.28		0.94	0.77	
Other Protestant	1.05	0.80		0.78	0.32		0.35	0.16		1.17	0.31		1.99	0.27		1.06	0.76		0.94	0.70	
Catholic	[ref]																				
Jewish	0.75	0.42		1.71	0.25		*			0.90	0.73		*			0.69	0.29		0.71	0.31	
Other	1.24	0.57		1.47	0.49		*			1.23	0.54		3.57	0.15		0.63	0.25		0.78	0.49	
Unaffiliated	1.22	0.25		0.87	0.58		0.18	0.01		0.88	0.42		1.8	0.34		0.87	0.46		0.81	0.20	
Spiritual	0.81	0.59		0.61	0.40		0.09	0.01		1.07	0.84		5.8	0.03		0.64	0.28		0.59	0.1	

*All women in the Jewish and Other groups reported high pleasure with sexual interactions. No Jewish women reported regret about periods stopping.
Shading indicates $p < 0.05$.

Table 3
Percentage of various religiously affiliated women reporting different menopause symptoms and attitudes.

	Baptist	Lutheran	Methodist	Pentecostal	Other Protestant	Catholic	Jewish	Other	Unaffiliated	Spiritual	Average
Hot flashes	54	49	43	51	55	43	36	48	48	38	46.5
Pain in sexual interactions	44	41	45	44	44	51	64	60	47	38	47.8
Pleasure in sexual interactions	95	98	93	95	95	98	100	100	91	85	95
Trouble falling asleep	88	88	85	84	90	89	92	90	89	86	88.1
Relief that menstrual periods stopped	64	61	70	70	66	65	56	54	61	54	62.1
Regret that menstrual periods stopped	3	9	4	13	8	4	0	13	7	20	8.1
Percentage of women reporting worry of becoming less attractive	48	47	49	55	56	55	62	58	58	72	56

individual [29]. Religious groups often fall within this definition, as they explicitly or implicitly prevent sexual behavior outside of marriage and may encourage it for married couples. Therefore, religious married couples in the US tend to report greater satisfaction in their sexual interactions compared to unmarried couples [29]. Other studies have shown that while women do report sexual problems like anxiety, inhibition, difficulty in achieving orgasm, and painful intercourse, the majority rate their overall sexual relationship as satisfactory [30], which is

similar to our findings in which nearly half of women experienced pain in sexual interactions, but nearly all women reported experiencing sexual pleasure.

This analysis has limitations. In this study, 53 % were Protestant, 25 % Catholic, 15 % Unaffiliated, 3 % Jewish, 2 % Spiritual, and 2 % Other (Muslim, Hindu, Buddhist); in the US overall population, 41 % are Protestant, 26 % Catholic, 2 % Jewish, 4 % Other (Muslim, Hindu, Buddhist), and 26 % Unaffiliated [31]. The population is largely White, which limits generalizability. Non-Christian religions are under-represented in this population. Formal measures of menopause symptoms and sexual function, such as the Men-QOL and Female Sexual Function Index (FSFI), were not used, and the study is cross-sectional, which limits our ability to determine causality. Nonetheless, the large sample size and variety of covariates assessed is a strength of the study as it allows for the control for potential confounders.

This study highlights the impact of social factors on menopause experience. Baptist women are more likely to smoke and experience hot flashes and trouble falling asleep compared to Catholic women. Unaffiliated and Spiritual women are less likely to experience trouble falling asleep and more likely to report pleasure in sexual interactions compared to Catholic women. A spiritual mindset and using mindfulness strategies may, therefore, be very helpful in managing menopausal symptoms, as shown in several other studies [32]. These findings demonstrate the importance of considering culturally responsive care that addresses social influences when treating menopausal women and adds to the growing literature on this subject [33].

Contributors

Annika Agarwal conceptualized and designed the study, performed the analysis of the data, and primarily wrote the manuscript.

Holly N. Thomas conceptualized and designed the study, performed the analysis of the data, and critically revised the manuscript for important content.

Both authors gave final approval of the submitted manuscript.

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Ethical approval

Participants in MIDUS 3 completed informed consent, and MIDUS 3 was approved by the University of Wisconsin Institutional Review Board. The current analysis was reviewed and declared not human subjects research by the University of Pittsburgh Institutional Review Board, given the use of de-identified data.

Provenance and peer review

This article was not commissioned and was externally peer reviewed.

Research data (data sharing and collaboration)

There are no linked research data sets for this paper. Data will be made available on request.

Declaration of competing interest

The authors declare that they have no competing interest.

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