

Impact of Menopause Symptoms on Women in the Workplace

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Abstract

Objective: To evaluate the impact of menopause symptoms on work outcomes and to assess the estimated economic impact.

Patients and Methods: Women aged 45 to 60 years receiving primary care at 1 of the 4 Mayo Clinic sites were invited to participate in a survey study (Hormones and Experiences of Aging) from March 1 through June 30, 2021. A total of 32,469 surveys were sent, with 5219 responses (16.1% response rate). Of the 5219 respondents, 4440 (85.1%) reported current employment information and were included in the study. The primary outcome was self-reported adverse work outcomes related to menopause symptoms assessed by the Menopause Rating Scale (MRS).

Results: The mean age of the 4440 participants was 53.9 ± 4.5 years, with the majority being White (4127 [93.0%]), married (3398 [76.5%]), and educated (2632 [59.3%] college graduate or higher); the mean total MRS score was 12.1, signifying moderate menopause symptom burden. Overall, 597 women (13.4%) reported at least one adverse work outcome due to menopause symptoms; 480 women (10.8%) reported missing work in the preceding 12 months (median, 3 days missed). The odds of reporting an adverse work outcome increased with increasing menopause symptom severity; women in the highest quartile of total MRS scores were 15.6 (95% CI, 10.7 to 22.7; $P < .001$) times more likely to have an adverse work outcome vs those in the first quartile. Based on workdays missed due to menopause symptoms, we estimate an annual loss of \$1.8 billion in the United States.

Conclusion: This large cross-sectional study identified a major negative impact of menopause symptoms on work outcomes and the need to improve medical treatment for these women and make the workplace environment more supportive. Additional studies are needed to confirm these findings in larger and more diverse groups of women.

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Menopause is a universal experience for women, occurring at a mean age of approximately 52 years.¹ There are record numbers of women entering menopause daily, and extrapolating from population data using age (>50 years) as a proxy for menopause, an estimated 984 million women worldwide in 2020 had reached menopause.² Menopause-related symptoms, including hot flashes, night sweats, mood changes, sleep disturbances, and cognitive difficulties can significantly impair women's quality of life³ and have

the ability to adversely impact women in the workplace.⁴⁻⁷

Despite the universality of menopause and the important role women play as contributors to the global economy, there remains a dearth of literature on the impact of menopause symptoms on work productivity. The limited studies available have mostly found an adverse effect of menopause symptoms in the workplace, including a compromised ability to work, lower work satisfaction, reduced work productivity, reduced work hours, or even loss of

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employment.⁴⁻⁷ However, some studies have not reported a link between menopause and a compromised work experience.^{8,9} One assessed only 3 questions related to the work impact, 2 related to job performance and 1 regarding comfort with discussing symptoms with their managers at work.⁸ The other was a small qualitative study assessing women's experiences of menopause.⁹

Vasomotor symptoms (VMS) (hot flashes and night sweats) are the most commonly reported symptoms of menopause, with a mean duration of 7 to 9 years and up to a decade or longer for nearly one-third of women.^{10,11} Additionally, many women experience symptoms of menopause in the late reproductive stage when they have not experienced cycle length irregularity of a week or more and well before their last menstrual periods occur.¹² Racial and ethnic differences in the duration of VMS have been documented, with Black women experiencing a longer duration of VMS (mean, 10.1 years) than women of other racial or ethnic backgrounds.¹⁰ The use of menopausal hormone therapy (HT), the most effective treatment for VMS, has drastically declined due to safety concerns raised with the publication of the Women's Health Initiative trials, adding to the potential menopause symptom burden experienced by women.^{13,14} Subsequent publication of the Women's Health Initiative trial results by decade of life has provided reassuring long-term all-cause and cause-specific mortality data^{15,16} leading to the conclusion that the benefits of HT typically outweigh the risks for most healthy, symptomatic women under the age of 60 years and within 10 years of menopause onset.¹⁷ Yet, HT usage rates remain low.^{13,14,18}

Given that midlife women constitute a significant proportion of the global workforce, the potential economic impact of menopause symptoms in the workplace related to the direct and indirect costs of absenteeism, lost work productivity, increased direct and indirect health care costs, and lost opportunities for career advancement are staggering. The current

study was conducted with the aim of further evaluating and better defining the impact of menopause symptoms on work outcomes in employed women receiving primary care at a tertiary care center in the United States. We further sought to evaluate racial and ethnic differences in these work outcomes. Finally, we performed a cost analysis to estimate the economic burden of lost workdays due to menopause symptoms based on these results.

PATIENTS AND METHODS

Study Design and Participants

We conducted a one-time survey study among women aged 45 to 60 years receiving primary care at 1 of 4 Mayo Clinic sites—Rochester, Minnesota; Scottsdale, Arizona; Jacksonville, Florida; and Mayo Clinic Health System, Northwest Wisconsin. The women were invited to complete a questionnaire between March 1 and June 30, 2021, that aimed to assess their menopause experiences and their perceptions about the care they received. The questionnaire assessed menopause symptoms, the impact of these symptoms on women's social, personal, and professional lives, the care received for these symptoms, and treatments used to manage symptoms. The study was approved by the Mayo Clinic Institutional Review Board.

Outcome Measures

Menopause Symptoms. Menopause symptoms were assessed utilizing the Menopause Rating Scale (MRS).¹⁹ The MRS consists of 11 items encompassing somatic, psychological, and urogenital subscales. Somatic symptoms include hot flashes, heart discomfort, sleep problems, physical and mental exhaustion, and joint/muscular discomfort. The psychological domain includes depressive mood, irritability, and anxiety. Urogenital symptoms include sexual problems, bladder problems, and dryness of the vagina. Each item is scored on a scale from 0 to 4 for severity (0 = none; 1 = mild; 2 = moderate; 3 = severe; 4 = very severe). The higher the composite score (range, 0 to

44), the higher the menopause symptom burden. For the current report, we examined the composite MRS score and the somatic, psychological, and urogenital domain scores.

Work Outcomes. Participants were asked to report if they experienced adverse work outcomes. Items queried included (1) missed days from work in the past 12 months; (2) hours cut back at work in the last 6 months; (3) laid off or fired from work in the past 6 months; and (4) quit/retired/changed jobs in the past 6 months. Response categories included no (no lost productivity) or yes (specifically due to menopause symptoms). An adverse work outcome was defined as an affirmative response to any of these questions related to menopause symptoms.

Statistical Analyses

Covariates. Current use of systemic HT was assessed in the survey. Additional information gathered from the electronic medical record included age, body mass index (BMI; calculated as weight in kilograms divided by height in meters squared), race/ethnicity, education (high school graduate or lower, some college education, 4-year college graduate, or postgraduate), smoking status (never, current, former), alcohol use (never, monthly or less, 2 to 4 times per month, 2 to 3 times per week, 4 or more times per week).

Data Analyses. Descriptive statistics are reported as median and interquartile range for continuous data and as frequencies and percentages for categorical data. Univariate and multivariable logistic regression models were used to assess the association between MRS scores (in quartiles) and self-reported adverse work outcomes. We computed an odds ratio (OR) and a 95% CI for an adverse work outcome for MRS score quartiles 2, 3, and 4 compared to quartile 1. For categorical variables with relatively small amounts of missing data, an “Unknown” category was used to represent those with missing data for analysis, while for variables with large amounts of missing data we only included pairwise complete observations in the

analysis. All tests were 2-sided, and $P \leq .05$ was considered statistically significant. All analyses were performed using SAS statistical software, version 9.4 (SAS Institute, Inc.; Cary, NC).

We calculated individual annual economic burden by determining the number of US women aged 45 to 60 years working full-time using 2020 US census data (15,350,000 women aged 45 to 60 years, from US census data),²⁰ their mean income (\$76,000 for women aged 45 to 60 years, from US census data) divided by 212 estimated work days per year and multiplied by risk of missing days of work and mean number of days missed annually (calculated using estimates from the current analysis). This age range was used for this calculation given that the range of ages for menopause has been defined as age 45 years or older with a mean age of 52 years¹ and because it has been established that menopause symptoms may start years before the last menstrual period¹² and may last for a decade or more after the final menstrual period.^{10,11}

RESULTS

Participants

Of the 32,469 surveys sent, 5219 responses were received (16.1%); 4440 (85.1%) of the respondents reported current employment and were included in the study. The demographic characteristics of the women in the study are summarized in [Table 1](#). The mean age of the 4440 participants was 53.9 ± 4.5 years, and the majority were White (4127 [93.0%]), married (3398 [76.5%]), and educated (2632 [59.3%] college graduate or higher). The mean total MRS score was 12.1, signifying moderate menopause symptom burden. Only 485 participants (10.9%) reported current systemic HT use.

Menopause Symptoms and Work Productivity

Overall, 597 of the 4440 women (13.4%; 95% CI, 12.5% to 14.5%) reported at least one adverse work outcome due to menopause symptoms: 480 women (10.8%) reported missing work in the preceding 12

TABLE 1. Participant Demographic and Clinical Characteristics^{a,b}

Variable	Total (N=4440)	Any adverse work outcome due to menopause symptoms		P value
		Yes (n=597)	No (n=3843)	
Age (y), mean ± SD	53.9±4.5	53.1±4.3	54.1±4.5	<.001
Race				<.001
White	4127 (93.0)	541 (90.6)	3586 (93.3)	
Asian	87 (2.0)	7 (1.2)	80 (2.1)	
Black	40 (0.9)	15 (2.5)	25 (0.7)	
Hispanic	134 (3.0)	28 (4.7)	106 (2.8)	
Other	28 (0.6)	4 (0.7)	24 (0.6)	
Unknown	24 (0.5)	2 (0.3)	22 (0.6)	
Partner status				.003
Single	431 (9.7)	79 (13.2)	352 (9.2)	
Lifepartnership	30 (0.7)	4 (0.7)	26 (0.7)	
Married	3398 (76.5)	419 (70.2)	2979 (77.5)	
Widowed	61 (1.4)	7 (1.2)	54 (1.4)	
Separated	8 (0.2)	3 (0.5)	5 (0.1)	
Divorced	504 (11.4)	84 (14.1%)	420 (10.9%)	
Unknown	8 (0.2)	1 (0.2)	7 (0.2)	
BMI (kg/m ²)	28 (24-33)	30 (25-35)	27 (23-33)	<.001
Education				.80
Highschool graduate/GED or less	249 (5.6)	30 (5.0)	219 (5.7)	
Somecollege or 2-year degree	1268 (28.6)	176 (29.5)	1092 (28.4)	
4-Year college graduate	1356 (30.5)	175 (29.3)	1181 (30.7)	
Postgraduate studies	1276 (28.7)	172 (28.8)	1104 (28.7)	
Unknown	291 (6.6)	44 (7.4)	247 (6.4)	
Smoking status ^c				.19
Missing	1798	314	1484	
Current smoker	151 (5.7)	20 (7.1)	131 (5.6)	
Former smoker	570 (21.6)	70 (24.7)	500 (21.2)	
Never smoked	1921 (72.7)	193 (68.2)	1728 (73.3)	
Alcohol use				<.001
Never	698 (15.7)	119 (19.9)	579 (15.1)	
Monthly or less	1206 (27.2)	184 (30.8)	1022 (26.6)	
2-4 times a month	1130 (25.5)	118 (19.8)	1012 (26.3)	
2-3 times a week	790 (17.8)	100 (16.8)	690 (18.0)	
4 or more times a week	289 (6.5)	34 (5.7)	255 (6.6)	
Unknown	327 (7.4)	42 (7.0)	285 (7.4)	
Systemic hormone therapy	485 (10.9)	79 (13.2)	406 (10.6)	.052
MRS score				
Total	11 (7-17)	17 (13-22)	11 (6-15)	<.001
Somatic	4 (3-6)	6 (4-8)	4 (2-6)	<.001
Psychological	4 (2-6)	7 (5-9)	4 (1-6)	<.001
Urogenital	3 (1-5)	4 (2-6)	3 (1-5)	<.001

^aBMI, body mass index; GED, General Education Development examination; IQR, interquartile range; MRS, Menopause Rating Scale.

^bData are presented as No. (percentage) of participants or median (IQR) unless indicated otherwise.

^cParticipants with missing data were not included in calculation of percentages, which were based on those with data (total=2642, yes=283, no=2359).

months (median number of days missed, 3), 250 (5.6%) reported cutting back on hours in the preceding 6 months (median number of days with reduced hours, 5), 13 (0.3%) reported being laid off in the preceding 6 months, and 45 (1.0%) reported quitting/

retiring/changing jobs in the preceding 6 months; 177 women (4.0%) reported more than one adverse work outcome due to menopause symptoms (Figure 1). Women who reported an adverse work outcome were more likely to be single, have a higher BMI, and be infrequent or never users of alcohol compared with those without adverse work outcomes; no differences in adverse work outcomes were noted on the basis of the level of education attained. Women with higher MRS scores were more likely to report an adverse work outcome than those with lower scores, a pattern that was consistent across all menopause symptom domains (Table 2). The odds for reporting an adverse outcome in the workplace increased monotonically with increasing severity of menopause symptoms, with women scoring in the fourth quartile of total MRS scores being 15.5 times more likely to have an adverse work outcome than those in the first quartile (95% CI, 10.6 to 22.6; $P < .001$) after adjustment for systemic HT use. The association between menopause symptoms and an adverse work outcome was strongest in the MRS psychological domain (21.1 times increased odds [95% CI, 13.1 to 33.8; $P < .001$] in women with symptoms in the fourth quartile vs those in the first quartile; Figure 2). Results were stratified by current HT use, and notably, HT users had significantly higher MRS total ($P < .001$) and domain scores (somatic domain $P = .034$; psychological domain $P < .001$; urogenital domain $P = .003$) vs nonusers. There was no significant difference in days of work missed due to menopause symptoms ($P = .58$) or in total adverse work outcomes ($P = .052$) between current HT users and nonusers.

Racial/Ethnic Differences

On a subanalysis, there were racial/ethnic differences in the association between menopause symptoms and adverse work outcomes, although the sample sizes were small. Black women tended to have higher and Asian women tended to have lower total MRS symptom scores compared with other racial/ethnic groups (median [interquartile

range]: Black women, 25 [19 to 30]; Asian women, 18 [15 to 22]; Hispanic women, 23 [19 to 29]; and White women, 23 [18 to 28]; $P < .001$). Higher percentages of Black women (37.5% [15 of 40], 95% CI, 22.7% to 54.2%) and Hispanic women (20.9% [28 of 134], 95% CI, 14.4% to 28.8%) and a lower percentage of Asian women (8.0% [7 of 87], 95% CI, 3.3% to 15.9%) reported any adverse work outcome related to menopause symptoms compared with White women (13.1% [541 of 4127], 95% CI, 13.1% to 14.2%). HT usage rates also varied by race/ethnicity (White women, 11.3% [465 of 4127]; Asian women, 3.4% [3 of 87]; Black women, 2.5% [1 of 40]; and Hispanic women, 8.2% [11 of 134]; $P = .040$).

Cost of Menopause Symptoms

Multiplying across the 15,350,000 women aged 45 to 60 years working full-time in the United States (from US census data) and applying the results of the current analysis (10.8% [480 of 4440] rate of missing a day of work per year and a mean of 3 days of missed work annually), the cost associated with lost work productivity associated with menopause symptoms in the United States is approximately \$1.8 billion annually. This estimate does not include the costs

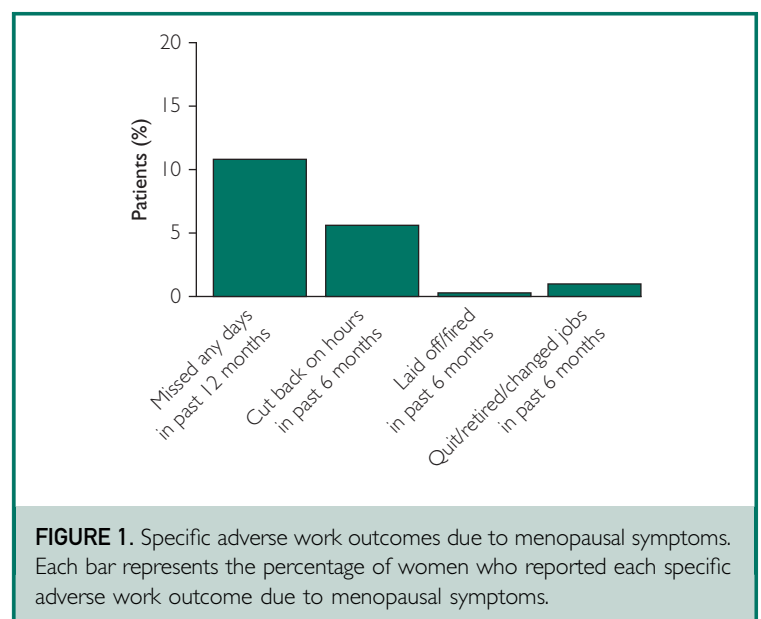
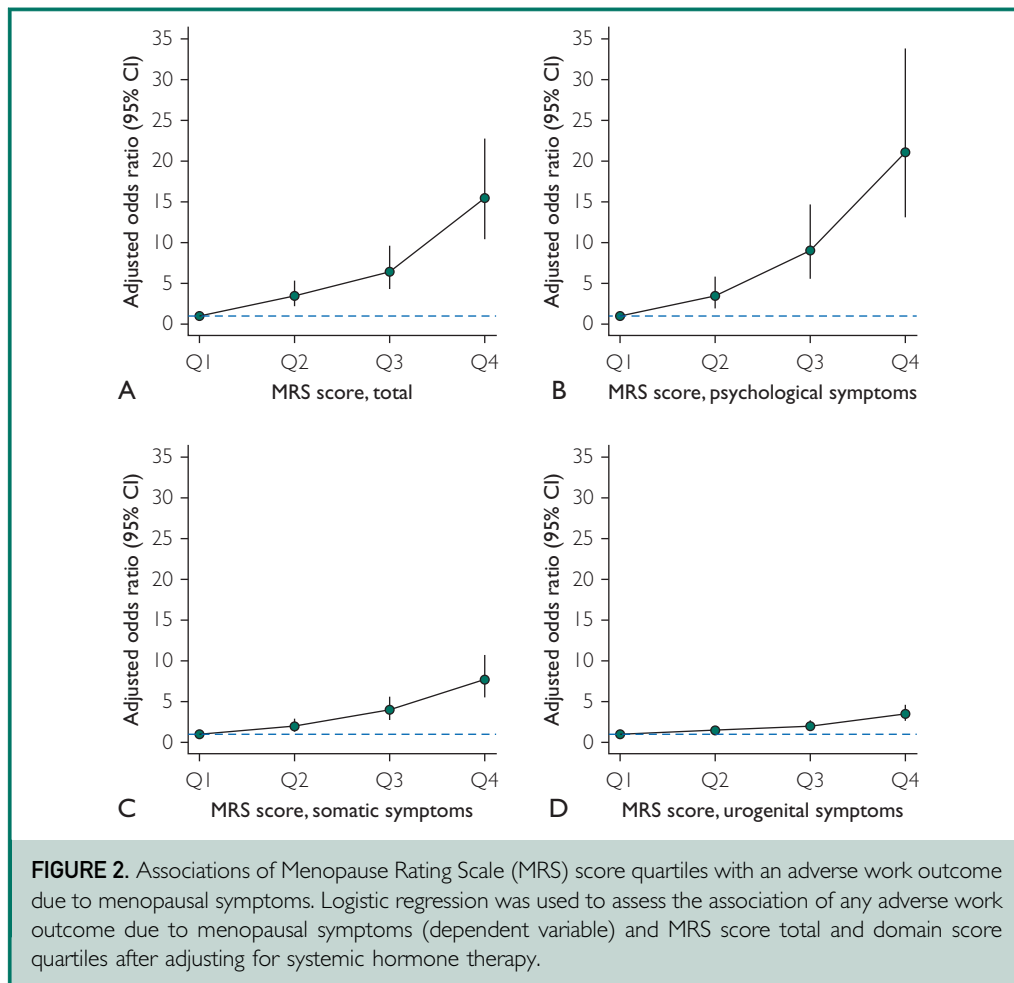


FIGURE 1. Specific adverse work outcomes due to menopausal symptoms. Each bar represents the percentage of women who reported each specific adverse work outcome due to menopausal symptoms.

TABLE 2. Associations of MRS Score Quartiles With an Adverse Work Outcome Due to Menopause Symptoms. Unadjusted and Adjusted for Systemic Hormone Therapy^{a,b}

Variable	Adverse outcome (N=597)	No adverse outcome (N=3843)	Unadjusted		Adjusted for systemic hormone therapy			
			Odds ratio (95% CI)	P value	Odds ratio (95% CI)	P value	HT odds ratio (95% CI)	P value
MRS Total							1.15 (0.88-1.50)	.32
Q1 (≤ 7)	31 (2.6)	1184 (97.4)	Reference		Reference			
Q2 (8-11)	84 (8.3)	924 (91.7)	3.47 (2.27-5.29)	<.001	3.45 (2.27-5.26)	<.001		
Q3 (12-16)	160 (14.5)	945 (85.5)	6.46 (4.36-9.59)	<.001	6.43 (4.34-9.54)	<.001		
Q4 (≥ 17)	322 (29.0)	790 (71.0)	15.56 (10.65-22.74)	<.001	15.46 (10.58-22.60)	<.001		
MRS Somatic							1.22 (0.94-1.60)	.14
Q1 (≤ 2)	48 (4.4)	1035 (95.6)	Reference		Reference			
Q2 (3-4)	102 (8.4)	1106 (91.6)	1.99 (1.40-2.83)	<.001	1.98 (1.39-2.82)	<.001		
Q3 (5-6)	174 (15.6)	944 (84.4)	3.97 (2.85-5.54)	<.001	3.97 (2.85-5.53)	<.001		
Q4 (≥ 7)	273 (26.5)	758 (73.5)	7.77 (5.64-10.70)	<.001	7.72 (5.60-10.64)	<.001		
MRS Psychological							1.10 (0.84-1.44)	.49
Q1 (≤ 1)	19 (1.9)	979 (98.1)	Reference		Reference			
Q2 (2-3)	61 (6.2)	926 (93.8)	3.39 (2.01-5.73)	<.001	3.39 (2.01-5.72)	<.001		
Q3 (4-6)	210 (15.0)	1191 (85.0)	9.09 (5.64-14.64)	<.001	9.05 (5.62-14.59)	<.001		
Q4 (≥ 7)	307 (29.1)	747 (70.9)	21.18 (13.20-33.99)	<.001	21.07 (13.13-33.82)	<.001		
MRS Urogenital							1.25 (0.96-1.62)	.09
Q1 (≤ 1)	98 (7.9)	1145 (92.1)	Reference		Reference			
Q2 (2-3)	154 (11.5)	1189 (88.5)	1.51 (1.16-1.97)	.002	1.50 (1.15-1.96)	.002		
Q3 (4-5)	145 (14.6)	846 (85.4)	2.00 (1.53-2.63)	<.001	1.99 (1.52-2.62)	<.001		
Q4 (≥ 6)	200 (23.2)	663 (76.8)	3.52 (2.72-4.57)	<.001	3.50 (2.70-4.54)	<.001		

^aHT, hormone therapy; MRS, Menopause Rating Scale; Q, quartile.^bData are presented as No. (percentage) of participants unless indicated otherwise.



related to reduced hours of work or to the loss of employment, early retirement, or changing jobs.

DISCUSSION

To our knowledge, this is the largest study to date examining the impact of menopause symptoms on work outcomes. Employed US women receiving primary care at a large medical center across 4 geographic locations reported a substantial menopause symptom burden and a negative impact of these symptoms on work outcomes. Women who reported adverse work outcomes had a higher BMI and were less likely to be married or to consume alcohol regularly compared with those without an adverse work outcome. The severity of menopause

symptoms correlated with the probability of an adverse work outcome, such that women in the highest symptom quartile were 15.6 times more likely to report an adverse work outcome due to menopause symptoms than those in the lowest quartile.

There is a notable dearth of literature on the impact of menopause symptoms in the workplace. However, our findings are consistent with those of most, but not all, of the few existing studies on adverse work-related outcomes in women experiencing severe menopause symptoms. Menopause symptoms pose workplace challenges that may manifest as higher levels of lost work productivity (presenteeism), lost days of work (absenteeism), and greater numbers of outpatient medical visits.^{5,7,21-23} Of the

prior studies on menopause in the workplace, many have focused specifically on assessing the impact of VMS as opposed to the total menopause symptom burden.^{7,22} The 2010 US National Health and Wellness Survey identified a link between the severity of VMS and lost work productivity and found higher adjusted rates of presenteeism in women with severe (24%) and moderate (14%) VMS vs those with mild symptoms (4%).⁷ Similarly, a study based on health care claims of over 500,000 US women revealed that untreated VMS were associated with 57% greater all-cause work productivity loss as a result of disability and medically related absenteeism.²²

Although VMS have been found to contribute negatively to the work experience and productivity, the impact of menopause in the workplace is not limited to this singular symptom, and each woman's experience of menopause is unique and potentially anchored in previously identified symptom clusters occurring during the menopause transition.²⁴ Other symptoms in the somatic, psychological, and urogenital domains, including sleep disruptions, difficulty with memory and concentration, mood disturbances, and genitourinary symptoms, may also have a negative impact, including sleep disruptions, difficulty with memory and concentration, mood disturbances, and genitourinary symptoms.²⁵ One study using 2001-2010 diagnosis code data found that employees with a diagnosis of menopause symptoms had 12.2% lower hourly productivity and 10.9% lower annual productivity.²¹ A cross-sectional study of 599 working Japanese women found that after adjusting for other factors, a higher number of menopause symptoms was linked with lower work performance.²⁶ A longitudinal prospective study of 3109 women from the United Kingdom found that compared with women with no symptoms, those with severe menopause symptoms were 1.43 times more likely to exit employment compared with continuing employment without reducing work hours and 1.23 times more likely to reduce work

hours compared with continuing employment without reducing work hours.²⁷ Another small community-based cohort study from the United Kingdom involving 409 women found that vasomotor, sleep, psychological, and urinary symptoms were the most commonly reported symptoms, with the prevalence of symptom reporting being similar across all occupations.²⁸ Over one-third of these women reported moderate to severe difficulty coping at work related to these symptoms, and risk factors for difficulty coping included financial insecurity, poorer self-rated physical health, depression, and adverse psychosocial work factors (eg, reported job insecurity, job dissatisfaction, or feelings of being unappreciated). Notably, neither the type of job nor the physical demands of the job were linked with reported difficulties coping with menopause symptoms in the workplace.²⁸

In contrast, an Australian study of 1092 female employees at a large hospital reported that 89% of survey respondents did not feel that menopause symptoms had affected their job performance in the past 7 days. However, the majority (66%) also did not feel comfortable discussing menopause symptoms with their immediate supervisor and most felt that manager and employee education, greater employer support, and workplace flexibility in terms of hours worked and temperature control was needed in the workplace.⁸

The relationship between menopause symptoms and work outcomes may in fact be bidirectional, with work-related factors also influencing the menopause experience. A small qualitative study of Australian university employees revealed that work had created, worsened, or even relieved self-identified menopause symptoms.⁹ A small cross-sectional study of Egyptian medical teaching staff found that less than ideal work conditions, environment, and policies contributed to the burden of menopause symptoms and were associated with low rates of disclosure of menopause status.²⁹ Conversely, supportive managers and

supervisors and flexibility in the workplace, such as having control over the temperature in the workplace, may have a positive effect on women's experiences of menopause.³⁰ Potential opportunities for workplace interventions include employer/manager education and training to increase awareness and knowledge about menopause and to improve communication skills and behaviors surrounding the topic as well as implementation of supportive policies such as those relating to sick leave and flexible work hours.³¹

Adding to the complexity of the interaction between women's experiences of menopause and the workplace, the very topic of menopause has been taboo, particularly in the workplace, potentially further exacerbating the psychological burden of menopause symptoms. Women often fear bias, discrimination, and stigmatization and therefore may be reluctant to disclose their menopause status and to discuss their menopause symptoms and concerns with their managers and supervisors.³² A small qualitative study suggested that women perceive menopause as a negative concept and as something to be endured rather than as a normal life stage.³³ Additionally, they identified feeling fear as well as a responsibility to manage the menopause symptoms they experienced at work on their own, with evidence for a negative impact on workforce participation related to these symptoms. Recognizing these fears and concerns and intentionally creating a safe environment for women to discuss their needs may help address this issue.

Women with untreated VMS have been reported to have significantly higher direct and indirect costs related to excess health care utilization and lost work productivity.²¹⁻²³ Based on the current analysis and US 2020 census data, lost workdays related to menopause symptoms result in a cost burden of approximately \$1.8 billion annually (not including the estimated costs associated with reduced work hours, switching to a lower paying job, not taking or losing a promotion or retiring early). This calculation also only includes paid employment

and does not include the unpaid work women commonly perform, such as caregiving. If the potential excess direct medical expenditures related to menopause are included, another \$24.8 billion can be attributed to US women aged 45 to 60 years (US 2020 census data) according to a prior analysis (excess direct medical costs of \$1346 per woman annually adjusted by a factor of 1.2 for inflation between 2014 and 2022).²² These data suggest that the total economic burden associated with menopause symptoms is conservatively \$26 billion annually in the United States alone. Putting this information in perspective, the US Centers for Disease Control and Prevention notes that chronic diseases and lifestyle behaviors including hypertension, diabetes, physical inactivity, smoking, and obesity reduce work productivity and cost US employers an estimated \$36.4 billion in missed days of work.³⁴ It is therefore in the best interest of employers and communities to evaluate ways to reduce this substantial economic burden by improving workplace menopause support and facilitating access to high-quality, evidence-based health care for menopause symptom management.

In addition, many women in midlife are at a time in their lives when they are experiencing career success and achieving leadership roles. That women may opt out of employment, and consequently out of the leadership development pipeline, identifies a potentially unrecognized reason for the leaky leadership pipeline and the paucity of women in senior leadership positions.³⁵ Some studies have found that employed women with menopause symptoms have a better quality of life compared with unemployed women, suggesting that improving the work environment may offer an opportunity to further enhance quality of life for working women with menopause symptoms.^{36,37} Further, the impact of women's early exit from employment includes the potential for financial insecurity in later life in addition to lost potential for career advancement and an important loss of human capital from a broader perspective.

The percentage of HT users in the current study was 10.9%, which is slightly higher than HT usage rates reported since publication of the Women's Health Initiative trial results.^{13,14,18} Notably, HT usage rates varied by race/ethnicity (White women, 11.3%; Asian women, 3.4%; Black women, 2.5%; and Hispanic women, 8.2%). The total symptom burden was higher among HT users in this study, potentially because these women had more severe symptoms that prompted them to seek medical treatment. The remaining differential symptom burden may relate to persistent undertreatment of menopause symptoms and underuse of HT in women with severe symptoms due to concerns regarding adverse effects, and the practice of using the lowest dose possible. Given that the greatest burden of menopause symptoms in this cohort was in the psychological domain, persistent symptoms in women using HT could represent residual mood symptoms that may not have been adequately addressed by the use of HT.

It is likely that the intersectionality of race, socioeconomic status, education, age, and other factors plays an important role in women's experiences of menopause and in how these experiences interact with the workplace. Minority women and those with medical comorbidities may experience worse menopause symptoms, including changes in cognition that may not rebound after the menopause transition in vulnerable individuals.^{10,38} Although limited by small numbers of racially and ethnically diverse women, the current study found that Black women had slightly higher total MRS scores, and a higher percentage of Black women reported adverse work outcomes related to symptoms compared with White women (37.5% vs 13.1%, respectively), with 1 in 3 Black women reporting missing one or more days of work in the past year related to menopause symptoms. Hispanic women also reported higher rates of adverse work outcomes due to menopause symptoms compared with White women (20.9% vs 13.1%, respectively). Prior studies have found that race differentially impacts the

menopause experience. It was previously reported that Black women experience VMS for a longer duration compared with other racial/ethnic groups (mean, 10.1 years).¹⁰ In a small qualitative study, Black women also indicated that they did not feel they received adequate information or support during the menopause transition.³⁹ Despite small sample sizes of non-White ethnorracial groups, the findings in the current study by race/ethnicity elucidate an important consideration for both primary care physicians and employers.

The strengths of this study include the use of a large community-based sample, inclusion of a geographically diverse group of women, and use of a validated tool assessing menopause symptom burden. We also intentionally did not limit the study to only postmenopausal women, given that many women experience typical menopause symptoms years before they experience their final menstrual periods.¹²

The potential limitations of our study include the cross-sectional study design and the use of self-reported work outcomes related to menopause symptoms due to the lack of a validated measure to assess the latter. We did not seek to confirm the validity of these self-reported adverse work outcomes; they were the perceptions of the study participants. The study was conducted during the COVID-19 (coronavirus disease 2019) pandemic, and some of the adverse work outcomes may have related to changes in mental or physical health or in work-related circumstances that participants may have erroneously ascribed to menopause symptoms. However, there is good-quality evidence that anxiety and depression are risk factors for more severe menopause symptoms^{40,41} and that conversely, menopause symptoms adversely impact mood, well-being, and quality of life.⁴² The study was conducted in women receiving primary care at a large medical center, which may have resulted in an underestimation of the true burden of menopause symptoms, the effects on work productivity, and the associated economic impact given that these

women had ready access to care, including access to specialty menopause care. There was a low percentage of racially and ethnically diverse women in this cohort, and additional studies are needed to confirm these findings in more diverse populations of women. Given the response rate of 16.1%, the possibility of a sampling bias cannot be excluded. It is possible that women with more severe symptoms were more likely to respond to the survey. We did not collect information on the type of employment, and although one previous study reported no differences in women's ability to cope with menopause symptoms based on the type of work or the physical demands of the job,²⁸ this information could have provided more nuanced data on the relationships between menopause symptoms and work-related outcomes.

Future study is needed to evaluate the impact of menopause symptoms on the work experiences of LGBTQI individuals as well as in women with multiple medical comorbidities, financial insecurity, and limited access to health care or who are underemployed or unemployed. The impact of the COVID-19 pandemic on women experiencing menopause symptoms in the work setting has not yet been described and likely adds another layer of complexity to the interaction of menopause symptoms and work outcomes. Finally, additional efforts are needed to implement and study the effects of workplace policies that support women experiencing menopause symptoms.⁴³

CONCLUSION

Women are a vital part of the global workforce and economy. This study identified an association between menopause symptoms and adverse work outcomes, including lost work productivity. The severity of menopause symptoms strongly predicted the odds of an adverse work outcome. Based on this analysis, the estimated annual cost associated with lost days of work related to menopause symptoms among US women aged 45 to 60 years is \$1.8 billion. Racial and ethnic differences were identified, with

Black and Hispanic women more likely to report adverse work outcomes related to menopause symptoms vs White women. The findings of this study highlight a critical need to improve the medical treatment provided to women with menopause symptoms and an opportunity to make the workplace environment more supportive for women going through this universal life stage. Additional studies are needed to confirm these findings in larger and more diverse groups of women.

POTENTIAL COMPETING INTERESTS

Dr Enders has received grants from Dicerna Pharmaceuticals, Inc, OxThera, and Alnylam Pharmaceuticals, Inc, and has patents planned, issued, or pending for Analyzing and Answering Questions. Dr Kling has received consulting fees from Procter & Gamble and Triangle Insights Group and payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing, or educational events from Pri-Med. Dr Griffin has a contract with Exact Sciences Corporation to lead a research study (the contract is paid to her institution). Dr Kapoor has been a consultant for Astellas Pharma Inc, Mithra Pharmaceuticals, Scynexis, Inc, and Womaness; has received grant support from Mithra Pharmaceuticals; has received payment for development of educational content from Med Learning Group and Academy of Continued Healthcare Learning; and has received honoraria for CME activity from CogniMed Inc, Pri-Med, and *OBG Management*. The other authors report no competing interests.

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Ms Mara—Formal analysis, writing/review and editing; Dr Griffin—Conceptualization, methodology, writing/review and editing; Dr Kapoor—Conceptualization, data curation, methodology, writing original draft.

Abbreviations and Acronyms: BMI, body mass index; HT, hormone therapy; MRS, Menopause Rating Scale; OR, odds ratio; VMS, vasomotor symptoms

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