



The Association between Severity of Menopausal Symptoms and Work Ability Index among University Staff

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Abstract

Background: Some menopausal symptoms can negatively affect people's daily activities. The work ability index (WAI) investigates employees at risk of work-related disabilities. The current study, conducted at Gonabad University of Medical Sciences, evaluated the association between the severity of symptoms during the menopausal transition and the work ability index.

Materials & Methods: In this descriptive study, 170 female subjects in the age range of menopause transition (42 to 54 years) were selected from the list of female employees at Gonabad University of Medical Sciences, using the simple random sampling method. Data were collected using a socio-demographic characteristics form, the work ability questionnaire, and the severity of menopause symptoms questionnaire. Finally, the data were analyzed in SPSS software (version 22). ANOVA and Pearson correlation coefficient were applied for data analysis.

Results: The mean±SD of the WAI score was 38.88±6.55. The mean ± SD of intensity of physical, mental, and urogenital menopausal symptoms were 7.44±2.96, 6.46±2.67, and 5.32±2.30, respectively. The Pearson correlation coefficient between menopausal symptom severity and work ability was significantly negative ($p<0.001$, $r=-0.418$).

Conclusion: The reduced work ability of female employees may cause increased absenteeism, additional costs for the employer, reduced employee productivity, and increased production costs, especially in the industry and service sectors.

Keywords: Menopause, Work, Ability

Introduction

Women make up half of the world's population, and according to published statistics, almost 90% of them reach the age of 65. Therefore, the majority of women experience a period of life called "menopause". The World Health Organization has defined three stages for menopause: pre-menopause, perimenopause, and post-menopause. The entire female reproductive period until the final menstruation is called pre-menopause. The

perimenopause period extends from 4-5 years before to one year after the last menstruation. The period after menopause is considered to extend from one year after the last menstruation until the end of life. The menopausal transition period comprises the peri- and post-menopausal stages, during which time, a woman's fertile and productive years end. In some countries, women live about 70-82 years, and as menopause begins at the age of 45-55, such women spend almost one third of their lives in menopause. First,

menstruation becomes irregular; later, it stops completely [1]. The average age of menopause differs in various parts of the world. In European countries, the average age of menopause is 51 years. Azadi's study showed that the average age of menopause in Iran is 48, 26 years, an age lower than that in developed countries and throughout the world [2].

The primary activity of the ovaries begins at puberty. Menstrual cycles last for 20 to 40 days and continue until menopause starts. Accepting this stage of life as the body's physiology and function is critical. Although menopause is a series of natural changes, most women and their families do not have enough information about it, which can lead to psychological problems. Therefore, women in this life stage need emotional support and medical and social services [3, 4].

Problems associated with this stage and considered harmful to a person's quality of life and performance include sleep disorders, sexual disorders, and vasomotor symptoms. These issues differ from one individual to another, depending on the woman's understanding, adaptation, number of activities, and responsibilities [5]. The work ability concept adopted by several European and Asian countries was developed in Finland in 1980 and concerns balancing a person's ability and work requirements [6]. In many countries, women, especially older ones, have more sick leave. One study demonstrated that women 45 years of age and older face more physical and mental demands at work and more absenteeism due to illness than younger women [6, 7].

To measure work ability, the Finnish Institute of Occupational Health developed the index of work ability, which measures the ability to do work according to social status, lifestyle, and work environment [8]. In a review study, Vandenberg indicated that old age, low education, being overweight, smoking, and physical inactivity negatively impact the ability to do work [9]. The workforce census in 2021 showed that 3.8 million women in the Netherlands, comprising half of the total workforce, are engaged in full- or part-time jobs [10]. And more than one third of these women are 45 years or older. Other countries have reported similar numbers. Employment has advantageous effects and results in good psychological and mental health for most women [11]. Menopausal women, however, show the greatest decline in annual performance rate [12].

Some menopausal symptoms are severe enough to negatively affect normal daily activities. The work ability index can be applied to assess the efficacy of occupational health interventions. It is also beneficial to identify individual employees at risk for work-related disabilities. Women, especially the large population who were born after 1980 in Iran is in the premenopause period, form half of the workforce; nonetheless, only a few similar studies in this field have been conducted in Iran to date.

The current study investigated the association between

menopausal symptom intensity and work ability in postmenopausal women employees of Gonabad University of Medical Sciences.

Materials and Methods

This study used a cross-sectional descriptive correlational design. The data were collected from January to March of 2021. A total of 170 female employees at Gonabad University of Medical Sciences who were in menopausal transition (age 42-54 years) were selected by simple random sampling [13].

Inclusion criteria: Female staff members at Gonabad University of Medical Sciences (age range of 42-54 years) who were in the menopausal transition stage and consented to participate in the study were included. Subjects had no history of any disease or condition that could possibly affect work ability in any way, for example, depression, diabetes, hypertension, or cardiac diseases. Furthermore, participants could not be undergoing therapy with hormonal drugs or have a history of hysterectomy or oophorectomy.

The exclusion criteria: People submitting incomplete or distorted questionnaires and those not consenting to continue participating in the study were excluded.

According to a similar study (Geukes et al.) in 2012, considering a confidence interval of 95% and a maximum error of one unit as well as a 16% possible dropout rate, the sample size was estimated to be 170 persons:

Formula 1.

$$n = \frac{(z_{1-\frac{\alpha}{2}})^2 * \delta^2}{d^2} = \frac{(1.96)^2 * (6.1)^2}{(1)^2} * 16\% = 170$$

A. Checklist of personal characteristics and lifestyle:

This form gathered information on personal characteristics and lifestyle, such as height, weight, marital status, occupation, work experience, employment status, shift type, level of education, physical activity, smoking, medical history, and menopause stage.

B. Work ability questionnaire (WAI): This index, developed by the Finnish Vocational Institute, is a self-report questionnaire that evaluates one's ability to work according to the work's physical and mental demands. Its validity and reliability have been confirmed by Mazloumi et al., and it is widely used in research and professional health clinics [8, 14, 15]. Participants' scores are calculated by responses to the questionnaire, physical and mental studies, and health status and resources. The questionnaire consists of seven questions and three fields, each evaluated with more than one question, as follows:

1. Work ability compared to the best time of life
2. Work ability in relation to job demands

3. The number of existing diseases a physician has diagnosed, an estimation of sickness absenteeism during the past year, and a work-ability assessment within the subsequent two years. The score range in this index is between 7 and 49, which is categorized as poor performance (7 to 27 points), moderate performance (28 to 36 points), good performance (34 to 43 points), and excellent performance (44 to 49 points). Poor and moderate performance rates are mentioned as a poor work ability index (score less than 37). The validity and reliability of the Iranian questionnaire were documented in Mazloum et al.'s study on 645 employees of various industries. Cronbach's alpha coefficient is 0.77 in area 1, 0.22 in area 2, and 0.82 in area 3 [15].

C. Menopause Rating Scale (MRS): Manifestations of menopause were calculated using the MRS questionnaire. This questionnaire, a valuable international means to assess menopausal signs, has been used in many clinical and epidemiological studies of middle-aged women to determine the frequency and severity of menopausal symptoms. It includes 11 manifestations related to menopause in three fields: physical (4 questions), psychological (4 questions), and urogenital manifestations (3 questions). We will evaluate physical problems such as hot flashes and night sweats, heart problems and diseases, sleep disorders, and muscle and joint pains. We will also examine mental issues such as depression, nervousness, anxiety, poor memory, and lack of concentration. Questions related to diminished sexual desire and satisfaction, urinary problems, vaginal dryness and burning are presented in the genito-urinary area. These questions are scored on a 5-point Likert scale. In this study, the option

"I do not have" will be scored one point, and the option "very severe" will be scored five points. The lower the score is, the less severe are the menopausal symptoms that a participant has experienced. This questionnaire has been applied in many foreign and local studies [13]. The validity and reliability of this method have been approved and employed in Iran by Ghasemi et al. (2012) and Makundi et al. (2013). The questionnaires' Cronbach's alpha coefficient in these two studies was 0.73 and 0.78, respectively [14, 15].

To analyze the data by SPSS (sv22), the Kolmogorov-Smirnov normality test was used to measure the work ability score and the severity index of menopause. In accordance with the normality of the data distribution ($p < 0.05$), parametric tests were used to compare data. Frequency (percentage) and mean \pm SD were used to describe qualitative and quantitative variables. The ANOVA test was used to analyze the collected data. Pearson's correlation test was used to assess the correlation between age and WAI. In all tests, the considered significance level was less than 0.05.

Results

The mean age and body mass index of participants was 40.00 ± 3.19 years and 25.60 ± 3.82 kg/m², respectively. Regarding occupation, 47.6% of women were Administrative Officers, and 52.4% had other jobs; 82.4% were in fixed shifts, and 17.6% had rotating shifts. Most participants (55.9%) were official hires. The mean and standard deviation of the work ability index score was 38.88 ± 6.55 (Range: 18-49).

Table 1. Participant characteristics

Variable	Level	Frequency	Percentage
Marital status	Single	12	7.1
	Married	150	88.2
	Spouse died or divorced	8	4.7
Education	Diploma or postgraduate diploma	20	11.8
	Bachelor of science	95	55.9
	Masters or higher	55	32.4
Smoking	Positive	2	1.2
	Negative	168	98.8
Physical activity	Daily	45	26.5
	Few times a week	49	28.8
	Weekly	29	17.1
	Inactive	47	27.6
Menopausal status	Perimenopause	112	65.9
	Post-menopause	58	34.1

Table 2. Frequency of work ability levels of women in menopausal transition stage employed at Gonabad University of Medical Sciences.

Work ability	Number	Percentage
Poor	11	6.5
Moderate	39	22.9
Good	76	44.7
High	44	25.9
Total	170	100

The mean ± SD of the intensity of physical, mental, and urogenital menopausal symptoms were 7.44±2.96, 6.46±2.67, and 5.32±2.30, respectively.

ANOVA results showed a significant difference between the average severity of menopausal symptoms and work ability quality (P<0.001). According to Tukey's post hoc test results, the mean intensity of menopause symptoms of work ability was not

significantly different between good and high levels (P=0.238) or between good and average levels (P=0.303). However, all other pairwise comparisons showed statistically significant differences (P<0.05).

Pearson's correlation coefficient between the severity of menopause and the work ability index was negative and significant (P<0.001, r=-0.418).

Table 3. Average severity of menopausal symptoms of women in menopausal transition working at Gonabad University of Medical Sciences according to work ability quality

Work ability	MRS Mean ± SD	P-value
Poor	26.64 ± 6.33	<0.001
Moderate	20.67 ± 4.82	
Good	18.79 ± 5.57	
High	16.84 ± 5.56	

According to Pearson's correlation test, a positive and significant correlation was observed between the severity of menopause symptoms and body mass index (r=0.243, P=0.002). No significant difference was observed between menopause symptom severity and marital status (P=0.59), education (P=0.1), physical activity (P=0.1), and work shift (P=0.8).

Moreover, no significant difference was found between the average score of work ability and marital status (P=0.42), education (P=0.14), physical activity (P=0.5), and body mass index (P=0.602). However, the mean work ability score of women with a rotating shift was significantly lower than that of women on a fixed shift (P=0.017).

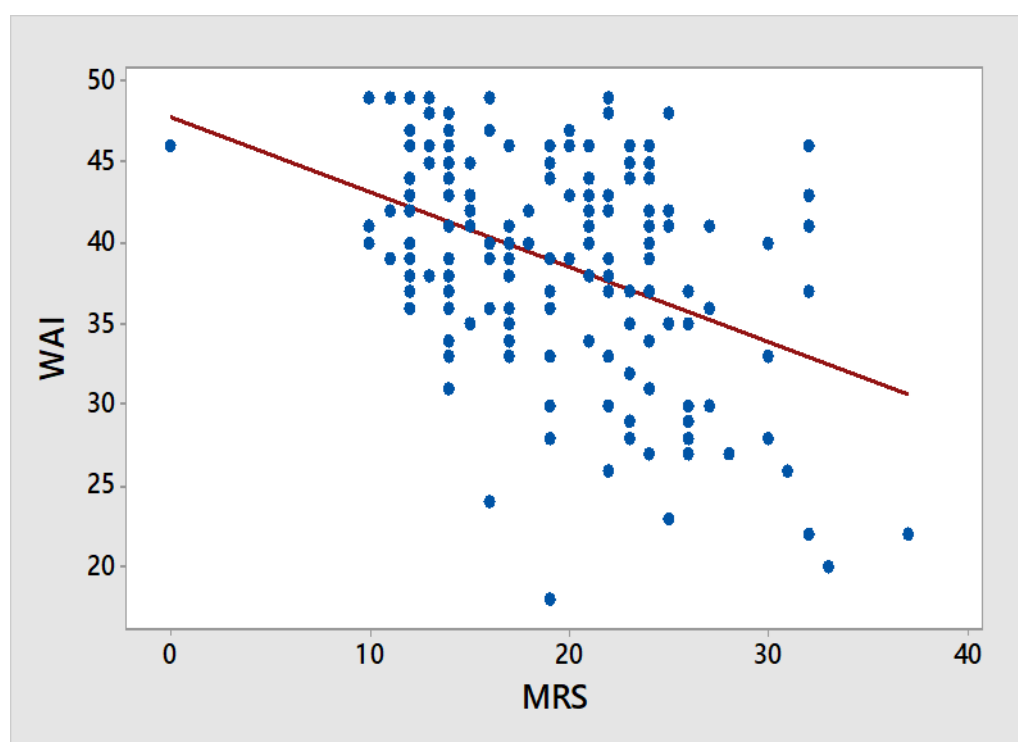


Fig. 1. Pearson's correlation test between menopause severity and the work ability index

Discussion

The current study aimed to determine the association between menopausal symptom severity and the work ability index. This study demonstrated a negatively significant correlation between the severity of menopause manifestations and work ability. As the severity of women's menopause symptoms increases, their ability to do work decreases. Analogous results have been reported in previous studies. In one study done in the Netherlands, almost one fifth of the participants were in the perimenopause stage ($n = 743$). Of these women, 80% experienced menopausal symptoms, 27.5% 'often' and 52.5% 'sometimes'. Experiencing menopausal symptoms was associated with lower work ability, poorer self-rated health, and more emotional exhaustion [16]. A 2019 study in the Netherlands investigated 205 employed women aged 44 to 60 years to analyze the relationship between the work ability index (WAI) and menopausal signs (with the Greim Climacteric scale). The results showed that more than 75% of symptomatic menopausal women reported severe problems in dealing with the physical and psychological demands of their work. There was a negative relationship between menopausal signs and work ability [17].

In the current study, employed women between the ages of 42 and 54 years were monitored and their work ability and menopausal symptom severity assessed using the WAI questionnaire and MRS questionnaire, respectively. The results demonstrated a negative relationship between menopause symptoms and the ability to do work.

In a case-control study conducted in Australia by Sarrell et al., women with severe vasomotor symptoms were studied and compared to asymptomatic women in terms of healthcare services, therapeutic services, treatment costs, and work productivity (disability and corresponding sick leave). The results of a 12-month follow-up revealed that women with severe untreated vasomotor symptoms had a significantly higher usage rate of therapeutic resources (outpatient visits, direct and indirect treatment costs) compared to women in the control group; therefore, vasomotor symptoms had an independently significant relationship with poor work ability.

The present study lacked a control group. The participants were healthcare staff members, and severity-associated visit rate to the physician was not evaluated. Nevertheless, according to the mean score of severity in physiological, psychological, and urogenital menopausal symptoms, most subjects experienced mild to moderate symptoms. Considering the effects of menopausal symptoms on work ability, however, the current findings are in agreement with the results of Sarel et al.

Viotti et al. studied 1069 menopausal women working in Italian offices in 2021 regarding the impact of menopausal signs on job demands, work ability, and fatigue. Their results showed that menopausal symptoms indirectly influenced burnout, work ability, and fatigue of employees.

The current study showed that women with severe menopausal manifestations are more susceptible to the adverse effects of work than those with mild symptoms [18]. Despite the difference in sample size between the current study and that of Viotti et al., the results are consistent regarding the effect of menopausal symptoms on the ability to do work.

Tariverdi et al. studied the relationship between menopausal issues with individual and social characteristics and menopausal symptoms in Tabriz teaching hospitals. They observed that depression, anxiety, and memory impairment were common complications of menopause in women [19]. The current study found depression, anxiety, and memory impairment to be part of psychological menopausal symptom severity, which showed the highest correlation with employees' work ability.

Yim et al. studied 2201 Korean women aged 44 to 56 years in 2015; hot flashes were the most common recurring symptom among the physical components of the condition, followed by leg and back pain. Decreased libido and vaginal dryness were reported by 36% and 23% of their participants, respectively [20].

In the current study, physical menopausal symptoms consisted of frequent hot flashes and night sweats, heart palpitations/heart discomfort, sleep disorder/early waking up, and muscle/joint pain. Urinary-genital menopausal symptoms of decreased libido/decreased sexual satisfaction, urinary incontinence/difficulty urinating, and vaginal dryness/vaginal burning were evaluated. A high score in each field indicated greater severity of the symptom. In the current study, average severity scores for physical and urogenital menopausal symptoms were 7.44 out of 15 and 5.32 out of 11 points, respectively.

The mentioned studies have shown different menopausal symptoms and their severity as well as the significant difference between both areas and the work ability index. Accordingly, women's care and teaching regarding the menopause phase should be proportional to the manifestations and their severity.

The present study documented a significant positive correlation between the severity of menopausal symptoms and body mass index. Koo et al. studied the relationship between obesity and the severity of menopausal symptoms in Korea in 2017. Their results align with the current findings, which showed that menopausal signs have a greater recurrence rate among obese women than in normal or overweight women.

However, the signs induced by menopause can be different depending on the stage of the condition [21].

Falahzadeh et al. studied the impact of demographic variables on the health and performance of postmenopausal women. Their findings demonstrated that education affects physical health by inducing better performance and greater vitality, and the impact of the higher (natural) BMI on women's social and physical health improves quality of life [22]. In the current study, women in the transitional phase rather than menopausal women were investigated. No significant relationship was observed in education and BMI with women's performance, although a higher BMI was associated with a more significant severity of symptoms. The discrepancy in the results may be due to the difference in the research community. The current study sample comprised employed women with similar education levels; there was no correlation between their education and work ability or symptom severity.

The stages of perimenopause and menopause include hormonal and metabolic modifications and changes in body composition, including increased body fat and weight gain [23]. Hence, menopause may lead to increased obesity among middle-aged women. Nevertheless, the inter-relationships between weight, menopausal phase, aging, and hormone levels are poorly understood [23]. There is no agreement among studies considering the relationship between body mass index (BMI) and body fat or menopausal manifestations [24, 25].

Ayati et al.'s 2014 study on 150 menopausal women who visited the menopause clinic in Mashhad investigated the association between severity of menopausal manifestations and other socio-cognitive variables and found that education level, smoking, and physical activity affected menopausal signs. A higher education level was associated with decreased severity of menopause symptoms, such as hot flashes; increased physical activity reduced hot flashes and urogenital signs, and smoking increased the number of hot flashes [26]. The current study recorded no significant relationship between education, smoking, or physical activity and menopausal sign severity. Participant education levels were similar, so no relationship between education and menopausal symptom severity was recorded. However, education cannot be an independent and direct variable affecting the severity of menopausal symptoms; it indirectly affects people's understanding, knowledge (health literacy), treatment availability, care, and counseling facilities in this area. A positive and significant correlation was found between health literacy and quality of life in the postmenopausal phase [27].

In the current study, no association was observed between the severity of menopausal manifestations and smoking. This result may be due to the low prevalence

of smoking; only two female employees reported smoking.

It is recommended that this study be repeated with a larger sample size and more parameters. Limitations to this study may include the compilation and use of an online questionnaire to facilitate the study due to the Covid-19 pandemic, remote working status, and the lack of access to research subjects.

Conclusion

The work ability index of the menopausal transition stage in women employed at the Gonabad University of Medical Sciences was mainly above average, and the mean score of menopausal symptom intensity was below average. However, the intensity of menopausal symptoms, especially in mental and physical ones, significantly decreases work ability in the menopause transitioning phase.

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Conflict of interest: None declared.

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Ethical Considerations

The participants' information is confidential and will not be mentioned anywhere; no intervention was done in the present study, and written consent was obtained from the participants. Furthermore, the principles of benefit and non-harm were observed.

Code of Ethics

This study was approved by the Ethics Committee of Gonabad University of Medical Sciences with code IR.GMU.REC.1400.048.

Authors' Contributions

The authors confirm that all persons designated as authors qualify for authorship and have verified the article for plagiarism. If plagiarism is detected, all authors will be held equally responsible and will bear the resulting sanctions imposed by the journal thereafter. MR and MM and NB conceived and designed the study, conducted research, provided research

materials, and collected and organized data. NKH analysed and interpreted data. MM wrote the initial and final drafts of the article, and provided logistic support. All authors have critically reviewed and approved the final draft, and are responsible for the content and similarity index of the manuscript.

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