


# Investigating the Prevalence and Severity of Menopausal Symptoms and Quality of Life in Peri-menopausal and Post-menopausal Palestinian Women: A Cross-Sectional Study

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## Abstract

**Background:** Menopause is accompanied with symptoms that could be bothersome to the point that quality of life can be affected. The present study aimed to assess the prevalence and severity of menopausal symptoms and quality of life among women in their peri- and post-menopausal phase.

**Methods:** This quantitative cross-sectional study was conducted from February to August 2022 on 332 peri-menopausal (n=162) and post-menopausal (n=170) women aged 45-55 years. They were recruited from the women who visited primary health centers in the East Gaza governorate using convenience sampling. The menopausal rating scale and a validated Arabic World Health Organization Quality of life-BREF (WHOQOL-BREF) were used. Descriptive and inferential analysis were applied and P<0.05 was considered as the level of statistical significance.

**Results:** The mean (SD) of the Menopausal Rating Scale (MRS) score was 2.27±0.49 vs 1.90±0.55 in the post-menopausal and peri-menopausal women, respectively. The most prevalent symptom was joint and muscle problems in peri-menopause (45.7%) and post-menopause (67.6%). The mean score of Quality of Life (QoL) dimensions, namely physical, social, environmental, and psychological domains was lower among the post-menopausal women compared to that among the peri-menopausal ones (3.19±0.73 vs 3.44±0.80, 3.46±0.72 vs 3.62±0.71, 3.50±0.60 vs 3.52±0.62, and 3.59±0.75 vs 3.68±0.77, respectively). Quality of life as well as the associated physical and social aspects were found to be significantly associated with menopausal symptoms (P=0.003 and P=0.048, respectively). Age (51–55 years; P<0.001), marital status (widowed/divorced; P=0.044), income (<300USD; P<0.001), and post-menopausal status (P<0.001) were significantly associated with severity of menopausal symptoms.

**Conclusions:** Menopausal symptoms are common in the post-menopausal status. Their severity was found to increase as menopause status progressed. Psychological symptoms were the most severe symptoms reflecting the need for proper psychological supporting efforts. Menopausal symptoms with severe manifestations impair the quality of life and are associated with socio-demographic and clinical variables.

**Keywords:** Menopause, Menopausal rating scale, Quality of life, Peri-menopause, Post-menopause, Gaza Strip

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## 1. Introduction

Menopause is a natural result of reproductive aging process, and women can normally live one third up to half of their lifetime after this event (1). Menopause is a point when the ovaries stop producing eggs as well as feminine hormones, estrogen and progesterone, due to failure of ovarian follicular function in which a woman will have perpetual amenorrhea after her last menstrual period (2). The hormonal deficiency affects multiple aspects of a woman's general health, leading to

several symptoms, including hot flash and night sweat, sleeping disorders, mood swings, pain, and vaginal infections. Menopausal women are more likely to develop osteoporosis and cardiovascular diseases (CVD) (3).

Menopause is diagnosed retrospectively since it is confirmed after 12 consecutive months following the last menstrual period (4). According to the Stages of Reproductive Aging Workshop (STRAW), menopause-related terms are defined as follows: Peri-menopause is a menopausal transition

when a woman experience variable cycle lengths as an early-stage sign, or more than one skipped cycle at least as a late-stage sign. Post-menopause is an interval of amenorrhea beginning for 12 months after the final period and lasting until the end of life. The first five years of post-menopause are considered as the early stage of the level; the rest of a woman's lifetime years are defined as the late stage (5).

A previous study demonstrated that psychological, sociocultural, and environmental circumstances influence menopause, which interpret why it highly varies in timing and patterns (6). Moreover, we cannot disregard that a large number of menopausal women struggle with menopause due to its physical and psychological problems (7), causing menopausal symptoms, which may not be life-threatening but leaving adverse effect on QoL of women in their middle age (2).

Quality of life (QoL) is defined as "the individual's perceptions of their position in life in the context of the cultural and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (8). Physical and psychosocial aspects of life among menopausal women are believed to be the most affected (7). QoL is influenced by a number of factors, including menopausal symptoms, hormonal changes, decline in health status, cultural attitudes, environmental factors, and changes in family composition (9). Hence, managing the menopausal symptoms, it is important to consider the menopausal stage, place of residence, the presence of chronic diseases or depression and anxiety (2).

According to existing literature, there is scarce information regarding the quality of life during menopause and the severity and prevalence of menopausal symptoms among middle-aged women. Thus, this study aimed to examine the severity and prevalence of menopausal symptoms on top of quality of life of women in peri- and post-menopause status in Gaza Strip, Palestine.

## 2. Methods

### 2.1. Study Design

This was a cross-sectional study among Palestinian women aged 45 to 55 years, attending

governmental primary health centers (PHCs). The study was conducted from February to August 2022. The study was undertaken at PHCs in the East Gaza Governorate: Sabha El Harazin, and AL Sorani clinics. These PHCs were randomly selected through cluster sampling. Gaza Strip was initially divided into six geographical clusters, after which two PHCs were randomly selected.

### 2.2. Study Sample and Sampling

According to the Palestinian central bureau of statistic, there are 16,777 women at the age range of 45-55 in the East Gaza governorate. The sample size formula of cross-sectional design ( $n = Z^2(1-\alpha) * p*(1-p)/d^2$ ) was utilized. Additionally, we assumed the prevalence of severe menopause symptoms to be 50% among women because no previous evidence existed. The sample size was estimated at 384 and 10% non-response rate was added, the estimated sample size being 422 women. Women were selected by convenience sampling.

### 2.3. Inclusion and Exclusion Criteria

The study sample comprised all peri- and post-menopausal women aged 45 to 55 years of the intended area. Women with mental disorders, a history of hysterectomy, and induced menopause or those receiving any kinds of menopausal hormone therapy (MHT) were excluded as well as the women who did not give the consent to participate in the study.

### 2.4. Ethical Consideration

The ethical approval was first obtained from Israa University-Gaza (02-05-2022). Subsequently, a permission from the Ministry of Health was obtained to conduct the study in the governmental PHCs (No: 960082). Voluntary and anonymous participation were ensured; accordingly, informed consent was obtained from the women after describing the objectives of the study. Additionally, the information gathered were treated with confidentiality and the questionnaires were kept with the leader of the research team until the research project was accomplished.

### 2.5. Data Collection Tools

A structured questionnaire was used, consisting of three parts; the first part comprised sociodemographic

variables (age, marital status, employment, education, income, and smoking), obstetric and maternity data, and menopausal status (age at menstruation, period length, period cycle, number of pregnancies, number of births, oral contraceptive use, age at menopause, time since menopause, chronic diseases, breast diseases, and gynecological diseases). The second part; on the other hand, assessed menopausal symptoms using the Menopause Rating Scale (MRS). MRS is a self-reported, subjective scale applied and validated on various populations. MRS is composed of 11 items whose answers are ranged from 0 (not present) to 4 (very severe). It is divided into three domains: somatic, psychological, and urogenital symptoms. Women are considered to have severe symptoms if MRS is equal or higher than 17 (4). The MRS was psychometrically tested for its reliability using Cronbach's alpha coefficient; the overall value of the whole scale was 0.81, ranging from 0.76 to 0.88. A pilot study revealed that Arabic statements are clear and understandable. Content validity, as measured by scale content validity and item content validity index (S-CVI, I-CVI), showed excellent values ( $>0.91$  and  $\geq 0.88$ , respectively), confirming the content validity of the MRS.

The third part assessed QoL using the Arabic version of the World Health Organization Quality of life (WHOQOL-BREF). It is a 26-item questionnaire, with the first two separated questions asking about overall individual perceptions about the quality of life and health status. The other 24 questions cover four domains: 1) physical health domain, including seven items and focusing on the overall perception of an individual about physical ability; 2) psychological health domain, including six items, concerned with revealing an individual's perception about affective and mental capacity; 3) social relationships domain, with three items about an individual's perception of social relationships and roles; 4) environment domain, consisting of eight items measuring an individual's perception about various aspects relating to environment. Answer of questions are rated on five-point Likert scale (1=very bad/ very dissatisfied to 5= very good/ very satisfied) (10). The WHOQOL-BREF was previously tested and examined for internal consistency and Cronbach's alpha was excellent for three domains ( $\geq 0.85$ ) but reasonable for the fourth social domain (0.6) (11).

## 2.6. Data Analysis

Data were coded, entered, and analyzed using

the Statistical Package for the Social Sciences (SPSS) version 25 (IBM Corp, Armonk, NY, USA). They were checked for errors and outliers prior to the analysis phase. Descriptive statistics were used with percentages and frequencies for categorical variables, and with mean and standard deviation (SD) for continuous variables. Analysis of variance (ANOVA) and t-test were both utilized for comparing and making associations among the variables. No clear cut-off between the bad and good QoL was determined. QoL was considered poor if the participants gave it a score of 1, 2, or 3 (poor QoL/unsatisfied feeling with health) or good with a score of 4 or 5 (good QoL/satisfactory feeling with health). P value below 0.05 was considered to be statistically significant.

## 3. Results

### 3.1. Characteristics of the Participants

Herein, 332 (78.6%) women aged between 45-55 years completed the questionnaire. They were divided into two categories: 162 (48.8%) in peri-menopausal, and 170 (51.2%) post-menopausal status. The mean (SD) age of the sample was 50.93 (3.41) years. The majority of the women were married (93.4%), housewives (93.1%), educated up to secondary school (84.3%), had an income  $\leq 300$  USD (68.7%), and were non-smoker (98.5%). The mean (SD) age at menstruation was 13.67 (1.43) years. The mean (SD) age at menopause of post-menopausal women was 47.52 (3.42) years. Out of them, 61.8% had menopause for at least 5 years. The proportion of subjects with chronic diseases was higher among the post-menopausal women compared to that in peri-menopausal ones (45.3% vs. 38.3%, respectively). The majority of them did not have breast diseases (96.1%) or gynecological diseases (98.2%) (Table 1).

### 3.2. Prevalence and Severity of Menopausal Symptoms

Menopausal symptoms were found to be high among women in the post-menopausal phase when compared to those in the peri-menopausal phase. Somatic symptoms (heart discomfort, hot flashes, sleeping disorders, and muscle and joint problems) increased significantly, with the percentage of severe symptoms being significantly higher in the post-menopausal compared to that in peri-menopausal phase ( $2.27 \pm 0.49$  vs.  $1.90 \pm 0.55$ )

**Table 1:** Demographic and clinical characteristics of participants

Variable		Peri-menopause (n=162) n (%)	Post-menopause (n=170) n (%)	Total (n=332) n (%)
Age	(M±SD)	48.13±2.53	52.62±2.59	50.43±3.41
	45–50	130 (80.2%)	37 (21.8%)	167 (50.3%)
	51–55	32 (19.8%)	133 (78.2%)	165 (49.7%)
Marital status	Single	4 (2.5%)	3 (1.8%)	7 (2.1%)
	Married	152 (93.8%)	158 (92.9%)	310 (93.4%)
	Other	6 (3.7%)	9 (5.3%)	15 (4.5%)
Job	Employed	9 (5.6%)	13 (7.6%)	22 (6.6%)
	Retired	1 (0.3%)	-	1 (0.3)
	Housewife	152 (93.8%)	157 (92.4%)	309 (93.1%)
Educational level	None	5 (3.1%)	20 (11.8%)	25 (7.5%)
	Secondary	144 (88.9%)	136 (80.0%)	280 (84.3%)
	Diploma & above	13 (8.0%)	14 (8.2%)	27 (8.1%)
Income USD	≤300	110 (67.9%)	118 (69.4%)	228 (68.7%)
	301–600	40 (24.7%)	35 (20.6%)	75 (22.6%)
	>600	12 (7.4%)	17 (10.0%)	29 (8.7%)
Smoking	Yes	2 (1.2%)	3 (1.8%)	5 (1.5%)
	No	160 (98.8%)	167 (98.2%)	327 (98.5%)
Age at menstruation	(M±SD)	13.67±1.46	13.67±1.40	13.67±1.43
	≤14	115 (71.0%)	131 (77.1%)	246 (74.1%)
	>14	47 (29.0%)	39 (22.9%)	86 (25.9%)
Period length	<5 days	51 (31.5%)	42 (24.7%)	93 (28.0%)
	5–6 days	65 (40.1%)	81 (47.6%)	146 (44.0%)
	>6 days	46 (28.4%)	47 (27.6%)	93 (28.0%)
Period cycle	≥28 days	116 (71.6%)	113 (66.5%)	229 (69.0%)
	<28 days	46 (28.4%)	57 (33.5%)	103 (31.0%)
No of pregnancy	Never	8 (4.9%)	7 (4.1%)	15 (4.5%)
	Once	2 (1.2%)	1 (0.6%)	3 (0.9%)
	Twice & more	152 (93.8%)	162 (95.3%)	314 (94.6%)
No of births	Never	9 (5.6%)	6 (3.5%)	15 (4.5%)
	Once	2 (1.2%)	5 (2.9%)	7 (2.1%)
	Twice & more	151 (93.2%)	159 (93.5%)	310 (93.4%)
Use of contraceptives	Yes	50 (30.9%)	46 (27.1%)	96 (28.9%)
	No	112 (69.1%)	124 (72.9%)	236 (71.1%)
Age at Menopause	(M±SD)	-	47.52±3.42	-
Time of menopause	>5 years	-	65 (38.2%)	-
	<5 years	-	105 (61.8%)	-
Presence of chronic diseases	Yes	62 (38.3%)	77 (45.3%)	139 (41.9%)
	No	100 (61.7%)	93 (54.7%)	193 (58.1%)
Presence of breast diseases	Yes	6 (3.7%)	7 (4.1%)	13 (3.9%)
	No	156 (96.3%)	163 (95.9%)	319 (96.1%)
Presence of women diseases	Yes	4 (2.5%)	2 (1.2%)	6 (1.8%)
	No	158 (97.5%)	168 (98.8%)	326 (98.2%)

USD: United states Dollar

(paired  $t=-6.51$ ,  $P<0.001$ ). By and large, the MRS mean score was higher in the post-menopausal than peri-menopausal phase, reflecting the severity of symptoms ( $2.27\pm0.49$  vs.  $1.90\pm0.55$ ). With regard to psychological symptoms (anxiety, depressed mood, irritability, and physical and mental exertion), the mean score was similarly high in women in the post-menopausal state than

those in the peri-menopausal state ( $2.19\pm0.53$  vs.  $2.09\pm0.65$ ). Additionally, the number of women with medium and severe symptoms notably increased in the post-menopausal state; however, it was not significant ( $t=-1.54$ ,  $P=0.124$ ). Moreover, urogenital symptoms (sexual and bladder problems, dryness of vagina) were found to be increased. The mean score of symptoms was higher



and more significant in the post-menopausal than in that in the peri-menopausal state ( $1.58 \pm 0.49$  vs  $1.44 \pm 0.54$ ) ( $t = -2.52$ ,  $P = 0.012$ ), and most women at the post-menopausal state (72.4%) reported medium urogenital symptoms compared to that being 51.9% in the peri-menopausal state (Table 2).

### 3.3. Quality of Life Among Peri- and Post-menopause Women

Women's satisfaction with their health decreased in the post-menopausal state, negatively affecting the self-rating of their QoL. With regard to the WHOQOL-BREF dimensions, the mean score of physical, social, environmental, and psychological domains was lower among the post-menopausal women compared to the peri-menopausal subjects ( $3.19 \pm 0.73$  vs.  $3.44 \pm 0.80$ ,  $3.46 \pm 0.72$  vs.  $3.62 \pm 0.71$ ,  $3.50 \pm 0.60$  vs.  $3.52 \pm 0.62$ , and  $3.59 \pm 0.75$  vs.  $3.68 \pm 0.77$ , respectively). However, statistically significant differences were found between the two groups in terms of physical (paired  $t = 2.96$ ,  $P = 0.003$ ) and social domains (paired  $t = 1.98$ ,  $P = 0.048$ ) (Table 3).

### 3.4. Association between Severity of Menopausal Symptoms and Quality of Life of Peri- and Post-menopausal Women

The number of women reporting poor QoL increased regardless of menopausal symptoms severity, in the post-menopausal state with a significant difference (14.8% vs. 18.2%;  $\chi^2 = 20.67$ ,  $P < 0.001$ ). There was a significant association among MRS domains, especially urogenital and psychological ones, in the post-menopausal state ( $P < 0.001$ ). Regarding somatic symptoms, 14.8% of the women in peri-menopausal state reported to have poor QoL compared to 18.2% in the postmenopausal state. Regarding psychological symptoms, the percentage of poor QoL rose from 14.8% in the peri-menopausal cases to 18.2% in the post-menopausal ones. With regard to urogenital symptoms, the percentage of poor QoL in the peri-menopausal state was 14.8% compared to 18.2% in the post-menopausal state (Table 4).

### 3.5. Variations of Severity of Menopausal Symptoms Regarding the Sociodemographic Variables

Severity of menopausal symptoms on the MRS was higher for the age range of 51-55 years. Nonetheless, a statistically significant difference existed concerning the somatic symptoms only (paired  $t = -4.68$ ,  $P < 0.001$ ). Severity of menopausal symptoms was found to be higher among the widowed/divorced women, except for urogenital

**Table 2:** Prevalence and severity of menopausal symptoms by menopausal stage

Domain	Peri-menopause (n=162)			Post-menopause (n=170)		
	n (%)	Medium n (%)	Severe n (%)	No n (%)	Medium n (%)	Severe n (%)
Hot flashes, sweating	58 (35.8%)	64 (39.5%)	40 (24.7%)	23 (13.5%)	53 (31.2%)	94 (55.3%)
Heart discomfort	79 (48.8%)	65 (40.1%)	18 (11.1%)	48 (28.2%)	84 (49.4%)	38 (22.4%)
Sleep problems	69 (42.6%)	56 (34.6%)	37 (22.8%)	38 (22.4%)	77 (45.3%)	55 (32.4%)
Muscle and joint problem	29 (17.9%)	59 (36.4%)	74 (45.7%)	9 (5.3%)	46 (27.1%)	115 (67.6%)
Somatic	20 (12.3%)	135 (83.3%)	7 (4.3%)	3 (1.8%)	149 (87.6%)	18 (10.6%)
Depressive mood	42 (25.9%)	63 (38.9%)	57 (35.2%)	34 (20.0%)	82 (48.2%)	54 (31.8%)
Irritability	40 (24.7%)	58 (35.8%)	64 (39.5%)	21 (12.4%)	89 (52.4%)	60 (35.3%)
Anxiety	49 (30.2%)	64 (39.5%)	49 (30.2%)	25 (14.7%)	89 (52.4%)	56 (32.9%)
Physical and mental exertion	41 (25.3%)	62 (38.3%)	59 (36.4%)	32 (18.8%)	68 (40.0%)	70 (41.2%)
Psychological	18 (11.1%)	124 (76.5%)	20 (12.3%)	5 (2.9%)	147 (86.5%)	18 (10.6%)
Sexual problems	114 (70.4%)	32 (19.8%)	16 (9.9%)	108 (63.5%)	45 (26.5%)	17 (10.0%)
Bladder problems	98 (60.5%)	40 (24.7%)	24 (14.8%)	100 (58.8%)	53 (31.2%)	17 (10.0%)
Dryness of vagina	117 (72.2%)	28 (17.3%)	17 (10.5%)	76 (44.7%)	57 (33.5%)	37 (21.8%)
Urogenital	74 (45.7%)	84 (51.9%)	4 (2.5%)	47 (27.6%)	123 (72.4%)	-

**Table 3:** Mean scores of the world health quality of life-BREF domains by menopausal stage

Domain	Physical (M±SD)	Psychological (M±SD)	Social (M±SD)	Environmental (M±SD)
Peri-menopause	3.44±0.80	3.68±0.77	3.62±0.71	3.52±0.62
Post-menopause	3.19±0.73	3.59±0.75	3.46±0.72	3.50±0.60
t-test	t=2.96	t=1.07	t=1.98	t=0.29
	P=0.003	P=0.284	P=0.048	P=0.771

**Table 4:** Association between severity of menopausal symptoms and quality of life regarding menopausal status

Domain		Peri-menopause			Post-menopause		
		Poor QOL	Good QOL	Total	Poor QOL	Good QOL	Total
Somatic	No	-	20 (12.3%)	20 (12.3%)	-	3 (1.8%)	3 (1.8%)
	Medium	22 (13.6%)	113 (69.8%)	135 (83.3%)	34 (20.0%)	115 (67.6%)	149 (87.6%)
	Severe	2 (1.2%)	5 (3.1%)	7 (4.3%)	8 (4.7%)	10 (5.9%)	18 (10.6%)
	Total	24 (14.8%)	138 (85.2%)	162 (100%)	31 (18.2%)	139 (81.8%)	170 (100%)
$\chi^2=4.76, P=0.092$				$\chi^2=5.04, P=0.080$			
Psychological	No	-	18 (11.1%)	18 (11.1%)	-	5 (2.9%)	5 (2.9%)
	Medium	12 (7.4%)	112 (69.1%)	124 (76.5%)	30 (17.6%)	117 (68.8%)	147 (86.5%)
	Severe	12 (7.4%)	8 (4.9%)	20 (12.3%)	12 (7.1%)	6 (3.5%)	18 (10.6%)
	Total	24 (14.8%)	138 (85.2%)	162 (100%)	31 (18.2%)	139 (81.8%)	170 (100%)
$\chi^2=38.08, P<0.001$				$\chi^2=20.14, P<0.001$			
Urogenital	No	9 (5.6%)	65 (40.1%)	74 (45.7%)	2 (1.2%)	45 (26.5%)	47 (27.6%)
	Medium	13 (8.0%)	71 (43.8%)	84 (51.9%)	40 (23.5%)	83 (48.8%)	123 (72.4%)
	Severe	2 (1.2%)	2 (1.2%)	4 (2.5%)	-	-	-
$\chi^2=4.37, P=0.113$				$\chi^2=14.61, P<0.001$			
MRS	No	-	7 (4.3%)	7 (4.3%)	-	2 (1.2%)	2 (1.2%)
	Medium	8 (4.9%)	91 (56.2%)	99 (61.1%)	8 (4.7%)	74 (43.5%)	82 (48.2%)
	Severe	16 (9.9%)	40 (24.7%)	56 (34.6%)	34 (20.0%)	52 (30.6%)	86 (50.6%)
$\chi^2=13.17, P=0.001$				$\chi^2=20.67, P<0.001$			

QOL: Quality of Life, MRS: Menopausal Rating Scale

symptoms, but the mean differences were only statistically significant in psychological symptoms ( $F=3.16, P=0.044$ ). Moreover, severity of symptoms was higher among those having an income of under 300 USD ( $F=13.16, P<0.001$ ), and those with menstruation at age  $\leq 14$  years. The mean difference was not however statistically significant ( $P>0.05$ ). Women with a history of menstruation period of more than 6 days had more severe symptoms, except for urogenital ones ( $P<0.05$ ); the mean differences were also not significant for none of the domains ( $P>0.05$ ). Women who reported one pregnancy,  $<28$  days of period cycle, giving one birth, and not using oral contraceptives showed more severe menopausal symptoms; meanwhile, the mean differences were not statistically significant ( $P>0.05$ ). Severity of menopausal symptoms, somatic and urogenital symptom were significantly higher in the post-menopausal phase (paired  $t=-6.51, P<0.001$  and paired  $t=-2.52, P=0.012$ , respectively) (Table 5).

#### 4. Discussion

We found that menopausal symptoms are prevalent and intense in the post-menopausal status. The severity of menopausal symptoms increased with progression of menopause status. The most common and severe symptoms were found to be the psychological ones. Moreover, the problems related to joint and muscles were common, especially in post-menopausal status.

Quality of life was found to be impaired among post-menopausal women. Menopausal symptoms with severe manifestations impair the quality of life and are associated with socio-demographic and clinical variables, like age, marital status, and income level. These findings will be further discussed with relevant literature across the globe.

Menopause is an important event in middle-aged women lives, and need to be studied as it interferes with their quality of life. This cross-sectional study was conducted in the east of Gaza Strip to assess the prevalence and severity of menopausal symptoms and the QoL among Palestinian women in peri- and post-menopause status.

The average age at menarche was 13.79 years. This result is similar to those reported in Ethiopia (4) where the mean age at menarche was at least 13 years. The mean age at menopause was  $47.52 \pm 3.42$  years, within the global range age of natural menopause ranging from 47.2 to 51.3 years (12), but earlier than that reported for Nablus, Palestine ( $49.37 \pm 3$ ) (13). The majority of our participants (61.8%) had the last menopausal period more than five years prior. Since the mean age at menstruation and menopause is not nationally available, we cannot compare our numbers to the accepted Palestinian data.

In our study, the prevalence of overall menopausal symptoms was 94.5% among all the

**Table 5:** Variations of severity of menopausal symptoms regarding sociodemographic variables

Age	Somatic (M±SD)	Psychological (M±SD)	Urogenital (M±SD)
45–50 years	1.95±0.55	2.13±0.63	1.50±0.55
51–55 years	2.23±0.52	2.15±0.55	1.53±0.49
t-test	t=-4.68, P<0.001	t=-0.19, P=0.284	t=-0.50, P=0.620
Marital status			
Single	1.82±0.40	1.82±0.49	1.24±0.42
Married	2.09±0.55	2.13±0.59	1.52±0.52
Other	2.20±0.61	2.45±0.55	1.49±0.42
F-test	F=1.13, P=0.326	F=3.16, P=0.044	F=1.03, P=0.357
Job			
Employed	2.14±0.44	1.95±0.50	1.51±0.47
Housewife	2.09±0.56	2.15±0.59	1.51±0.52
t-test	t=0.47, P=0.638	t=-1.64, P=0.103	t=-0.056, P=0.956
Education			
None	2.06±0.40	2.16±0.51	1.52±0.51
Secondary	2.10±0.57	2.16±0.51	1.52±0.52
Diploma & above	2.05±0.52	1.89±0.48	1.46±0.47
F-test	F=0.13, P=0.875	F=2.67, P=0.071	F=0.172, P=0.842
Income USD			
≤300	2.12±0.55	2.24±2.56	1.56±0.53
301-600	2.01±0.56	1.96±0.60	1.43±0.51
>600	2.09±0.53	1.78±0.58	1.36±0.43
F-test	F=1.11, P=0.330	F=13.16, P<0.001	F=3.41, P=0.034
Age at menstruation			
≤14	2.11±0.53	2.15±0.59	1.52±0.52
>14	2.03±0.61	2.11±0.59	1.50±0.53
t-test	t=1.04, P=0.302	t=0.58, P=0.563	t=0.35, P=0.726
Period length			
<5 days	2.00±0.58	2.12±0.63	1.54±0.59
5–6 days	2.10±0.56	2.08±0.60	1.52±0.51
>6 days	2.16±0.51	2.25±0.53	1.47±0.49
F-test	F=1.91, P=0.150	F=2.55, P=0.079	F=0.58, P=0.559
Period cycle			
≥28 days	2.08±0.55	2.15±0.58	1.48±0.48
<28 days	2.11±0.55	2.11±0.61	1.60±0.60
t-test	t=-0.56, P=0.578	t=0.57, P=0.568	t=-1.80, P=0.075
No. of pregnant times			
Never	1.92±0.55	2.22±0.57	1.51±0.60
Once	2.58±0.14	2.42±0.38	1.89±1.02
Twice & more	2.09±0.55	2.13±0.59	1.51±0.51
F-test	F=1.95, P=0.144	F=0.48, P=0.621	F=0.80, P=0.453
No. of births			
Never	1.92±0.55	2.18±0.53	1.49±0.59
Once	2.32±0.61	2.18±0.59	1.76±0.63
Twice & more	2.09±0.55	2.14±0.59	1.51±0.51
F-test	F=1.36, P=0.259	F=0.06, P=0.941	F=0.83, P=0.435
Oral contraceptives			
Yes	2.01±0.57	2.08±0.62	1.51±0.52
No	2.12±0.54	2.16±0.58	1.51±0.52
t-test	t=-1.71, P=0.088	t=-1.10, P=0.271	t=-0.6, P=0.953
Menopause status			
Peri-menopause	1.90±0.55	2.09±0.65	1.44±0.54
Post-menopause	2.27±0.49	2.19±0.53	1.58±0.49
t-test	t=-6.51, P<0.001	t=-1.54, P=0.124	t=-2.52, P=0.012
Time of menopause			
>5 years	2.31±0.51	2.16±0.56	1.60±0.45
<5 years	2.25±0.48	2.20±0.51	1.57±0.51
t-test	t=0.77, P=0.441	t=-.52, P=0.605	t=0.37, P=0.710

USD: United States Dollar

participants. Only 4.3% and 1.2% of the peri- and post-menopausal women did not experience any symptoms, respectively. This finding is in accordance with those reported in Ethiopia (4), Palestine (13), Latin America (14), Sri Lanka (15), and India (16). However, these numbers are higher than that of a Chinese study conducted by Wang and colleagues (2), which were dissimilar with other national Chinese studies. This may be partly explained by the large-scale study sample, and using different measurement tools for assessing the symptoms.

In this study, menopausal symptoms were more prevalent and severe among post-menopausal women. Most of the symptoms were reported as moderate on MRS, similar to findings reported in literature (2, 4, 6, 9, 14), but dissimilar with that of a Chinese study (17). This difference could be attributed to the variations of population across different geographical regions manifested by estrogen level fluctuation. Additionally, different rating scales may count for differences.

The most prevalent symptoms were the somatic and psychological symptoms as only 23 (14%) of the whole sample did not report any of them compared to the least prevalent symptoms, being urogenital ones, where 121 (36.5%) of the participants did not report. These findings were consistent with the literature from China, Pakistan, Latin America, India, the Middle East, Sri Lanka, and Latin America (2, 4, 6, 7, 13-15, 17).

The most prevalent specific symptom was muscle and joint problems among peri- and post-menopausal women (45.7%, 67.6%, respectively); similar findings were found from the international literature (6, 7, 9, 14). The severity of these symptoms might be due to deprived estrogen levels, decreased physical activity, and/or stress and social concerns related to family and upbringing. In agreement with a previous Palestinian study, we showed that muscle and joint problem, irritability, anxiety, physical and mental exertion, and depressive mood were the most prevalent specific symptoms with slight differences in frequency percentages (13).

Additionally, a previous study reported that muscle and joint discomfort (15.6%), physical and mental exhaustion (13.8%), and depressive mood (13.7%) were highly prevalent and rated as severe

to very severe (scores of 3 and 4), at a higher rate than vasomotor symptoms (9.6%) among Latin American women (14). Our study results agree with those of the mentioned study; as muscular joint pain and all of the psychological symptoms were highly prevalent among Palestinian women.

Vasomotor symptoms were less frequent, in line with the results obtained by Blumel and colleagues (14), Rathnayake and co-workers (15), Wang and colleagues (2), and Yisma and colleagues (4). The average prevalence of vasomotor symptoms was reported in some Asian studies (6, 7), but shown to be highly prevalent in Ethiopia and India (4, 16). Although menopause in nature causes vasomotor symptoms (17), the diversity of findings could be partly attributed to the fluctuation of estrogen level, ethnic differences, different health behaviors, as well as environmental and sociodemographic factors.

Urogenital symptoms were the least reported among the whole sample compared to other MRS symptoms. This is similar to what was found in a number of studies conducted in Indian subcontinental, Gulf area, and Ethiopia (4, 6, 7, 9, 15). Dryness of vagina, bladder problems, and sexual issues were respectively the most prevalent urogenital symptoms. Of note, eastern communities are less open when talking about such symptoms. Additionally, some may consider it as a part of normal aging, making speaking about it as a medical condition worthless.

In terms of severity, psychological symptoms were the most severe symptoms. Many studies have confirmed this finding (1, 4, 14) and indeed high grade of vasomotor symptoms were found to be linked with psychological symptoms, including anxiety and depression, in addition to sense of fatigue and sleep loss. A possible explanation is that cognitive and emotional well-being of middle-aged women are affected by severity of menopausal symptoms. These psychological symptoms are not surely resulted directly from menopausal symptoms; nevertheless, fatigue associated with exacerbation and severity of menopausal symptoms could be the main factor.

In our study, we found that the overall QoL got significantly impaired as the menopause progressed similar to the results of Nassar and colleagues (13), and Rathnayake and co-workers (15). The physical



and social domains were significantly lower in the post-menopause stage. Poor QoL was associated with occurrence of menopausal symptoms, significantly with psychological symptoms in general, and urogenital symptoms only among the post-menopausal women. Moreover, severe symptoms increased significantly, especially among those who had poor QoL, which is consistent with what was obtained from other studies (13-15). Several studies have associated menopausal symptoms with age, education level, employment, smoking, physical activity, null parity, chronic diseases, and menopausal status, by which the QoL can be affected (2, 6, 13-15, 17).

Our findings revealed different menopausal symptoms were significantly associated with some sociodemographic and clinical factors; for example, somatic symptoms were more common in the 51-55 age groups while psychological symptoms were significantly higher among the widows and divorced group. Our population mostly belongs to poor economic status where they complained of significant psychological and urogenital symptoms. Somatic and urogenital symptoms were also significantly higher at the post-menopausal stage. These findings give the opportunity to explore the nature of the relationship between the perceived menopausal symptoms and the related independent factors.

#### 4.1. Limitations

This paper has a number of limitations. Firstly, we applied convenient sampling for selecting women, which limits generalization of our findings. Secondly, the nature of a cross-sectional design limits the causal relationship between variables. Furthermore, some independent variables were impractical to be measured due to limited resources, such as height and weight, body mass index (BMI), and follicle stimulating hormone (FSH) level as an indicator for menopause.

#### 5. Conclusions

In conclusion, menopausal symptoms, especially somatic and urogenital symptoms, were more prevalent in post-menopause status and most of them were moderate. Muscle and joint pain and psychological symptoms were the most severe ones. QoL was impaired as menopause progressed, specifically the physical and social

domains. Severity of menopausal symptoms was found to contribute to a poorer QoL, especially the psychological and urogenital symptoms, in post-menopause. Severity of menopausal symptoms were also associated with age, marital status, income level, and menopausal status.

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#### Ethical Approval

The ethical approval was first obtained from Israa University-Gaza (02-05-2022). Subsequently, a permission from the Ministry of Health was obtained to conduct the study in the governmental PHCs (No: 960082). Voluntary and anonymous participation were ensured; accordingly, informed consent was obtained from the women after describing the objectives of the study. Additionally, the information gathered were treated with confidentiality and the questionnaires were kept with the leader of the research team until the research project was accomplished.

**Conflict of Interest:** None declared.

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