The Effectiveness of an E-Module on Quality of Life Among Menopausal Women in Medina City, Saudi Arabia

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Abstract
Background: Menopause is a major transition point in the life of a woman as it brings about significant physical and psychological changes that lead to impairing QOL. Many studies suggested that Dealing with these issues by novel interventions is imperative.
Main Aim: This study aims to assess the effectiveness of an E-module on improving QOL among menopausal women in Medina City, Saudi Arabia.
Methods: A quasi-experimental study was conducted with 210 menopausal women aged 45-60 years, randomly assigned to intervention and control groups. The intervention group received an 8-week E-module covering topics like symptom management, lifestyle modifications, and psychological support. The control group received no intervention. Pre- and post-intervention assessments were conducted using the MENQOL (Menopause-Specific Quality of Life) questionnaire to measure changes in QOL. Data were analyzed using paired t-tests to compare the effectiveness of the E-module.
Conclusion: The E-module significantly enhanced QOL among the intervention group, demonstrating that digital health literacy might be an advantageous method to menopausal symptom management.
Keywords: E Module, Quality of Life, Menopausal, Women

INTRODUCTION

Menopause represents a critical transitional stage in a woman's life characterized by the cessation of ovarian function and accompanied by a wide range of physical, psychological, and social changes that significantly influence quality of life (QoL). It is a biologically determined process typically occurring between the ages of 45 and 55 years, and it is associated with hormonal changes, particularly the decline in estrogen levels, which contribute to multiple physiological and psychological symptoms (Dutta, 2013; Barati et al., 2022). Women commonly experience vasomotor symptoms such as hot flushes, sleep disturbances, mood changes, cognitive complaints, and urogenital dysfunction, all of which may negatively impact their overall well-being (Taavoni et al., 2015; Firooznia et al., 2014). Quality of life during menopause is a multidimensional concept encompassing physical health, psychological well-being, social relationships, and environmental context. The World Health Organization defines QoL as individuals' perception of their position in life within their cultural and value systems, goals, expectations, and concerns (World Health Organization, 1995). Evidence suggests that menopausal symptoms are strongly associated with reduced QoL, particularly when combined with low health literacy, socioeconomic disparities, and limited access to healthcare services (Fallahzadeh, 2010; Peacock et al., 2023).

Globally and regionally, menopausal women experience significant impairment in QoL, with symptoms such as depression, fatigue, sleep disturbances, and musculoskeletal pain being among the most reported factors (Barati et al., 2021; Dotlic et al., 2021). In Saudi Arabia, studies indicate that psychosocial and somatic symptoms significantly affect women's well-being, while limited awareness and inadequate menopause-specific education further exacerbate these challenges (Barkoot et al., 2022; Khan et al., 2023). As women now spend nearly one-third of their lives in the postmenopausal stage, improving QoL during this period has become a major public health priority (Matina et al., 2024).

Education plays a critical role in improving menopausal outcomes by enhancing knowledge, coping mechanisms, and self-efficacy. Structured educational interventions have been shown to significantly improve symptom management and quality of life among menopausal women (Keye et al., 2023; Nappi et al., 2021). In recent years, digital health interventions such as e-modules, mobile applications, and online platforms have emerged as effective tools for delivering accessible, flexible, and culturally sensitive education (Johnson & Tafuto, 2024; Vollrath et al., 2024).

Within the Saudi context, digital health aligns with Vision 2030, which emphasizes healthcare transformation, innovation, and women's empowerment. Despite these advancements, menopause education remains underdeveloped compared to other areas of women's health, highlighting the need for innovative interventions such as e-modules to improve QoL among menopausal women in Medina City

Objectives

The general objective of this study was to investigate the effectiveness of an e-module on quality of life among menopausal women in Medina City, Saudi Arabia.

The specific objectives were to assess baseline quality of life among menopausal women, develop and validate an e-module tailored to their needs, evaluate the effectiveness of the intervention through pre- and post-assessment, compare outcomes between intervention and control groups, and identify factors associated with the effectiveness of the e-module, including demographic and clinical variables.

METHODOLOGY

This thesis adopted a comprehensive methodological approach combining **scoping reviews and a quasi-experimental study** to investigate the quality of life among menopausal women and evaluate the effectiveness of educational and digital interventions. The scoping reviews were conducted using the framework of Arksey and O'Malley, which includes identifying research questions, searching relevant studies, selecting studies, charting data, and synthesizing results. The review followed PRISMA-ScR guidelines to ensure transparency and methodological rigor. Studies published between January 2020 and June 2025 were retrieved from databases including PubMed, Scopus, Web of Science, CINAHL, and Google Scholar. Eligible studies included quantitative, qualitative, and mixed-method research focusing on QoL among menopausal women and using validated instruments such as MENQOL, MRS, SF-36, and WHOQOL.

The primary study employed a quasi-experimental design involving menopausal women aged 45–60 years in Medina City, Saudi Arabia. Participants were divided into intervention and control groups. The intervention group received an 8-week structured e-module covering menopause education, symptom management, lifestyle modifications, and psychological support, while the control group received no intervention.

Quality of life was assessed using the Menopause-Specific Quality of Life (MENQOL) questionnaire before and after the intervention. Statistical analyses were conducted to evaluate changes in QoL and compare outcomes between groups. This integrated approach

allowed for triangulation of evidence from both literature and empirical findings to provide a comprehensive understanding of menopausal QoL and intervention effectiveness

RESULTS

This section presents statistical analyses evaluating the effectiveness of the intervention on menopausal symptoms and their association with participant characteristics. Data were analyzed using IBM SPSS, with descriptive statistics reported as means, standard deviations, frequencies, and percentages. Differences in symptom severity were examined using one-way ANOVA, while relationships between symptom domains were assessed using Pearson's correlation. Changes over time and differences between intervention and control groups were analyzed using repeated-measures ANOVA, including time, group, and interaction effects. Statistical significance was set at $p < 0.05$, with effect sizes reported using partial eta squared (η^2).

Table 1: Socio-Demographic and Health Characteristics by Study Group (N = 210)

Variable	**Category**	**Control n (%)**	**Intervention n (%)**
Marital Status	Married	72 (68.6%)	72 (68.6%)
	Single	9 (8.6%)	9 (8.6%)
	Divorced	15 (14.3%)	15 (14.3%)
	Widowed	9 (8.6%)	9 (8.6%)
Education Level	Illiterate	20 (19.0%)	21 (20.0%)
	Primary	7 (6.7%)	11 (10.5%)
	Secondary	15 (14.3%)	17 (16.2%)
	University or higher	63 (60.0%)	55 (52.4%)
	Other*	0 (0.0%)	1 (1.0%)
Employment Status	Working	38 (36.2%)	40 (38.1%)
	Not working	17 (16.2%)	20 (19.0%)
	Retired	15 (14.3%)	14 (13.3%)
	Housewife	35 (33.3%)	31 (29.5%)
Monthly Income	Below 3,000 SAR	41 (39.0%)	41 (39.0%)
	3,000–7,000 SAR	31 (29.5%)	31 (29.5%)
	More than 7,000 SAR	33 (31.4%)	33 (31.4%)
Number of Children	No children	24 (22.9%)	24 (22.9%)
	One child	19 (18.1%)	19 (18.1%)
	2–3 children	33 (31.4%)	33 (31.4%)
	More than 3 children	29 (27.6%)	29 (27.6%)
Duration of Menopause	Below 1 year	38 (36.2%)	38 (36.2%)
	1–5 years	46 (43.8%)	46 (43.8%)
	More than 5 years	21 (20.0%)	21 (20.0%)
Health Status	No diseases	21 (20.0%)	25 (23.8%)
	Hypertension (HTN)	36 (34.3%)	35 (33.3%)
	Diabetes Mellitus (DM)	25 (23.8%)	21 (20.0%)
	Osteoporosis	17 (16.2%)	18 (17.1%)
	Others	6 (5.7%)	6 (5.7%)
Age Mean± SD		56.29± 7.03	56.35± 7.06

Table 1 shows that the control and intervention groups (N = 210) were comparable across socio-demographic and health characteristics. Most participants were married, had university-level education, and similar employment distributions, with about one-third working or being housewives. Income levels were identical between groups, with the largest proportion earning below 3,000 SAR. Reproductive characteristics were also similar, with most women having two to three children and menopause duration of one to five years. Hypertension was the most common chronic condition, and mean age was nearly identical between groups, confirming baseline equivalence.

Duration of menopause

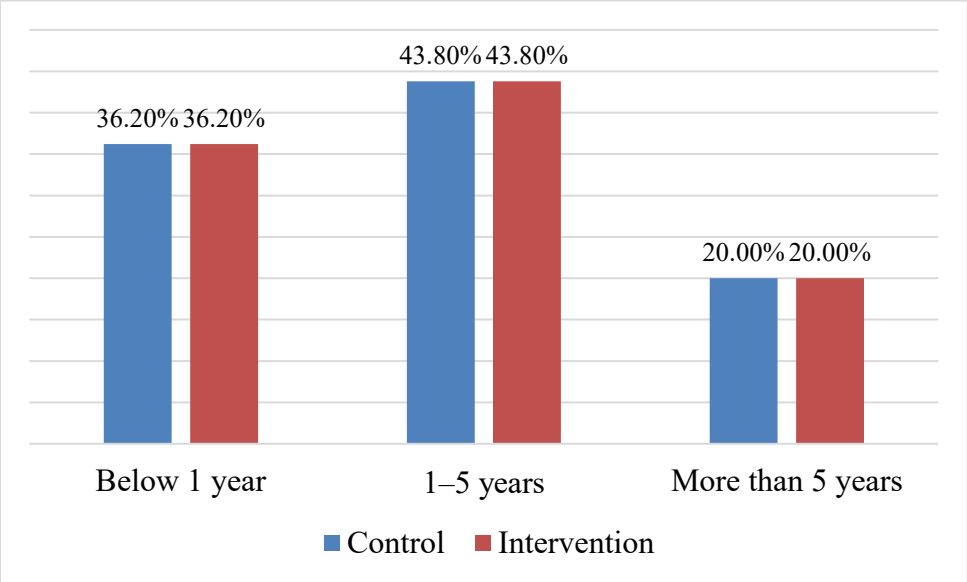

Figure 1: Duration of menopause

The figure illustrates the distribution of participants by duration of menopause in the control and intervention groups. In both groups, the highest proportion of women had experienced menopause for 1–5 years (43.8%), followed by those with a duration of less than one year (36.2%). A smaller proportion of participants in each group reported menopause duration of more than five years (20.0%).

Table 2: Prevalence and Severity of Vasomotor Symptoms among Participants in Control Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Hot flashes / flushes	Yes	57 (54.3%)	1.92 ± 1.96
	No	48 (45.7%)	
Night sweats	Yes	63 (60.0%)	2.06 ± 1.96
	No	42 (40.0%)	
Sweating (not related to exercise)	Yes	75 (71.4%)	2.39 ± 1.98
	No	30 (28.6%)	

Table 2 shows a high prevalence of vasomotor symptoms among women in the control group (N = 105), with sweating unrelated to exercise being the most common (71.4%) and most bothersome symptom (mean 2.39 ± 1.98). Night sweats (60.0%) and hot flashes (54.3%) were also frequently reported, with notable levels of discomfort. These findings indicate a significant burden of untreated menopausal symptoms and considerable variability in symptom perception. The prominence of sweating suggests a particularly disruptive impact on daily comfort and functioning. In the context of Madinah's hot climate and conservative cultural setting, these symptoms may be further intensified, affecting social participation and well-being. Limited awareness and discussion of menopause may contribute to under-recognition and poor management. Overall, the results highlight the need for culturally sensitive educational interventions. Such strategies can improve symptom understanding, coping mechanisms, and quality of life among menopausal women.

DESCRIPTIVE ANALYSIS IN THE CONTROL GROUP

Prevalence and severity of psychological symptoms

Table 3: Prevalence and Severity of Psychological Symptoms among Participants in Control Group (N = 105)

Symptom	Presence	n (%)	Bothering Score Mean ± SD
Being dissatisfied with my personal life	Yes	28 (26.7%)	1.15 ± 1.82
	No	77 (73.3%)	
Feeling anxious or nervous	Yes	70 (66.7%)	2.32 ± 2.05
	No	35 (33.3%)	
Experiencing poor memory	Yes	51 (48.6%)	1.66 ± 1.95
	No	54 (51.4%)	
Accomplishing less than I used to	Yes	62 (59.0%)	1.78 ± 2.04
	No	43 (41.0%)	
Feeling depressed, down, or blue	Yes	62 (59.0%)	1.97 ± 1.92
	No	43 (41.0%)	
Being impatient with others	Yes	51 (48.6%)	1.42 ± 1.92
	No	54 (51.4%)	
Feelings of wanting to be alone	Yes	40 (38.1%)	2.29 ± 1.96
	No	65 (61.9%)	

Table 3 shows a high prevalence of psychological symptoms among women in the control group (N = 105), with anxiety or nervousness being the most common (66.7%) and most bothersome. Depressive symptoms and reduced productivity were also frequently reported, indicating diminished emotional well-being and self-efficacy. Cognitive issues such as poor memory and impatience affected nearly half of participants, while feelings of social withdrawal had a relatively high impact. These findings highlight significant emotional and functional challenges during menopause. In the cultural context of Madinah, where women play central family and social roles, such symptoms may be particularly distressing. Limited discussion of mental health may lead to under-recognition and internalization of symptoms. Many women may perceive these issues as normal ageing

rather than seek support. Overall, the results emphasize the need for culturally sensitive education and psychological support interventions.

Prevalence and severity of physical and somatic symptoms

Table 4: Prevalence and Severity of Physical and Somatic Symptoms among Participants in Control Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Experiencing flatulence (gas pain)	Yes	66 (62.9%)	1.35 ± 1.41
	No	39 (37.1%)	
Aching in muscles and joints	Yes	84 (80.0%)	2.78 ± 2.02
	No	21 (20.0%)	
Feeling tired or worn out	Yes	86 (81.9%)	3.01 ± 1.81
	No	19 (18.1%)	
Difficulty sleeping	Yes	63 (60.0%)	2.16 ± 1.96
	No	42 (40.0%)	
Aches in back of neck or head	Yes	53 (50.5%)	1.77 ± 2.01
	No	52 (49.5%)	
Decreased physical strength	Yes	79 (75.2%)	2.82 ± 1.98
	No	26 (24.8%)	
Decreased stamina	Yes	74 (70.5%)	2.59 ± 2.06
	No	31 (29.5%)	
Feeling a lack of energy	Yes	79 (75.2%)	2.69 ± 1.99
	No	26 (24.8%)	
Dry skin	Yes	58 (55.2%)	2.01 ± 2.04
	No	47 (44.8%)	
Weight gain	Yes	63 (60.0%)	2.30 ± 2.23
	No	42 (40.0%)	
Increased facial hair	Yes	35 (33.3%)	1.18 ± 1.80
	No	70 (66.7%)	
Changes in skin appearance/texture/tone	Yes	71 (67.6%)	2.32 ± 1.93
	No	34 (32.4%)	
Feeling bloated	Yes	70 (66.7%)	2.26 ± 1.91
	No	35 (33.3%)	
Low backache	Yes	79 (75.2%)	2.74 ± 1.97
	No	26 (24.8%)	
Frequent urination	Yes	61 (58.1%)	2.10 ± 2.09
	No	44 (41.9%)	
Involuntary urination when laughing or coughing	Yes	46 (43.8%)	1.56 ± 1.95
	No	59 (56.2%)	

Table 4 shows a high prevalence of physical symptoms among women in the control group (N = 105), with fatigue (81.9%), musculoskeletal pain (80.0%), and reduced strength (75.2%) being the most common and most bothersome. Other frequent symptoms included low backache, lack of energy, decreased stamina, bloating, and skin changes, all with moderate to high impact. Sleep disturbances and weight gain were also common, while urinary symptoms and increased facial hair were less frequent. These findings indicate a

substantial physical burden affecting daily functioning and well-being. The combination of fatigue, pain, and poor sleep suggests a cyclical decline in energy and performance. In the context of Madinah, cultural expectations may lead women to continue responsibilities despite discomfort, often underreporting symptoms. Limited awareness and social sensitivity may further restrict help-seeking. Overall, the results highlight the need for culturally appropriate education and self-care strategies to improve symptom management and quality of life.

Prevalence and severity of sexual symptoms

Table 5: Prevalence and Severity of Sexual Symptoms among Participants in Control Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Change in sexual desire	Yes	67 (63.8%)	2.37 ± 2.05
	No	38 (36.2%)	
Vaginal dryness during intercourse	Yes	51 (48.6%)	2.08 ± 2.04
	No	54 (51.4%)	
Avoiding intimacy	Yes	58 (55.2%)	1.99 ± 1.99
	No	47 (44.8%)	

Table 5 shows that sexual symptoms are common among women in the control group (N = 105), with reduced sexual desire (63.8%) being the most prevalent, followed by avoidance of intimacy (55.2%) and vaginal dryness (48.6%). These symptoms were associated with moderate levels of distress, indicating a meaningful impact on quality of life. The findings suggest that menopause affects not only physical function but also emotional well-being and marital relationships. Vaginal dryness may contribute to discomfort and reinforce avoidance behaviors. Cultural norms may limit open discussion of sexual health, leading to underreporting and silent suffering. As a result, the true burden of these symptoms may be underestimated. The interconnected nature of physical, emotional, and relational factors highlights the complexity of sexual health during menopause. These findings emphasize the need for culturally sensitive education and support. Addressing sexual health openly can improve communication, self-care, and overall well-being.

DESCRIPTIVE ANALYSIS IN THE INTERVENTION GROUP

Prevalence and severity of vasomotor symptoms

Table 6: Prevalence and Severity of Vasomotor Symptoms among Participants in the Intervention Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Hot flashes / flushes	Yes	46 (43.8%)	1.28 ± 1.65
	No	59 (56.2%)	
Night sweats	Yes	74 (70.5%)	2.03 ± 1.63
	No	31 (29.5%)	

Sweating (not related to exercise)	Yes	64 (61.0%)	1.79 ± 1.85
	No	41 (39.0%)	

Table 6 shows that vasomotor symptoms in the intervention group (N = 105) were common but generally associated with lower levels of distress. Night sweats were the most prevalent symptom, followed by sweating not related to exercise, while hot flashes were less frequent and least bothersome. Overall bothering scores were low to moderate, indicating improved symptom tolerance. These findings suggest that education reduced the perceived severity of symptoms rather than their occurrence. Women appeared better able to recognize triggers and apply coping strategies. The intervention likely improved confidence in managing symptoms. Cultural acceptance and awareness may also reduce embarrassment and anxiety. Compared to non-educated groups, distress levels were lower. Education helped reframe menopause as a manageable transition. Overall, the intervention enhanced symptom interpretation and coping.

Prevalence and severity of psychological symptoms

Table 7: Prevalence and Severity of Psychological Symptoms among Participants in the Intervention Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Being dissatisfied with my personal life	Yes	22 (21.0%)	0.76 ± 1.48
	No	83 (79.0%)	
Feeling anxious or nervous	Yes	85 (81.0%)	2.52 ± 1.73
	No	20 (19.0%)	
Experiencing poor memory	Yes	56 (53.3%)	1.54 ± 1.76
	No	49 (46.7%)	
Accomplishing less than I used to	Yes	71 (67.6%)	2.03 ± 1.67
	No	34 (32.4%)	
Feeling depressed, down, or blue	Yes	70 (66.7%)	2.02 ± 1.78
	No	35 (33.3%)	
Being impatient with others	Yes	43 (41.0%)	1.48 ± 1.82
	No	62 (59.0%)	
Feelings of wanting to be alone	Yes	34 (32.4%)	1.02 ± 1.59
	No	71 (67.6%)	

Table 7 shows that psychological symptoms are highly prevalent in the intervention group (N = 105), particularly anxiety, reduced accomplishment, and depressive mood, all with moderate levels of distress. Poor memory was also common, while dissatisfaction with life and social withdrawal were less frequent and less bothersome. Despite high prevalence, the

overall severity remained moderate, suggesting improved coping. These findings indicate that education helped women better understand and manage emotional changes. Symptoms were recognized without being overwhelming. Lower distress in social withdrawal suggests maintained social engagement. Cultural and community support in Madinah may reinforce this effect. Education likely reduced fear and self-blame related to symptoms. Overall, the intervention enhanced emotional awareness and resilience.

Prevalence and severity of physical and somatic symptoms

Table 8: Prevalence and Severity of Physical and Somatic Symptoms among Participants in the Intervention Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Experiencing flatulence (gas pain)	Yes	73 (69.5%)	2.22 ± 1.68
	No	32 (30.5%)	
Aching in muscles and joints	Yes	86 (81.9%)	2.85 ± 1.73
	No	19 (18.1%)	
Feeling tired or worn out	Yes	91 (86.7%)	2.83 ± 1.57
	No	14 (13.3%)	
Difficulty sleeping	Yes	51 (48.6%)	1.63 ± 1.75
	No	54 (51.4%)	
Aches in back of neck or head	Yes	50 (47.6%)	1.61 ± 1.89
	No	55 (52.4%)	
Decreased physical strength	Yes	77 (73.3%)	2.59 ± 1.81
	No	28 (26.7%)	
Decreased stamina	Yes	72 (68.6%)	2.34 ± 1.90
	No	33 (31.4%)	
Feeling a lack of energy	Yes	76 (72.4%)	2.25 ± 1.73
	No	29 (27.6%)	
Dry skin	Yes	45 (42.9%)	1.48 ± 1.92
	No	60 (57.1%)	
Weight gain	Yes	59 (56.2%)	2.02 ± 1.98
	No	46 (43.8%)	
Increased facial hair	Yes	31 (29.5%)	1.07 ± 1.78
	No	74 (70.5%)	
Changes in skin appearance/texture/tone	Yes	68 (64.8%)	1.87 ± 1.56
	No	37 (35.2%)	
Feeling bloated	Yes	76 (72.4%)	2.32 ± 1.71
	No	29 (27.6%)	
Low backache	Yes	83 (79.0%)	2.57 ± 1.67
	No	22 (21.0%)	
Frequent urination	Yes	71 (67.6%)	1.92 ± 1.73
	No	34 (32.4%)	
Involuntary urination when laughing or coughing	Yes	39 (37.1%)	1.03 ± 1.58
	No	66 (62.9%)	

Table 8 shows that physical symptoms remain highly prevalent in the intervention group (N = 105), particularly fatigue, musculoskeletal pain, and low backache. Most participants also reported decreased strength, stamina, and energy, along with common gastrointestinal

symptoms such as bloating and flatulence. Despite this high prevalence, bothering scores were generally moderate, indicating improved tolerance and coping. These findings suggest that education did not eliminate symptoms but reduced their perceived burden. Women likely developed better self-care strategies and understanding of menopausal changes. Cultural roles and daily responsibilities may still contribute to physical strain. Environmental factors such as climate may further influence symptom experience. Education appears to help normalize symptoms rather than eliminate them. Overall, the intervention supports improved physical self-management and adaptation.

Prevalence and severity of sexual symptoms

Table 9: Prevalence and Severity of Sexual Symptoms among Participants in the Intervention Group (N = 105)

Symptom	**Presence**	**n (%)**	**Bothering Score Mean ± SD**
Change in sexual desire	Yes	55 (52.4%)	1.76 ± 1.87
	No	50 (47.6%)	
Vaginal dryness during intercourse	Yes	36 (34.3%)	1.48 ± 1.82
	No	69 (65.7%)	
Avoiding intimacy	Yes	31 (29.5%)	0.48 ± 0.50
	No	74 (70.5%)	

Table 9 presents the prevalence and severity of sexual symptoms among participants in the intervention group (N = 105). A change in sexual desire was reported by 52.4% of participants, with a mean bothering score of 1.76 ± 1.87, indicating mild to moderate distress. Vaginal dryness during intercourse was reported by 34.3% of participants and was associated with a mean bothering score of 1.48 ± 1.82. Avoiding intimacy was less frequently reported, affecting 29.5% of participants, and showed a low mean bothering score of 0.48 ± 0.50, reflecting minimal perceived distress.

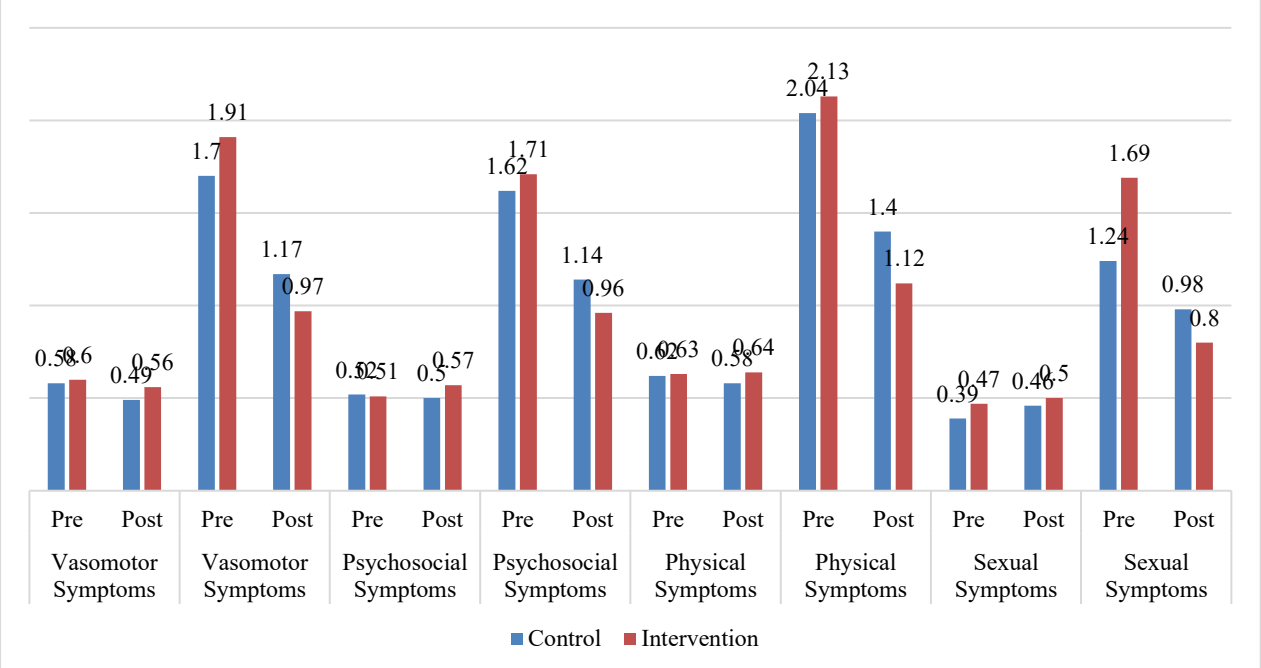

Figure 2: Pre- and Post-Intervention MENQOL Domain Scores by Study Group

The findings indicate a reduction in both the prevalence and distress of sexual symptoms among women in the intervention group, suggesting a positive effect of the educational programme. Fewer women reported vaginal dryness and avoidance of intimacy, and overall bothering scores were low. Although changes in sexual desire remained common, the associated distress was mild, reflecting improved understanding and coping. Education likely helped normalize sexual changes and reduce anxiety related to intimacy. It also enabled women to adopt practical strategies and maintain emotional closeness with partners. Given the sensitive nature of sexual health, culturally appropriate education appears to facilitate open understanding without stigma. Women may feel more confident in communication and help-seeking. These outcomes highlight the importance of integrating sexual health education into menopause care. Overall, education improves both individual well-being and relationship quality.

PRE- AND POST-INTERVENTION MENQOL DOMAIN SCORES BY STUDY GROUP

Table 10: Pre- and Post-Intervention MENQOL Domain Scores by Study Group

Domain	Time	Control Group Mean ± SD	Intervention Group Mean ± SD
Vasomotor Symptoms	Pre	0.58 ± 0.35	0.60 ± 0.35
	Post	0.49 ± 0.34	0.56 ± 0.35
Bothering – Vasomotor Symptoms	Pre	1.70 ± 1.26	1.91 ± 1.38
	Post	1.17 ± 1.03	0.97 ± 0.84
Psychosocial Symptoms	Pre	0.52 ± 0.29	0.51 ± 0.32
	Post	0.50 ± 0.30	0.57 ± 0.31
Bothering – Psychosocial Symptoms	Pre	1.62 ± 1.13	1.71 ± 1.25
	Post	1.14 ± 0.88	0.96 ± 0.74
Physical Symptoms	Pre	0.62 ± 0.29	0.63 ± 0.29
	Post	0.58 ± 0.33	0.64 ± 0.32
Bothering – Physical Symptoms	Pre	2.04 ± 1.14	2.13 ± 1.22
	Post	1.40 ± 1.05	1.12 ± 0.88
Sexual Symptoms	Pre	0.39 ± 0.40	0.47 ± 0.42
	Post	0.46 ± 0.41	0.50 ± 0.36
Bothering – Sexual Symptoms	Pre	1.24 ± 1.15	1.69 ± 1.54
	Post	0.98 ± 1.15	0.80 ± 0.89

Table 10 shows that both control and intervention groups had similar baseline MENQOL scores across all domains. After the intervention, symptom scores changed minimally, but bothering scores decreased in both groups, with greater reductions in the intervention group. This was particularly evident in vasomotor, psychosocial, physical, and sexual domains. The findings suggest that the intervention had a stronger effect on symptom perception rather than symptom presence. Women in the intervention group reported less distress despite similar symptom levels. This indicates improved awareness, coping strategies, and self-management. The reduction in psychosocial and sexual distress highlights the value of education in sensitive areas. Cultural relevance of the intervention likely enhanced its effectiveness. Overall, education improved how women interpret and manage menopausal symptoms.

VARIANCE IN VASOMOTOR OUTCOMES

Table 11: Repeated-Measures ANOVA (Time × Group) for Vasomotor Outcomes (Control vs Intervention)

Outcome / Effect	**Control (n=105) Mean ± SD**	**Intervention (n=105) Mean ± SD**	**F (df)**	**p-value**	**Partial η^2**
Descriptive statistics					
Bothering Vasomotor Symptoms (PRE)	2.12 ± 1.46	1.70 ± 1.26	—	—	—
Vasomotor Symptoms (POST)	0.63 ± 0.34	0.49 ± 0.34	—	—	—
Within-subjects effects					
Time (PRE vs POST)	—	—	201.57 (1, 208)	< 0.001	0.492
Time × Group (TYPE)	—	—	2.35 (1, 208)	0.127	0.011
Between-subjects effect					
Group (TYPE) (average across time)	—	—	8.00 (1, 208)	0.005	0.037

Table 11 shows a significant reduction in vasomotor symptoms over time in both control and intervention groups. The control group had higher baseline scores, while the intervention group reported lower post-intervention scores. A strong effect of time ($p < 0.001$) indicates substantial overall improvement. However, the time × group interaction was not significant, suggesting similar patterns of change in both groups. A significant group effect indicates consistently lower symptom levels in the intervention group. These findings suggest that vasomotor symptoms may decrease naturally over time. Education may not accelerate symptom reduction but may influence perception and management. Environmental factors such as climate may also play a role. The intervention likely helped reduce perceived symptom burden. Overall, education supports better interpretation and coping with vasomotor symptoms.

VARIANCE IN BOTHERING PSYCHOSOCIAL SYMPTOMS

Table 12: Repeated-Measures ANOVA (Time × Group) for Bothering Psychosocial Symptoms (Control vs Intervention)

Outcome / Effect	**Control (n = 105) Mean ± SD**	**Intervention (n = 105) Mean ± SD**	**F (df)**	**p-value**	**Partial η^2**
Descriptive statistics					
Bothering Psychosocial Symptoms (PRE)	1.80 ± 1.36	1.62 ± 1.13	—	—	—
Bothering Psychosocial Symptoms (POST)	0.78 ± 0.49	1.14 ± 0.88	—	—	—
Within-subjects effects					
Time (PRE vs POST)	—	—	58.98 (1, 208)	< 0.001	0.221

Time × Group (TYPE)	—	—	7.63 (1, 208)	0.006	0.035
Between-subjects effect					
Group (TYPE) (average across time)	—	—	0.91 (1, 208)	0.340	0.004

Table 12 shows a significant reduction in psychosocial symptoms over time in both control and intervention groups. Baseline scores were similar, but the control group showed a greater numerical decrease post-intervention. A significant effect of time ($p < 0.001$) indicates overall improvement, while a significant time × group interaction confirms different patterns of change between groups. The group effect was not statistically significant, indicating no overall difference when time is excluded. These findings suggest that psychosocial distress may improve over time due to adaptation or increased awareness. The larger reduction in the control group may reflect differences in symptom reporting. Education likely encouraged more open acknowledgment of emotional symptoms in the intervention group. Cultural factors may influence how distress is expressed. Overall, education impacts both perception and reporting of psychosocial symptoms.

VARIANCE IN BOTHERING PHYSICAL SYMPTOMS

Table 13: Repeated-Measures ANOVA (Time × Group) for Bothering Physical Symptoms (Control vs Intervention)

Outcome / Effect	**Control (n = 105) Mean ± SD**	**Intervention (n = 105) Mean ± SD**	**F (df)**	**p-value**	**Partial η^2**
Descriptive statistics					
Bothering Physical Symptoms (PRE)	2.23 ± 1.29	2.04 ± 1.14	—	—	—
Bothering Physical Symptoms (POST)	0.84 ± 0.53	1.40 ± 1.05	—	—	—
Within-subjects effects					
Time (PRE vs POST)	—	—	122.26 (1, 208)	< 0.001	0.370
Time × Group (TYPE)	—	—	16.86 (1, 208)	< 0.001	0.075
Between-subjects effect					
Group (TYPE) (average across time)	—	—	2.78 (1, 208)	0.097	0.013

Table 13 shows a significant reduction in physical symptom burden over time in both control and intervention groups. Baseline scores were similar, but the control group demonstrated a greater numerical decrease post-intervention. A highly significant effect of time ($p < 0.001$) indicates overall improvement, while a significant time × group interaction confirms different patterns of change between groups. The group effect was not statistically significant, suggesting similar overall levels when time is not considered. These findings indicate that physical symptoms may improve over time, partly due to increased awareness and self-monitoring. The greater reduction in the control group may reflect differences in symptom perception rather than actual improvement. Education likely enhanced body awareness and accurate symptom reporting in the intervention group. Cultural and environmental factors may also influence physical experiences. Overall, education shapes both symptom management and interpretation.

VARIANCE IN BOTHERING SEXUAL SYMPTOMS

Table 14: Repeated-Measures ANOVA (Time × Group) for Bothering Sexual Symptoms (Control vs Intervention)

Outcome / Effect	**Control (n = 105) Mean ± SD**	**Intervention (n = 105) Mean ± SD**	**F (df)**	**p-value**	**Partial η^2**
Descriptive statistics					
Bothering Sexual Symptoms (PRE)	2.15 ± 1.73	1.24 ± 1.15	—	—	—
Bothering Sexual Symptoms (POST)	0.63 ± 0.45	0.98 ± 1.15	—	—	—
Within-subjects effects					
Time (PRE vs POST)	—	—	60.52 (1, 208)	< 0.001	0.225
Time × Group (TYPE)	—	—	30.52 (1, 208)	< 0.001	0.128
Between-subjects effect					
Group (TYPE) (average across time)	—	—	5.19 (1, 208)	0.024	0.024

Table 14 shows a significant reduction in sexual symptom burden over time in both control and intervention groups. The control group had higher baseline scores but showed a greater numerical decrease post-intervention compared to the intervention group. A significant effect of time ($p < 0.001$) indicates overall improvement, while a significant time × group interaction confirms different patterns of change between groups. The control group demonstrated larger reductions, whereas the intervention group showed more consistent reporting. A significant group effect suggests differences in how symptoms were perceived across groups. These findings indicate that symptom burden may decrease over time, partly due to increased awareness. Education may have influenced more accurate and open reporting rather than just reducing symptoms. Cultural factors may also affect how symptoms are expressed. Overall, education plays a role in shaping perception and management of sexual health.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING VASOMOTOR SYMPTOMS

Table 15: Association between participants' characteristics and bothering vasomotor symptoms for the control group (n = 105)

Variable / Category	**Mean ± SD**	**F (df)**	**p-value**
Marital status		0.826 (3,101)	.483
Married	2.18 ± 1.41		
Single	2.07 ± 1.30		
Divorced	1.64 ± 1.42		
Widowed	2.56 ± 2.07		
Education level		0.372 (3,101)	.773
Illiterate	1.92 ± 1.27		
Primary	2.05 ± 1.24		
Secondary	2.44 ± 1.80		
University or higher	2.12 ± 1.48		

Working status		1.002 (3,101)	.395
Working	1.89 ± 1.29		
Not working	2.63 ± 1.61		
Retired	2.04 ± 1.87		
Housewife	2.16 ± 1.38		
Monthly income		1.901 (2,102)	.155
< 3,000 SAR	1.86 ± 1.43		
3,000–7,000 SAR	2.05 ± 1.24		
> 7,000 SAR	2.52 ± 1.65		
Number of children		0.477 (3,101)	.699
None	1.88 ± 1.19		
One	2.00 ± 1.72		
2–3	2.20 ± 1.60		
> 3	2.32 ± 1.36		
Duration of menopause		1.441 (2,102)	.242
< 1 year	1.87 ± 1.25		
1–5 years	2.14 ± 1.51		
> 5 years	2.54 ± 1.68		
Health status		0.396 (4,100)	.811
No diseases	1.83 ± 1.15		
Hypertension	2.15 ± 1.45		
Diabetes mellitus	2.20 ± 1.64		
Osteoporosis	2.16 ± 1.39		
Other conditions	2.61 ± 2.23		

Table 15 shows no significant associations between socio-demographic or health characteristics and vasomotor symptoms in the control group (n = 105). Similar symptom scores were observed across marital status, education, employment, income, number of children, duration of menopause, and health status. Although higher mean scores were noted among widowed, non-working, and higher-income participants, these differences were not statistically significant. This suggests that vasomotor symptoms were relatively uniform across participants. The findings indicate that symptoms are largely driven by physiological factors rather than social variables. Cultural norms may also influence consistent symptom reporting. Environmental factors such as the hot climate may further intensify symptoms across all groups. Overall, vasomotor symptoms appear to be a shared experience. These results highlight the need for universal educational interventions. Such approaches can improve awareness and symptom management for all women.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING PSYCHOSOCIAL SYMPTOMS

Table 16: Association between participants' characteristics and Bothering Psychosocial Symptoms for the control group (n = 105)

Variable / Category	Mean ± SD	F (df)	p-value
Marital status		1.154 (3,101)	0.331
Married	1.87 ± 1.30		
Single	1.02 ± 0.73		
Divorced	1.78 ± 1.46		
Widowed	2.02 ± 1.96		

Education level		0.375 (3,101)	0.771
Illiterate	1.84 ± 1.27		
Primary	1.78 ± 1.35		
Secondary	1.46 ± 1.30		
University or higher	1.87 ± 1.41		
Working status		0.720 (3,101)	0.542
Working	1.70 ± 1.26		
Not working	1.50 ± 1.43		
Retired	1.82 ± 1.46		
Housewife	2.04 ± 1.39		
Monthly income		0.122 (2,102)	0.885
< 3,000 SAR	1.85 ± 1.47		
3,000–7,000 SAR	1.84 ± 1.23		
> 7,000 SAR	1.70 ± 1.35		
Number of children		**2.814 (3,101)**	**0.043***
None	1.23 ± 1.02		
One	2.08 ± 1.63		
2–3	2.18 ± 1.51		
> 3	1.66 ± 1.06		
Duration of menopause		0.007 (2,102)	0.993
< 1 year	1.81 ± 1.37		
1–5 years	1.80 ± 1.34		
> 5 years	1.77 ± 1.42		
Health status		1.236 (4,100)	0.300
No diseases	1.34 ± 1.22		
Hypertension	1.88 ± 1.34		
Diabetes mellitus	1.82 ± 1.44		
Osteoporosis	1.87 ± 1.19		
Other conditions	2.64 ± 1.86		

Table 16 shows that most socio-demographic and health characteristics were not significantly associated with psychosocial symptoms in the control group (n = 105). Similar scores were observed across marital status, education, employment, income, duration of menopause, and health status. However, a significant association was found with the number of children, with higher distress reported among women with one to three children. This suggests that caregiving responsibilities may influence emotional well-being. Women without children reported lower psychosocial symptom burden. Overall, psychosocial symptoms appeared broadly shared across participants. These findings indicate that emotional distress during menopause may be more related to life-stage transitions than socio-economic factors. Cultural and family roles in Madinah may further shape these experiences. The results highlight the importance of addressing family-related stressors. Educational interventions should support coping strategies and emotional well-being.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING PHYSICAL SYMPTOMS

Table 17: Association between participants' characteristics and Bothering Physical Symptoms for the control group (n = 105).

Variable / Category	Mean ± SD	F (df)	p-value
Marital status		0.688 (3,101)	0.562
Married	2.20 ± 1.23		
Single	1.90 ± 1.21		
Divorced	2.25 ± 1.40		
Widowed	2.75 ± 1.69		
Education level		0.435 (3,101)	0.728
Illiterate	2.02 ± 1.16		
Primary	2.11 ± 1.31		
Secondary	2.07 ± 1.15		
University or higher	2.35 ± 1.37		
Working status		0.673 (3,101)	0.571
Working	2.20 ± 1.31		
Not working	1.86 ± 1.47		
Retired	2.40 ± 1.45		
Housewife	2.37 ± 1.12		
Monthly income		0.560 (2,102)	0.573
< 3,000 SAR	2.09 ± 1.35		
3,000–7,000 SAR	2.21 ± 1.12		
> 7,000 SAR	2.41 ± 1.39		
Number of children		1.139 (3,101)	0.337
None	1.80 ± 1.21		
One	2.34 ± 1.33		
2–3	2.32 ± 1.32		
> 3	2.40 ± 1.28		
Duration of menopause		0.405 (2,102)	0.668
< 1 year	2.18 ± 1.15		
1–5 years	2.16 ± 1.37		
> 5 years	2.46 ± 1.38		
Health status		0.385 (4,100)	0.819
No diseases	1.91 ± 0.97		
Hypertension	2.31 ± 1.26		
Diabetes mellitus	2.29 ± 1.50		
Osteoporosis	2.31 ± 1.23		
Other conditions	2.38 ± 1.90		

Table 17 shows no significant associations between socio-demographic or health characteristics and physical symptoms in the control group (n = 105). Similar scores were observed across marital status, education, employment, income, number of children, duration of menopause, and health status. Although slightly higher scores were noted among widowed women, housewives, and those with multiple children, these differences were not statistically significant. This suggests that physical symptoms were relatively uniform across participants. The findings indicate that menopausal physical symptoms are

largely driven by biological and lifestyle factors rather than social variables. Cultural norms may also influence how symptoms are perceived and reported. Environmental factors such as climate may further contribute to symptom burden. Overall, physical symptoms appear to be a shared experience among women. These results support the need for population-wide educational interventions. Such approaches can improve self-care and symptom management across all groups.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING SEXUAL SYMPTOMS

Table 18: Association between participants' characteristics and Bothering Sexual Symptoms for the control group (n = 105)

Variable / Category	Mean ± SD	F (df)	p-value
Marital status		1.244 (3,101)	0.298
Married	2.01 ± 1.66		
Single	2.96 ± 2.10		
Divorced	1.93 ± 1.53		
Widowed	2.74 ± 2.19		
Education level		0.679 (3,101)	0.567
Illiterate	1.68 ± 1.71		
Primary	2.48 ± 1.56		
Secondary	2.40 ± 1.95		
University or higher	2.20 ± 1.72		
Working status		0.724 (3,101)	0.540
Working	1.87 ± 1.70		
Not working	2.53 ± 1.74		
Retired	2.42 ± 1.76		
Housewife	2.14 ± 1.77		
Monthly income		0.258 (2,102)	0.773
< 3,000 SAR	2.09 ± 1.72		
3,000–7,000 SAR	2.03 ± 1.80		
> 7,000 SAR	2.32 ± 1.72		
Number of children		1.302 (3,101)	0.278
None	2.17 ± 1.74		
One	1.47 ± 1.61		
2–3	2.25 ± 1.74		
> 3	2.45 ± 1.77		
Duration of menopause		1.914 (2,102)	0.153
< 1 year	2.46 ± 1.69		
1–5 years	1.78 ± 1.63		
> 5 years	2.40 ± 1.95		
Health status		0.927 (4,100)	0.452
No diseases	2.33 ± 1.67		
Hypertension	1.78 ± 1.57		
Diabetes mellitus	2.08 ± 1.87		
Osteoporosis	2.57 ± 1.72		
Other conditions	2.78 ± 2.37		

Table 18 shows no significant associations between socio-demographic or health characteristics and sexual symptoms in the control group (n = 105). Similar scores were observed across marital status, education, employment, income, number of children, duration of menopause, and health status. Although higher mean scores were noted among single, widowed, non-working, and multiparous women, these differences were not statistically significant. This suggests that sexual symptoms were relatively uniform across participants. In the absence of education, symptoms may be internalized and perceived as a normal part of aging. Cultural norms may also limit open discussion, leading to underreporting. As a result, variations between groups may be masked. These findings highlight the shared nature of sexual symptom burden. They also emphasize the importance of culturally sensitive education. Such interventions can improve awareness, communication, and coping strategies for all women.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING VASOMOTOR SYMPTOMS

Table 19. Association between participants' characteristics and Bothering Vasomotor Symptoms for the intervention group (n = 105)

Variable / Category	Mean ± SD	F (df)	p-value
Marital status		0.532 (3,101)	0.662
Married	1.73 ± 1.26		
Single	1.59 ± 1.00		
Divorced	1.40 ± 1.23		
Widowed	2.04 ± 1.59		
Education level		0.881 (4,100)	0.478
Illiterate	2.14 ± 1.22		
Primary	1.67 ± 1.10		
Secondary	1.69 ± 1.41		
University or higher	1.55 ± 1.25		
Working status		4.131 (3,101)	0.008
Working	1.36 ± 1.21		
Not working	2.12 ± 1.13		
Retired	1.14 ± 0.81		
Housewife	2.12 ± 1.37		
Monthly income		0.940 (2,102)	0.394
< 3,000 SAR	1.83 ± 1.34		
3,000–7,000 SAR	1.44 ± 1.21		
> 7,000 SAR	1.78 ± 1.20		
Number of children		0.044 (3,101)	0.988
None	1.67 ± 1.18		
One	1.79 ± 1.21		
2–3	1.67 ± 1.41		
> 3	1.70 ± 1.22		
Duration of menopause		1.268 (2,102)	0.286
< 1 year	1.79 ± 1.40		
1–5 years	1.49 ± 1.10		
> 5 years	1.98 ± 1.28		
Health status		0.959 (4,100)	0.433
No diseases	1.73 ± 1.14		
Hypertension	1.57 ± 1.21		

Diabetes mellitus	1.46 ± 1.18		
Osteoporosis	2.19 ± 1.68		
Other conditions	1.67 ± 0.42		

Table 19 shows that most socio-demographic and health characteristics were not significantly associated with vasomotor symptoms in the intervention group (n = 105). Similar scores were observed across marital status, education, income, number of children, duration of menopause, and health conditions. A significant association was found with working status, where housewives and non-working women reported higher symptom burden, while working and retired women had lower scores. Minor variations were noted among widowed and illiterate participants, but these were not statistically significant. These findings suggest that the educational intervention reduced variability in symptom perception across groups. Women appeared better equipped to understand and manage vasomotor symptoms. However, daily routines and lifestyle factors still influenced outcomes. Non-working women may face greater challenges in symptom management. Overall, education played a key role in equalizing symptom burden, with targeted support needed for specific groups.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING PSYCHOSOCIAL SYMPTOMS

Table 20: Association between participants' characteristics and Bothering Psychosocial Symptoms for the intervention group (n = 105)

Variable / Category	**Mean ± SD**	**F (df)**	**p-value**
Marital status		0.385 (3,101)	.764
Married	1.62 ± 1.19		
Single	1.70 ± 0.67		
Divorced	1.81 ± 1.33		
Widowed	1.30 ± 0.60		
Education level		0.619 (4,100)	.650
Illiterate	1.76 ± 1.13		
Primary	1.31 ± 0.71		
Secondary	1.92 ± 1.36		
University or higher	1.55 ± 1.14		
Working status		1.816 (3,101)	.149
Working	1.51 ± 1.23		
Not working	1.69 ± 0.92		
Retired	1.15 ± 0.63		
Housewife	1.94 ± 1.24		
Monthly income		1.937 (2,102)	.149
< 3,000 SAR	1.83 ± 1.36		
3,000–7,000 SAR	1.31 ± 0.99		
> 7,000 SAR	1.67 ± 0.88		
Number of children		0.679 (3,101)	.567
None	1.76 ± 1.09		
One	1.38 ± 1.11		
2–3	1.52 ± 1.23		
> 3	1.79 ± 1.08		
Duration of menopause		1.728 (2,102)	.183
< 1 year	1.82 ± 1.39		

1–5 years	1.39 ± 0.82		
> 5 years	1.78 ± 1.16		
Health status		2.390 (4,100)	.056
No diseases	1.56 ± 1.04		
Hypertension	1.67 ± 1.02		
Diabetes mellitus	1.19 ± 0.74		
Osteoporosis	2.24 ± 1.65		
Other conditions	1.29 ± 0.82		

Table 20 shows no significant associations between socio-demographic or health characteristics and psychosocial symptoms in the intervention group (n = 105). Scores were similar across marital status, education, employment, income, number of children, and duration of menopause. Although minor variations existed, none reached statistical significance. Housewives reported slightly higher scores, while retired women had the lowest. Health status showed a near-significant trend, with higher scores among women with osteoporosis. These findings suggest that the educational intervention reduced variability in psychosocial symptom burden. Women appeared to better understand and cope with emotional changes regardless of background factors. Cultural and social support in Madinah may further enhance this effect. However, physical comorbidities may still influence psychological well-being. Overall, education promoted more uniform psychosocial outcomes across participants.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING PHYSICAL SYMPTOMS

Table 21: Association between participants' characteristics and Bothering Physical Symptoms for the intervention group (n = 105)

Variable / Category	**Mean ± SD**	**F (df)**	**p-value**
Marital status		0.390 (3,101)	0.761
Married	1.99 ± 1.15		
Single	1.87 ± 0.80		
Divorced	2.25 ± 1.36		
Widowed	2.25 ± 1.08		
Education level		2.299 (4,100)	0.064
Illiterate	2.43 ± 0.97		
Primary	1.65 ± 0.93		
Secondary	2.49 ± 1.21		
University or higher	1.81 ± 1.17		
Working status		**3.837 (3,101)**	**0.012**
Working	1.81 ± 1.19		
Not working	2.35 ± 0.94		
Retired	1.41 ± 0.73		
Housewife	2.41 ± 1.20		
Monthly income		2.703 (2,102)	0.072
< 3,000 SAR	2.32 ± 1.26		
3,000–7,000 SAR	1.69 ± 0.96		
> 7,000 SAR	2.01 ± 1.08		
Number of children		0.207 (3,101)	0.892
None	2.19 ± 1.04		

One	2.04 ± 1.32		
2–3	1.95 ± 1.17		
> 3	2.01 ± 1.12		
Duration of menopause		**3.161 (2,102)**	**0.047**
< 1 year	2.27 ± 1.24		
1–5 years	1.73 ± 1.07		
> 5 years	2.30 ± 1.01		
Health status		1.695 (4,100)	0.157
No diseases	2.01 ± 1.15		
Hypertension	2.21 ± 1.15		
Diabetes mellitus	1.50 ± 0.97		
Osteoporosis	2.33 ± 1.32		
Other conditions	2.11 ± 0.74		

Table 21 shows that most socio-demographic factors were not significantly associated with physical symptoms in the intervention group (n = 105), although education and income showed near-significant trends. A significant association was found with working status, where housewives and non-working women reported higher symptom burden, while retired women reported the lowest. Duration of menopause was also significantly associated, with higher symptoms in early (<1 year) and late (>5 years) stages. No significant differences were observed for marital status, number of children, or health conditions, though higher scores were noted in women with osteoporosis and hypertension. These findings suggest that education reduced but did not eliminate the impact of contextual factors. Daily physical demands and lifestyle roles remain important determinants of symptom burden. Women with higher education may better apply self-care strategies. However, cultural roles may limit the effectiveness of education alone. Overall, integrated approaches combining education with lifestyle support are needed to improve physical well-being.

ASSOCIATION BETWEEN PARTICIPANTS' CHARACTERISTICS AND BOTHERING SEXUAL SYMPTOMS

Table 19: Association between participants' characteristics and Bothering Sexual Symptoms for the intervention group (n = 105)

Variable / Category	Mean ± SD	F (df)	p-value
Marital status		1.020 (3,101)	.387
Married	1.34 ± 1.21		
Single	0.70 ± 0.48		
Divorced	1.02 ± 1.23		
Widowed	1.33 ± 1.00		
Education level		0.577 (4,100)	.680
Illiterate	1.13 ± 1.21		
Primary	1.15 ± 1.11		
Secondary	1.53 ± 1.25		
University or higher	1.19 ± 1.13		
Working status		1.235 (3,101)	.301
Working	1.48 ± 1.16		
Not working	1.12 ± 1.07		
Retired	0.83 ± 0.90		

Housewife	1.19 ± 1.28		
Monthly income		0.873 (2,102)	.421
< 3,000 SAR	1.31 ± 1.22		
3,000–7,000 SAR	1.01 ± 1.16		
> 7,000 SAR	1.36 ± 1.07		
Number of children		1.112 (3,101)	.348
None	1.06 ± 1.05		
One	1.07 ± 1.18		
2–3	1.54 ± 1.22		
> 3	1.16 ± 1.14		
Duration of menopause		0.174 (2,102)	.841
< 1 year	1.32 ± 1.21		
1–5 years	1.17 ± 1.12		
> 5 years	1.25 ± 1.16		
Health status		1.120 (4,100)	.352
No diseases	1.17 ± 1.21		
Hypertension	1.25 ± 1.10		
Diabetes mellitus	1.00 ± 1.07		
Osteoporosis	1.70 ± 1.25		
Other conditions	0.89 ± 1.09		

Table 22 shows no significant associations between socio-demographic or health characteristics and bothering sexual symptoms in the intervention group (n = 105). Sexual symptom scores were similar across marital status, education level, employment status, income, number of children, duration of menopause, and health conditions. Although minor variations were observed, none reached statistical significance. Mean scores remained relatively low and consistent across all categories. These findings suggest that the educational intervention reduced differences in symptom perception among participants. Women appeared to better understand and normalize sexual changes as part of menopause. The intervention may have minimized the influence of personal and social factors on symptom distress. It also reduced the tendency to associate sexual well-being solely with marital or reproductive roles. In the context of Madinah, this reflects improved awareness within cultural boundaries. Education likely promoted confidence, acceptance, and healthier coping strategies. Overall, the results highlight the equalizing effect of education on sexual symptom experiences.

ASSOCIATION OF AGE WITH BOTHERING MENOPAUSAL SYMPTOMS (CONTROL)

Table 23: Pearson Correlation Matrix for Bothering Menopausal Symptoms and Age for the Control Group (N = 105)

Variable	Vasomotor Symptoms	Psychosocial Symptoms	Physical Symptoms	Sexual Symptoms	Age
Vasomotor Symptoms	1	.386**	.560**	.382**	−.185
Psychosocial Symptoms	.386**	1	.649**	.383**	.073
Physical Symptoms	.560**	.649**	1	.552**	.002

Sexual Symptoms	.382**	.383**	.552**	1	−.072
Age	−.185	.073	.002	−.072	1

Table 23 shows significant positive correlations among all menopausal symptom domains in the control group (N = 105). Vasomotor symptoms were moderately associated with psychosocial, physical, and sexual symptoms, while psychosocial symptoms had a strong correlation with physical symptoms and moderate links with sexual symptoms. Physical symptoms also showed a strong association with sexual symptoms, indicating a close interrelationship across domains. In contrast, age was not significantly correlated with any symptom domain. These findings highlight that menopausal symptoms are highly interconnected and tend to cluster rather than occur independently. The strong link between physical and psychosocial symptoms suggests a reinforcing cycle of physical discomfort and emotional distress. Similarly, physical symptoms may directly affect sexual well-being. Cultural factors and shared life roles may explain the limited influence of age. Overall, the results emphasize the need for holistic interventions addressing multiple symptom domains simultaneously.

ASSOCIATION OF AGE WITH BOTHERING MENOPAUSAL SYMPTOMS (INTERVENTION)

Table 24: Pearson Correlation Matrix for Bothering Menopausal Symptoms (PRE) and Age (N = 105)

Variable	Vasomotor Symptoms	Psychosocial Symptoms	Physical Symptoms	Sexual Symptoms	Age
Vasomotor Symptoms	1	.449**	.542**	.136	.064
Psychosocial Symptoms	.449**	1	.639**	.406**	.058
Physical Symptoms	.542**	.639**	1	.459**	.020
Sexual Symptoms	.136	.406**	.459**	1	.014
Age	.064	.058	.020	.014	1

Table 24 shows significant positive correlations among most menopausal symptom domains at baseline (N = 105). Vasomotor symptoms were moderately correlated with psychosocial (r = 0.449) and physical symptoms (r = 0.542), while psychosocial symptoms showed a strong correlation with physical symptoms (r = 0.639) and moderate correlation with sexual symptoms (r = 0.406). Physical symptoms were also significantly associated with sexual symptoms (r = 0.459). In contrast, age showed no significant correlation with any symptom domain. These findings highlight the interconnected and multidimensional nature of menopausal symptoms, where distress in one domain is linked to others. The strong link between psychosocial and physical symptoms suggests a reinforcing cycle of emotional and physical burden. Although vasomotor symptoms were not directly related to sexual symptoms, indirect effects through physical discomfort are likely. Cultural perceptions may explain the minimal role of age in symptom reporting. Overall, the results emphasize the need for holistic, integrated interventions addressing multiple symptom domains simultaneously.

DISCUSSION

The findings across the thesis consistently demonstrate that menopausal symptoms significantly impair quality of life across physical, psychological, and social domains. Vasomotor symptoms, fatigue, depression, and sleep disturbances were identified as major contributors to reduced QoL, which is consistent with previous literature (Barati et al., 2021; Dotlic et al., 2021). Sociodemographic factors such as education level, socioeconomic status, and lifestyle behaviors also play a critical role in determining QoL outcomes (Yerra et al., 2021; Muhseenah & Nallapu, 2025).

Educational interventions were shown to significantly improve QoL by enhancing knowledge, self-efficacy, and symptom management. These findings align with studies demonstrating the effectiveness of structured education in improving menopausal outcomes (Keye et al., 2023). Furthermore, digital interventions provide additional advantages, including accessibility, flexibility, and cultural adaptability, making them particularly suitable for the Saudi context (Johnson & Tafuto, 2024; Lee et al., 2021).

The effectiveness of the e-module in this study supports the growing body of evidence highlighting the role of digital health in improving women's health outcomes. Digital platforms enable women to access information privately and at their own pace, which is particularly important in culturally sensitive contexts. However, challenges such as digital literacy, accessibility, and long-term sustainability of interventions must be considered (Vollrath et al., 2024).

Overall, improving menopausal QoL requires a holistic approach that integrates education, lifestyle modification, psychosocial support, and digital health solutions. The findings of this study suggest that e-modules represent a scalable and effective intervention that can be integrated into healthcare systems to improve menopausal care.

CONCLUSION

This study demonstrates that the E-Module is an effective approach for improving quality of life among menopausal women in Saudi Arabia, particularly by reducing symptom-related distress in psychosocial, physical, and sexual domains. Menopausal symptoms were found to be highly prevalent and multidimensional, with outcomes influenced by socio-demographic factors. The intervention primarily enhanced women's ability to cope with and manage symptoms, leading to improved perceived well-being. These findings highlight the importance of culturally sensitive, empowerment-based, and holistic approaches to menopause management that address not only physical symptoms but also emotional and social dimensions. The results further emphasize the value of educational interventions in conservative settings, where awareness and access to care may be limited. From a theoretical perspective, the study supports integrated models of menopausal care, while practically advocating for broader implementation of digital health interventions. Future research should focus on long-term effectiveness, larger populations, and cultural adaptation of such programs. Overall, this study provides important contributions to menopause research and supports the development of effective, scalable interventions.

STUDY RECOMMENDATIONS:

The study recommends integrating menopause education into primary healthcare services to ensure early awareness, reduce misconceptions, and normalize menopause as a natural life transition. Developing a standardized, culturally tailored national curriculum is essential to ensure consistent and accessible education across Saudi Arabia. Interventions should prioritize reducing symptom-related distress rather than only symptom frequency, focusing on coping strategies and quality of life outcomes. Strengthening healthcare professionals' training in menopause management, including communication on sensitive topics, is also crucial.

Targeted support is needed for housewives and non-working women, emphasizing home-based coping strategies and community-based programs. Integrating mental health and stress management into menopause care is important due to the strong link between psychosocial, physical, and sexual symptoms. Sexual health should be addressed openly within culturally appropriate frameworks to improve well-being and communication.

A life-course approach is recommended to tailor care according to different menopausal stages. Family and community involvement should be promoted to enhance support systems and reduce stigma. Expanding digital and community-based platforms can improve accessibility and reach. Monitoring programs using quality-of-life indicators is essential for continuous improvement. Finally, further research and scaling of educational interventions are needed to support national strategies for healthy aging among women

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