ORIGINAL RESEARCH ARTICLE

Effect of lifestyle modification education on knowledge, attitude, and quality of life on menopause among middle-aged teachers

DOI: 10.29063/ajrh2024/v28i11.17

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Abstract

All women go through menopause at some point in their lives, but because of the nature of their jobs, teachers have it harder than other female employees. This study aimed to assess middle-aged teachers' knowledge, attitudes, and quality of life-related to menopause after receiving education on health-promoting lifestyle modification. A quasi-experimental Time Series design with pre-intervention, immediate, post-intervention, and a three-month follow-up was employed in this study. Through a purposive sampling technique, 84 middle-aged teachers were selected. A pre-designed questionnaire was used to gather information on knowledge, attitude, and the Menopause Specific Quality of Life (MENQOL) on menopause. The health-promoting lifestyle modification education was given through lectures and group discussions. Using SPSS version 22, repeated measure ANOVA was used to assess the impact of educational instruction at the three time periods. The mean knowledge score was 3.6±1.2 at the pre-intervention, 21.3±1.6 at the immediate post-intervention, and 24.4±1.3 at the 3-month follow-up. With a statistical significance of (p 0.0001), it was found that the knowledge score at the 3-month follow-up was considerably higher than it was at the pre-intervention (p 0.0001). At each of the three time intervals, the mean scores for attitude were 14.8±2.7, 39.4±1.01, and 43.3±1.2. This shows, that the educational intervention had changed the mean attitude scores, with a statistical significance of (p 0.0001). Health education focused on health-promoting lifestyle modifications was effective in improving the knowledge, attitude, MENQOL, and overall QOL of middle-aged teachers. *(Afr J Reprod Health 2024; 28 [11]: 170-180).*

Keywords: Menopause, knowledge, attitude, menopause quality of life, health education

Résumé

Toutes les femmes traversent la ménopause à un moment donné de leur vie, mais en raison de la nature de leur travail, les enseignantes ont plus de difficultés que les autres employées. Cette étude visait à évaluer les connaissances, les attitudes et la qualité de vie des enseignantes d'âge moyen liées à la ménopause après avoir reçu une formation sur la modification du mode de vie favorisant la santé. Une conception de séries temporelles quasi expérimentale avec pré-intervention, immédiate, post-intervention et un suivi de trois mois a été utilisée dans cette étude. Grâce à une technique d'échantillonnage intentionnel, 84 enseignantes d'âge moyen ont été sélectionnées. Un questionnaire préconçu a été utilisé pour recueillir des informations sur les connaissances, l'attitude et la qualité de vie spécifique à la ménopause (MENQOL) sur la ménopause. L'éducation à la modification du mode de vie favorisant la santé a été dispensée sous forme de conférences et de discussions de groupe. À l'aide de SPSS version 22, une ANOVA à mesures répétées a été utilisée pour évaluer l'impact de l'enseignement pédagogique aux trois périodes. Le score moyen de connaissances était de 3,6±1,2 avant l'intervention, de 21,3±1,6 immédiatement après l'intervention et de 24,4±1,3 au suivi à 3 mois. Avec une signification statistique de (p 0,0001), il a été constaté que le score de connaissances au suivi à 3 mois était considérablement plus élevé qu'il ne l'était avant l'intervention (p 0,0001). À chacun des trois intervalles de temps, les scores moyens d'attitude étaient de 14,8±2,7, 39,4±1,01 et 43,3±1,2. Cela montre que l'intervention éducative avait modifié les scores moyens d'attitude, avec une signification statistique de (p 0,0001). L'éducation à la santé axée sur les modifications du mode de vie favorisant la santé a été efficace pour améliorer les connaissances, l'attitude, la qualité de vie masculine et la qualité de vie globale des enseignants d'âge moyen. *(Afr J Reprod Health 2024; 28 [11]: 170-180).*

Mots-clés: Ménopause, connaissances, attitude, qualité de vie liée à la ménopause, éducation pour la santé

Introduction

Health education is a primary strategy of health promotion. It is defined as “consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge and developing life skills, which are conducive to individual and community health”[1]. Health education is not limited to the dissemination of health-related information

and extends to fostering the motivation, skills, and confidence (self-efficacy) that are necessary to act to improve health[1].

The menopause, which is brought on by the decline in ovarian function, is a significant turning point for women. A new biological state known as menopause is accompanied by numerous physical and psychological changes such as hot flashes, nocturnal sweats, aches and pains in the muscles and joints, trouble sleeping, weight gain, and depression are just a few of the symptoms it produces, all of which impair quality of life (QOL)[1-3].

The World Health Organization (WHO) defines the QOL as "an individual's perception of their position in life in the context of the culture and value system in which they live and about their goal expectations, standards, and concerns"[4]. QOL often refers to characteristics of health in postmenopausal women (PMW) based on a mix of symptoms without considering the physical, emotional, or social functions. As a result, "quality of life" (QOL) associated with PMW is widely used to refer to "menopause-specific quality of life" (MENQOL)[5].

In the middle age years, most women experience a variety of changes. Social, physiological, psychological, and even economic changes might occur. On the other side, there is a strong likelihood that middle-aged age will see the onset of several chronic conditions, including heart disease, diabetes, arthritis, and hypertension[6]. Additionally, it is the time when women experience menopause and its associated effects[7]. Menopause, despite being natural, may have an impact on a woman's health and quality of life[8–11].

Menopause is an inevitable period of life, understanding what it is when it occurs, and the many symptoms of menopause might help you adjust to it[12–18]. Therefore, a woman's positive outlook about menopause also has a significant impact on minimizing the impacts of menopausal symptoms[19]. One of the various strategies that can be used to enhance women's understanding and attitude regarding menopause is health education. Additionally, this can enable women more control over their lives[25, 26].

The women's perception of menopause depends on their social, cultural, and economic status and lifestyle factors. Further, inadequate knowledge and negative attitude towards menopause add to the burden of menopause-related symptoms and impairment of overall QOL at an individual level. This in turn affects negatively to the entire family and society[20,21].

Pender's Health Promotion Model (HPM) is one comprehensive model that emphasizes the promotion of health and the empowerment of individuals to achieve better health and prevent diseases through behavioral changes[22]. This can also be used in postmenopausal health promotion. In Pender's model, behavioral changes are regarded as the desired outcome, and such change is affected by a combination of individual characteristics and experiences, behavior-specific cognitions and attitude, and competing demands and preferences[20]. Existing knowledge, attitude, and irritable menopausal symptoms could be considered as predictors of behavioral change of post-menopausal women along with their existing characteristics, experiences, and values. Therefore, a health-promoting activity would be directed at attaining positive health outcomes by modifying such factors for acquiring expected behavioral changes to achieve optimal well-being. They will improve health, enhance functional ability, and have better QOL. Therefore, the current study based on Pender's HPM was designed to evaluate the impact of a health-promoting lifestyle education intervention (HPLEI) on knowledge, attitude, and QOL in a group of middle-aged teachers in Saudi Arabia.

Methods

Study design and setting

Under the Quantitative research approach, the quasi-experiment, the interrupted time series design with pre-intervention, immediate post-intervention, and a three-month follow-up was employed for this study between February 2023 and May 2023. Middle-aged instructors employed at Farasan Governorate School (Elementary, Secondary, and High School) and Farasan University College in the Farasan province of the Kingdom of Saudi Arabia were included in this study.

Sampling size and sampling technique:

Using non-probability purposive sampling, 85 Middle-aged teachers between the age group of 40-60 years were chosen as the sample size for this study.

The participants were employed at Farasan Governorate School (Elementary, Secondary, and High School) and Farasan University College.

Instrument

Several experts examined the data instrument and found it to be trustworthy.

- Part 1: The socio-demographic includes age, education, occupation, monthly income, marital status, attained menopause, age at menopause, previous knowledge about menopause, Number of children, and nationality.
- Part II: Knowledge on the physiological basis of menopause, menopausal symptoms, complications, and health management after menopause was assessed in the knowledge section which contained 27 statements answered in a Yes or No manner. In the knowledge section, every correct answer was given 1 mark; wrong answers were given 0 mark. The total score ranged from 0 to 27.
- Part III: The attitude section included 9 statements for measuring the attitude which was designed as a five-choice Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree). In the attitude section, marks were given for each answer as strongly agree: 5, agree: 4, neutral: 3, disagree: 2, and strongly disagree: 1. Then, an overall score was created, with higher scores indicating a higher level of knowledge and a positive attitude
- Part IV: The 29 items on the MENQOL Questionnaire were designed to measure MENQOL in areas related to vasomotor, physical, psychosocial, and sexual functioning. Lower MENQOL is indicated by higher scores. Implementation of health-promoting lifestyle education intervention education module. It covers definition, types, causes, symptoms, prevention, physical activity, diet, other lifestyle management therapies, and health issues in the postmenopausal period.

Data collection procedure

The purpose of the study was communicated to every teacher who participated in the data collection procedure. The informed consent was obtained by writing. After administering a pre-interventional test to the teachers, they were divided into 8 groups. The educational module was administered as a group. For a total of one hour per group over 10 days, the education was provided. This education manual includes definitions, types, causes, symptoms, prevention, physical activity, diet, other lifestyle management therapies, and health issues in the postmenopausal stage. Health education was discussed by lecture cum discussion method. After the training session, each group underwent an instant post-intervention test, and then the study participants received handouts. After three months the 2nd follow-up post-assessment test was administered to all study participants.

Plan for data analysis

Data were analysed with SPSS version 22.0 software. The study evaluated proportions and frequencies using descriptive statistics. The difference between pre-and post-test scores on knowledge, attitude, and quality of life on menopause was determined by using a paired t-test. The impact of the educational intervention was evaluated using repeated measures of an ANOVA at the preintervention, immediately postintervention, and 3-month follow-up. The knowledge, practice, and Quality of life variables were correlated by using the Karl Pearson correlation and coefficient test.

Ethical consideration

The study received official ethical approval from Jazan University's Scientific Research Ethics Committee, as well as authorization from the Dean of Farasan University College and Farasan Governorate schools. Each participant gave his or her agreement to contribute to the study. Ethics committee decision date: 30.01.2023 Decision number: Reference No.: REC-44/07/513.

Results

Socio-demographic characteristics

In this study, 85 middle-aged teachers were selected, and finally, 84 samples were included in this study. The majority of the participants were 46–50 years of age, with a mean age of 49.1 (5.47) years. Out of 84 samples, 91.7% of those were married and 39

(46.4%) of the respondents had a bachelor's degree. A maximum of the teachers were working from secondary school. Grand multipara makes up about half of the participant population. Only 15% of people attained menopause, while approximately 91% of participants knew something about it beforehand. The majority of the teachers (64.3%) were Saudi nationals.The percentage of women who correctly answered the questions about their knowledge of the menopausal phenomenon is shown in Table No.1. Only 45.2% of participants knew how menstruation stopped before the intervention, whereas after education the maximum number of participants knew how menstruation stopped (91.7% immediately after, 96.4% three months follow up). 29.8% of study participants were aware of hot flushes as a symptom of menopause, but all (100%) of them correctly responded in both post-interventions. Less than half of people (13.1% had cardiovascular disease and 48.8% had osteoporosis) were aware of menopause-related health issues; however, these numbers rose to 98.8% at the immediate post-intervention and 100% at the three-month follow-up. Thus, it was concluded that the study participants had excellent knowledge of menopause following the health-promoting lifestyle education intervention.

The percentage of women who had a favorable attitude toward the menopausal phenomenon shows that before education none of the participants agreed that menopause is a time when women are lonely before the intervention, but this percentage rose to 75.0% at the time immediate and 77.4% at three months following the intervention respectively. More than 35.0% of study participants strongly agreed with the statement that menopause was the period where problems with menstruation were eliminated (36.9% pre-intervention, 90.5% immediately post-intervention, and 96.4% in 3-month follow-up). Before the intervention, 21.4% of the study participants strongly agreed that women could take care of themselves using the knowledge they gleaned from various sources; this number rose to 88.1% at the immediate post-intervention and 92.9% at the three-The percentage of women who strongly disagreed with the statement that during menopause, women's month follow-up. attention toward their husbands decreased from 4.8% at pre-intervention to 91.7% at the immediate and 96.4% at three months after the intervention, respectively.

Hence it concludes that health-promoting lifestyle education intervention improved the teacher's level of knowledge and positive attitude towards menopause.

The distribution of the MENQOL domains in Table 2 demonstrates that, except for the vasomotor domain, all MENQOL scores decreased during the pre-intervention. Only 15.5% of the participants reached menopause, making it impossible to observe outcomes after the intervention.

The impact of the educational intervention was evaluated using repeated measures of an ANOVA (Table 3) at the preintervention, immediately postintervention, and 3-month follow-up. The mean knowledge scores were 3.59 (1.24) at preintervention, 21.27 (1.55) at immediate postintervention, and 24.38 (1.31) at 3-month follow-up, respectively. With time, it was discovered that there was a significant difference between the mean scores (Wilk's value = 0.459, p 0.0001). Over the three time points, the change in knowledge scores displayed a quadratic trend (p 0.001). The Bonferroni post hoc test was used to compare knowledge scores at three different time points (pre-intervention, immediately following the intervention, and three-month follow-up) using pairwise comparisons (Table 4). The test revealed that knowledge scores were significantly higher at immediately post-intervention (p 0.0001), and three months follow-up (p = 0.004).

Before the intervention, the mean score for attitudes was 14.81 (2.67), and it increased to 39.36 (1.01) at the immediate post-intervention and 43.31 (1.23) three months follow-up, respectively. With time, there was a significant difference between the mean scores (Wilk's value = 0.572, p 0.0001). The Bonferroni post hoc test was also used to compare attitude scores at three-time points in pairs (Table 4).

Table 1: Knowledge about menopause parameters before and after the intervention

S. No	Knowledge Items	Yes			No		
		Pre-test	Post-test - 1	Post-test - 2	Pre-test	Post-test -1	Post-test - 2
1	Menstruation stops suddenly (N)	46 (54.8)	7 (8.3)	3 (3.6)	38 (45.2)	77 (91.7)	81 (96.4)
2	Menopause occurs at the age of 48–55 years	29 (34.5)	78 (92.9)	83 (98.8)	55 (65.5)	6 (7.1%)	1 (1.2)
3	Hereditary background affects the time of menopause occurrence	32 (38.1)	72 (85.7)	78 (92.9)	52 (61.9)	12 (14.3)	6 (7.1)
4	Menopause occurs due to increasing sexual hormones (N)	55 (65.5)	4 (4.8)	82 (97.6)	29 (34.5)	80 (95.2)	2 (2.4)
5	Menstruation disorder occurs before menopause	35 (41.7)	81 (96.4)	84 (100)	49 (58.3)	3 (3.6)	0
6	Most women experience hot flashes and night sweating during the menopausal period	25 (29.8)	84 (100)	84 (100)	59 (70.2)	0	0
7	Menopause in women decreases genital infection (N)	69 (82.1)	7 (8.3)	5 (6.1)	15 (17.9)	77 (91.7)	79 (94.1)
8	Women in menopause increase weight and become obese	63 (75)	81 (96.4)	83 (98.8)	21 (25)	3 (3.6)	1 (1.2)
9	Menopausal symptoms are preventable and curable	58 (69.1)	76 (90.5)	79 (94.1)	26 (31.1)	8 (9.5)	5 (6.1)
10	Menopause decreases cardiovascular diseases in women (N)	73 (86.9)	10 (11.9)	11 (13.1)	11 (13.1)	74 (88.1)	73 (86.9)
11	Menopause increases osteoporosis in women	41 (48.8)	83 (98.8)	84 (100)	43 (51.2)	1 (1.2)	0
12	Menopause causes dryness and skin shrivel in women	45 (53.6)	79 (94.1)	81 (96.4)	39 (46.4)	5 (6.1)	3 (3.6)
13	Sexualities change in menopausal women	40 (47.6)	80 (95.2)	82 (97.6)	44 (52.4)	4 (4.8)	2 (2.4)
14	Menopause increases extra hair on women's face	51 (60.7)	77 (91.7)	84 (100)	33 (39.3)	7 (8.3)	0
15	Menopause causes vaginal dryness and painful sexual intercourse	62 (73.8)	82 (97.6)	83 (98.8)	22 (26.2)	2 (2.4)	1 (1.2)
16	Menopause causes urinary frequency and dysuria	23 (27.4)	71 (84.5)	74 (88.1)	61 (72.6)	13 (15.5)	10 (11.9)
17	Smoking and using alcohol increase osteomalacia in women	13 (15.5)	69 (82.1)	72 (85.7)	71 (84.5)	15 (17.9)	12 (14.3)
18	Regular physical activity is effective in preventing osteoporosis in menopausal women	33 (39.3)	78 (92.9)	83 (98.8)	51 (60.7)	6 (7.1)	1 (1.2)
19	Menopause affects the power of concentration and memory of women	19 (22.6)	68 (81.1)	75 (89.3)	65 (77.4)	16 (19.1)	9 (10.7)
20	The frequency and severity of Joint and muscular discomfort (pain in the joints, rheumatoid complaints in menopausal women	14 (16.7)	71 (84.5)	80 (95.2)	70 (83.3)	13 (15.5)	4 (4.8)
21	The level of stress and depression increases in menopausal women	39 (46.4)	75 (89.3)	79 (94.1)	57 (67.9)	9 (10.7)	5 (6.1)
22	Despite 1 year of cessation of menstruation, pregnancy prevention is necessary (N)	79 (94.1)	3 (3.6)	2 (2.4)	5 (6.1)	81 (96.4)	82 (97.6)
23	Knowledge of exercise management	38 (45.2)	82 (97.6)	84 (100)	46 (54.8)	2 (2.4)	0
24	Knowledge of meal management	41 (48.8)	81 (96.4)	83 (98.8)	43 (51.2)	3 (3.6)	1 (1.2)

25	Knowledge of sexual life management	31 (36.9)	84 (100)	84 (100)	53 (63.1)	0	0
26	Knowledge of self-regulating management	37 (44.1)	79 (94.1)	80 (95.2)	47 (56.1)	5 (6.1)	4 (4.8)
27	Knowledge of professional management	52 (61.9)	84 (100)	84 (100)	32 (38.1)	0	0

(N) Negatively worded questions

Table 2: Distribution of domains of MENQOL

S. No	Domains of MENQOL	Yes	No
		Frequency/Percentage	Frequency/Percentage
1	**Vasomotor**		
	Hot Flashes	76 (90.5)	8 (9.5)
	Night Sweats	54 (64.3)	30 (35.7)
	Sweating	62 (73.8)	22 (26.2)
2	**Psychosocial**		
	Dissatisfaction with Personal Life	16 (19.1)	68 (80.9)
	Feeling Anxious or Nervous	17 (20.2)	67 (79.8)
	Poor Memory	9 (10.7)	75 (89.3)
	Accomplishing less than I used to	12 (14.3)	72 (85.7)
	Feeling down, depressed, or blue	18 (21.4)	66 (78.6)
	Being impatient with other people	15 (17.9)	69 (82.1)
	Feelings of wanting to be alone	11 (13.1)	73 (86.9)
3	**Sexual**		
	Change in sexual desire	19 (22.6)	65 (77.4)
	Vaginal Dryness	18 (21.4)	66 (78.6)
	Avoiding intimacy	13 (15.5)	71 (84.5)
4	**Physical**		
	Flatulence or gas pains	15 (17.9)	69 (82.1)
	Aching muscles or joints	11 (13.1)	73 (86.9)
	Feeling tired or worn out	38 (57.1)	36 (42.9)
	Difficulty sleeping	20 (23.8)	64 (76.2)
	Aches in the back of the neck or head	3 (3.6)	81 (96.4)
	Decrease in physical strength	23 (27.4)	61 (72.6)
	Decrease in stamina	18 (21.4)	66 (78.6)
	Feeling a lack of energy	13 (15.5)	71 (84.5)
	Drying skin	28 (33.3)	56 (66.7)
	Weight gain	11 (13.1)	73 (86.9)
	Increased facial hair	7 (8.3)	77 (91.7)
	Changes in appearance, texture, or tone of the skin	13 (15.5)	71 (84.5)
	Feeling Bloated	32 (38.1)	52 (61.9)
	Low backache	19 (22.6)	65 (77.4)
	Frequent urination	23 (27.4)	61 (72.6)
	Involuntary Urination	8 (9.5)	76 (90.5)

Table 3: Distribution of mean & sd of knowledge & attitude scores on menopa**use**

S. No	Variables	Max score obtained	Mean (SD)	Std. Error of Mean	Variance
1	**Knowledge**				
	Pre-assessment	7/27	3.59 (1.24)	.1356	1.545
	Immediate post-intervention	25/27	21.27 (1.55)	.1688	2.394
	3 months follow-up	27/27	24.38 (1.31)	.1426	1.709
2	**Attitude**				
	Pre-assessment	20/45	14.81 (2.67)	.2916	7.144
	Immediate post-intervention	41/45	39.36 (1.01)	.1093	1.003
	3 months follow-up	45/45	43.31 (1.23)	.1342	1.513
3	**Domains:**				
	Vasomotor	3	2.13 (.65)	.0714	.428
	Psychomotor	7	3.31 (1.37)	.1496	1.879
	Sexual	3	1.89 (.61)	.0656	.362
	Physical	16	10.02 (2.6)	.2834	6.746

Table 4: Difference between pre and post-intervention of Knowledge and attitude Scores on Menopause

S. No	Variables	Paired Difference				t	df	Sig. (2-tailed)	ANOVA Sum of Squares	df	Mean Square	F	Sig
		Mean (SD)	Std. Error Mean	95% Confidence Interval of the Difference									
				Lower	Upper								
1	Knowledge - Pre and immediate post-intervention assessment	-17.69 (1.95)	.213	-18.12	-17.26	-82.99	83	.000	34.74 163.97 198.70	6 77 83	5.79 2.13	2.72	.02
2	Knowledge - Pre and 3 months follow-up assessment	-20.79 (1.7)	.185	-21.15	-20.42	-112.47	83	.000					
3	Attitude - Pre and immediate post-intervention assessment	-24.55 (2.65)	.289	-25.12	-23.97	-85.05	83	.000	4.94 78.35 83.29	5 78 83	.99 1.01	.98	.43
4	Attitude - Pre and 3 months follow-up assessment	-28.49 (3.08)	.336	-29.16	-27.82	-84.79	83	.000					

The test revealed that attitude scores were significantly higher 3 months after the intervention than they were before (p 0.0001) and at the immediate post-intervention (p = 0.001).

The mean attitude scores at the immediate post-intervention and 3 months later, however, differed significantly. Factorial mixed ANOVA was conducted to assess the impact of a health-promoting lifestyle education intervention on the scores of knowledge across three-time points (pre-intervention, immediate post-intervention, and 3 months follow-up) by age, educational level, and occupational level. There was no significant interaction between age and knowledge (Wilk's Lambda = 0.749, $p = 0.09$), educational level, and knowledge within the three phases of intervention (Wilk's Lambda = 0.87, $p = 0.65$). However, a significant interaction was observed between occupational level and knowledge within the three phases of intervention (Wilk's Lambda = 0.81, $p = 0.01$).

Factorial mixed ANOVA was conducted to assess the impact of the health-promoting lifestyle education intervention on the scores of attitude across three time points (pre-intervention, immediate post-intervention, and 3 months follow-up) by age, educational level, and occupational level. There was no significant interaction between age

and attitude (Wilk's Lambda = 0.65, p = 0.77), educational level, and attitude (Wilk's Lambda = 0.97, p = 0.80), occupational level and attitude within the three phases of intervention (Wilk's Lambda = 0.96, p = 0.79.

Karl Pearson's Correlation Coefficient (r), which was used to determine the relationship between post-test knowledge and attitude of health-promoting lifestyle education intervention on menopause reveals that a highly positive relationship was found between knowledge and attitude scores (r=0.86) at p<.54.

Discussion

Knowledge about menopause parameters before and after the intervention

Developing positive behavior and boosting menopausal women's quality of life begins with knowledge acquisition[27–29]. When women are more aware of menopause, their attitudes, health behaviors, and health habits improve, which in turn enhances their quality of life[30,35]. In this study, the mean knowledge score regarding menopause considerably rose following the educational intervention. In Egyptian studies as well, the overall knowledge score dramatically improved after the health education program[12,15]. Contrary to these findings, an Iranian study reported no significant change in the mean knowledge score from pre-intervention (10.52) to post-intervention (15.14)[24].

Even the Ministry of Health's competent departments do not take menopause seriously, which has led to a loop where women keep visiting doctors to get their symptoms treated. Furthermore, research has demonstrated that the information they obtain is not reliable because a sizable percentage of it comes from friends and family[20]. The majority of study participants had little to no knowledge before implementing the intervention such as menstrual irregularity as a symptom of menopause; weight gain during menopause; the prevention of osteoporosis during menopause through physical activity; and smoking, and alcohol as a risk factor for osteoporosis. This was a promising finding from the study. This was in line with several studies[12,14,15, 23-24].After the intervention, an increase in the knowledge of the study participants was seen on all items of the knowledge questions. However, still, the highest improvement was seen in the knowledge of the effect of hereditary background on the time of menopause occurrence, the effect of menopause on osteoporosis, increased extra hair on the face, skin dryness and shrivel, urinary frequency, dysuria, and hot flushes as a symptom of menopause. The increase in the knowledge about menopause suggests the usefulness of the given training. Similarly, in a study done in Egypt, the highest level of improvement was found in the knowledge about the definition of menopause, weight gain, osteoporosis, urinary incontinence, and dyspaurina[16].

In this study age had no significant association with change in knowledge; this was similar to what was reported in a study conducted in Egypt[16]. The study participants' educational backgrounds had no discernible impact on their knowledge gains or losses. However, research done in Egypt revealed that the level of education has a substantial impact on knowledge growth[16,19]. This discrepancy may be due to the homogeneity (all teachers) of the study participants in this study, unlike the comparable studies where participants had a variety of educational backgrounds.

As compared to individuals who worked in primary and secondary schools, those who worked in higher education greatly increased their knowledge in the current study. The aforementioned research in Egypt also found a substantial connection between occupational level and knowledge growth[12,15].

Menopause-related attitudes both before and after the intervention

Women with a cheerful mindset are also thought to experience less severe menopausal symptoms[22]. In addition, attitude is a strong organizing principle in action and can start healthy behavior due to the effect it has on the individual[32-34]. The intervention in this study gradually increased the attitude mean scores considerably. Women's attitudes toward menopause, among other things, are influenced by their participation in educational initiatives that can help them learn to care for themselves and become independent[18]. This was consistent with research done in Egypt, which showed a noticeable improvement in positive attitudes after the educational intervention[12,15]. Whereas in a study done in Iran, there was no significant change in attitude after the educational intervention. In this study knowledge of the participants was not affected

by the education given so the unchanged attitude of the participants towards menopause is highly expected[24].

The current study's findings showed that there was no reliable relationship between participants' ages and changes in attitude throughout time. This result was in line with a previous study[28] conducted in Iran, which discovered that age had no influence on the development of attitudes and that women of all ages tended to have more positive attitudes. This study has found no change in attitude after educational intervention across the categories of educational and occupational levels. This finding is similar to Egyptian studies conducted by Elnaggar et al. (2013) and Orabi (2017) in which they discovered a lack of change as attitude needs more time to adjust than knowledge needs and so stressed the need for timely and repetitive education to achieve the goal [16,19]

Conclusion

The findings of this study highlight the positive impact of health-promoting lifestyle modification education on improving the knowledge, attitude, and quality of life of middle-aged teachers undergoing menopause. Educational interventions effectively enhance awareness and understanding of menopause-related changes, fostering more positive attitudes toward managing symptoms and transitions. Furthermore, the improved lifestyle practices contribute to a better quality of life by promoting physical, mental, and emotional well-being. Implementing such educational programs in school environments can empower teachers to embrace healthy lifestyle choices during menopause, potentially leading to long-term health benefits. Future studies should explore sustained impacts over time and the broader applicability of these interventions across different professions and demographic groups.

Acknowledgment

The author gratefully acknowledges Jazan University – Research Ethics Committee for granting permission to conduct this study. The author is highly grateful to the Dean of the College, Dr. Afaf Mohammad Babeeir, for allowed to conduct this study in Farasan province.

The authors also thank all the participants for their effective contribution to the success of this study.

Conflicts of interest

The author declares no conflicts of interest.

Contribution of author

Dr. Santhi Muttipoll Dharmarajlu, Ph.D. – Constructing concepts, Design, the definition of intellectual content, Literature search manuscript, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review and Guarantor.

Funding

None

Data availability

The statistical data that support the findings of this study are available from the corresponding authors upon reasonable request

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