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Nirmala Rathnayake · Gayani Alwis · Janaka Lenora · [Show all 5 authors](#) · Sarath Lekamwasam

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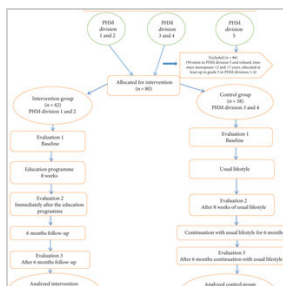
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Abstract and figures

Limited knowledge and negative attitudes about menopause among postmenopausal women (PMW) create a multitude of health-related issues leading to impaired quality of life (QOL) among them. This study evaluated the impact of a health-promoting lifestyle education intervention (HPLEI) on knowledge, attitude, and QOL in a group of PMW in Sri Lanka. A quasi-experimental study was conducted with 72 PMW, matched for sociodemographic status of the community from two

geographically separated areas in Galle, and they were allocated to intervention (n=37) and control (n=35) groups. HPLEI is comprised of health education sessions focused on postmenopausal health management with lifestyle modifications provided only for the intervention group for 8 weeks and follow-up for 6 months. The control group was not given any planned education programme and was allowed to proceed with the usual lifestyle during this period. Knowledge, attitude, menopause-specific QOL (MENQOL), and overall QOL were evaluated in both groups with self-administered questionnaires at the baseline, after 8 weeks of education sessions and at the end of 6 months of follow-up. The mean (SD) ages of the intervention and control groups were 54.6 (4.5) and 56.5 (3.4) (p=0.06) years, respectively. All evaluated variable scores were not different between the intervention and control groups (p>0.05) at the baseline. In the intervention group, knowledge (mean±SD; 21.70±1.05) and attitude (mean±SD; 44.02±5.33) scores increased at the end (p



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Page 1

Effect of Health-Promoting Lifestyle Modification Education on Knowledge, Attitude, and Quality of Life of Postmenopausal Women

Nirmala Rathnayake ¹, Gayani Alwis ², Janaka Lenora,³ Iresha Manjula,⁴ and Sarath Lekamwasam ⁵

¹Department of Nursing, Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka

²Department of Anatomy, Faculty of Medicine, University of Ruhuna, Sri Lanka

³Department of Physiology, Faculty of Medicine, University of Ruhuna, Sri Lanka

⁴Department of Gynecology and Obstetrics, Faculty of Medicine, University of Ruhuna, Sri Lanka

⁵Population Health Research Centre, Department of Medicine, Faculty of Medicine, University of Ruhuna, Sri Lanka

Correspondence should be addressed to Nirmala Rathnayake; nirmala.priyanthi@gmail.com

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Limited knowledge and negative attitudes about menopause among postmenopausal women (PMW) are related issues leading to impaired quality of life (QOL) among them. This study evaluated the impact of a health-promoting lifestyle modification education intervention (HPLEI) on knowledge, attitude, and QOL in a group of PMW in Sri Lanka. A study was conducted with 72 PMW, matched for sociodemographic status of the community from two geographical locations: Galle, and they were allocated to intervention ($n = 37$) and control ($n = 35$) groups. HPLEI is conducted in 10 sessions focused on postmenopausal health management with lifestyle modifications provided on a weekly basis for 8 weeks and follow-up for 6 months. The control group was not given any planned education and proceeded with the usual lifestyle during this period. Knowledge, attitude, menopause-specific QOL, and overall QOL were evaluated in both groups with self-administered questionnaires at the baseline, after 8 weeks, and at the end of 6 months of follow-up. The mean (SD) ages of the intervention and control groups were 53.4 (3.4) ($p = 0.06$) years, respectively. All evaluated variable scores were not different between the intervention and control groups ($p > 0.05$) at the baseline. In the intervention group, knowledge (mean \pm SD; 21.70 ± 1.05) and attitude scores increased at the end ($p < 0.001$). In the control group, a marginal increase in all dimensions of QOL (mean \pm SD; 9.71 ± 2.21) and unchanged attitude scores (mean \pm SD; 23.91 ± 7.56) were seen. All dimensions of QOL during the follow-up in the intervention group (mean \pm SD; 138.51 ± 18.47) ($p < 0.001$) except for overall QOL were increased in the control group (mean \pm SD; 92.05 ± 28.87) ($p < 0.001$) with the exception of overall QOL. Overall QOL increased (mean \pm SD; 74.85 ± 9.71) ($p < 0.001$) in the intervention group during the study period and overall QOL (mean \pm SD; 51.03 ± 13.61) showed a reduction ($p < 0.001$) at the end. Health education with lifestyle modifications was effective in improving knowledge, attitude, MENQOL, and overall QOL of

1. Introduction

learning involving some form of education to improve health literacy, including health education, health promotion, and health communication.

to the dissemination of health-related information and extends to fostering the motivation, skills, and confidence (self-efficacy) that are necessary to take action to improve health [1].

Menopause is a major milestone in women resulting from the depletion of ovarian functions. Menopause leads to a new biological state accompanied by a multitude of physical and psychological changes. It causes a wide range of symptoms such as hot flashes, night sweats, muscle and joint aches or pains, sleeping problems, weight gain, and depression, leading to impairment of quality of life (QOL) [2, 3].

The QOL is defined as “an individual’s perception of their position in life in the context of culture and value system in which they live and in relation to their goal expectations, standards and concerns” by the World Health Organization [4]. In postmenopausal women (PMW), QOL usually refers to the aspects pertaining to health based on a combination of symptoms without considering the physical, emotional, or social functions [5]. Therefore, the term QOL specific to PMW is often referred as menopause-specific quality of life (MENQOL) [5].

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 the entire family and society, negatively [6, 7].

Women encounter numerous challenges in this period; however, this time is an opportunity for them to change their life and improve their health status. Since some factors are not easily modifiable, lifestyle which is relatively easy to change can be the focus of interventions in this regard. Enhancing the awareness of women regarding physical, psychosocial, and lifestyle changes that arise following menopause through health education programmes is a way to

demands and preferences [12]. Existing and irritable menopausal symptoms are predictors of behavioral change. Existing characteristics, experience, and a health-promoting activity would influence health outcomes by modifying behavior. Expected behavioral changes to a health-promoting activity would influence health outcomes. They will improve health, enhance quality of life, and have better QOL.

Even though previous studies on health-promoting information (HPM) [13] have shown positive results in women around menopause in Sri Lanka, studies have been reported from other countries. Application and validity of health-promoting information conducted elsewhere to Sri Lanka should be understood by health care providers to strive for women’s health [14]. Promoting health-promoting information [15] to PMW and supervision can improve their health power to accept menopause [16]. The cost-benefit ratio for the programme is favorable. The programme enhance its effectiveness and sustainability through shorter duration attempts [13]. Health-promoting information programmes that focused on health-promoting information delivered with supervision for a lengthy period would improve PMW in Sri Lanka effectively.

Improving QOL is imperative for individual PMW for achieving a better quality of life for a country like Sri Lanka since women make significant contributions as an active labor force. The study’s findings and possibilities in the extended family and community. The current study based on Pender’s Health Promotion Model (HPM) evaluate the impact of a health-promoting information intervention (HPLEI) on knowledge and behavior of a group of PMW in Sri Lanka.

pause through health education programmes is a way to improve positive attitudes towards menopause [8]. Health education with proper training also improves the women's knowledge about menopause enabling them to deal with the emotional and practical aspects of menopause and allow women to be familiar with this stage of life [9]. Furthermore, health standards and QOL can also be enhanced by promoting awareness of changing behaviors and creating an environment that supports good health practices [10] rather than a pharmacologic intervention that has less acceptability proven with greater dropout rates [11]. Therefore, current interventions targeting PMW focus mainly on educating them on disease prevention by adapting a healthy diet and appropriate physical activity schedule [5, 7].

Pender's Health Promotion Model (HPM) is one comprehensive model that emphasizes the promotion of health and the empowerment of individuals for achieving better health and preventing diseases through behavioral changes [12]. 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

group of PMW in Sri Lanka.

2. Materials and Methods

2.1. Study Design, Participants, and quasi-experimental study, which HPLEI that was designed as a pair of menopause on bodily structural health," conducted at the Faculty Ruhuna, Sri Lanka [17]. The method of a sample and HPLEI have been previous publication when presenting health-promoting behaviors and cohort of study participants [18]. They were selected randomly from 05 Public Health Divisions in Bope-Poddala Medic Galle district, in Sri Lanka, for the main study at the initial screening for replacement therapy (HRT) or various diseases (NCDs) and disorders related to the nervous systems and gait were excluded. In addition, women with age-related premature menopause (menopausal

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with menopause secondary to surgery or drug therapy, and women who are exposed to dedicated dietary or exercise programmes currently or previously were also excluded.

Of the 05 PHM divisions, 02 divisions were assigned randomly for the "intervention group ($n = 42$)" and another 02 geographically separated PHM divisions were assigned randomly for the "control group ($n = 38$)" to minimize the contamination. One PHM division was excluded. Consenting women with time since menopause ≥ 2 to ≤ 7 years and women who had at least education up to grade 5 were included in the current study.

The sample size calculation was based on a previous study of similar nature done in Iran, by comparing the QOL before and after education intervention [19]. The postmenopausal status was determined on self-stated menstrual history. Only 37 women from the intervention group

to the given guidelines. During the intervention group were additionally necessary and family members' accordingly. Estimation on current status, feasibility, obtaining active participation of closest family members was emphasized. They were asked to record the activities they have done daily and prescribed to follow. The diary was reviewed regularly and reminding frequently to enhance the compliance.

The control group was not exposed to any education programme which allowed them to continue their usual lifestyle during this period, but they were contacted with them regularly.

The study flowchart of the current

sexual history. Only 37 women from the intervention group and 35 women from the control group completed the study ($n = 72$).

2.2. Health-Promoting Lifestyle Education Intervention. HPLEI comprised of 8 weeks health education sessions and 6 months of follow-up. Health education included 8 sessions focused on lifestyle modifications which were carried out for 8 weeks (June–July 2017), and printed health education package was provided at the end of the training for the intervention group. A health education package was designed by the research team with the contributions from a group of experts including a gynecologist, physician, nutritionist, and sport physician. It was based on menopausal symptom management, healthy diet [20], healthy physical exercises, and spiritual support, individualized for each participant.

Available options for the management of troublesome menopausal symptoms such as hot flushes and joint pain were provided. Adjustment in diet was done according to the current physical activity level. Proportion of energy was carbohydrate 55–65%, fat 20–30%, and protein 10–15%. The energy distribution of meals was breakfast 20%, lunch 40%, dinner 20%, and snacks 20%. A low-calorie diet (1200–1600 kcal) was recommended concerning the food preferences and available food items. Physical exercises were of three types: continuous walking (30 min \times 5 days per week), strength training exercise for limbs (8–10 times \times 3 times per day \times 3 days per week), and balance training exercise (8–10 times \times 3 times per day \times 3 days per week). They were also asked to engage in relaxation exercises such as meditation for 10 minutes daily, reading books, listening to music, and engaging in religious activities.

Teaching materials were prepared to suit the subjects including the visual images without medical terminology. The content was culturally acceptable since the content validity was ensured by having a focus group discussion with a group of PMW selected from another geographical location. All the sessions were conducted as a group activity by the principal investigator with session duration of 1 hour (40 minutes for education and 20 minutes for discussion).

After 8 weeks of education sessions, the women in the intervention group were invited to follow the given guidelines and they were followed up for a period of 6 months (August 2017–January 2018) by observing their adherence

2.3. Evaluation of Knowledge, Attitude, and Quality of Life. Knowledge, attitude, MENQOL was observed in both the intervention and control groups. Evaluation 1 was conducted at the baseline; Evaluation 2 (immediately after the education sessions for the intervention group); Evaluation 3, after the 6 months of follow-up; Evaluation 4, after the 12 months of follow-up. Evaluation 3, by administering the questionnaire, menopause-specific quality of life questionnaire, and Short-form 36

2.3.1. Knowledge and Attitude Questionnaire. The questionnaire was designed to assess the physiological basis of menopause, complications of menopause, and management of menopause was assessed in the questionnaire. It contained 23 statements answered in a Likert manner. The attitude section in the questionnaire was measuring the attitude which was measured by a Likert scale (strongly agree, agree, disagree, and no idea). The knowledge and attitude questionnaire was developed by the investigators and had been used to assess the knowledge and attitude of PMW in a previous study [21]. The knowledge and attitude questionnaire (unpublished data).

In the knowledge section, every correct answer was given 1 mark; wrong answers and no answers were given 0 marks. Scores for four subscales and total score ranged from 0 to 23. In the attitude section, 1 was given for each answer as strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. An overall score was created, higher score indicated higher level knowledge and positive attitude.

2.3.2. MENQOL Questionnaire. The questionnaire consists of 75 items and is aimed at capturing Menopausal Quality of Life on vasomotor, physical, psychosocial, and sexual domains. It is a validated questionnaire [22] and locally [23]. High score indicates high MENQOL.

2.3.3. The SF-36 Survey. It is a health survey consisting of 36 items designed to provide a comprehensive estimation of the individual

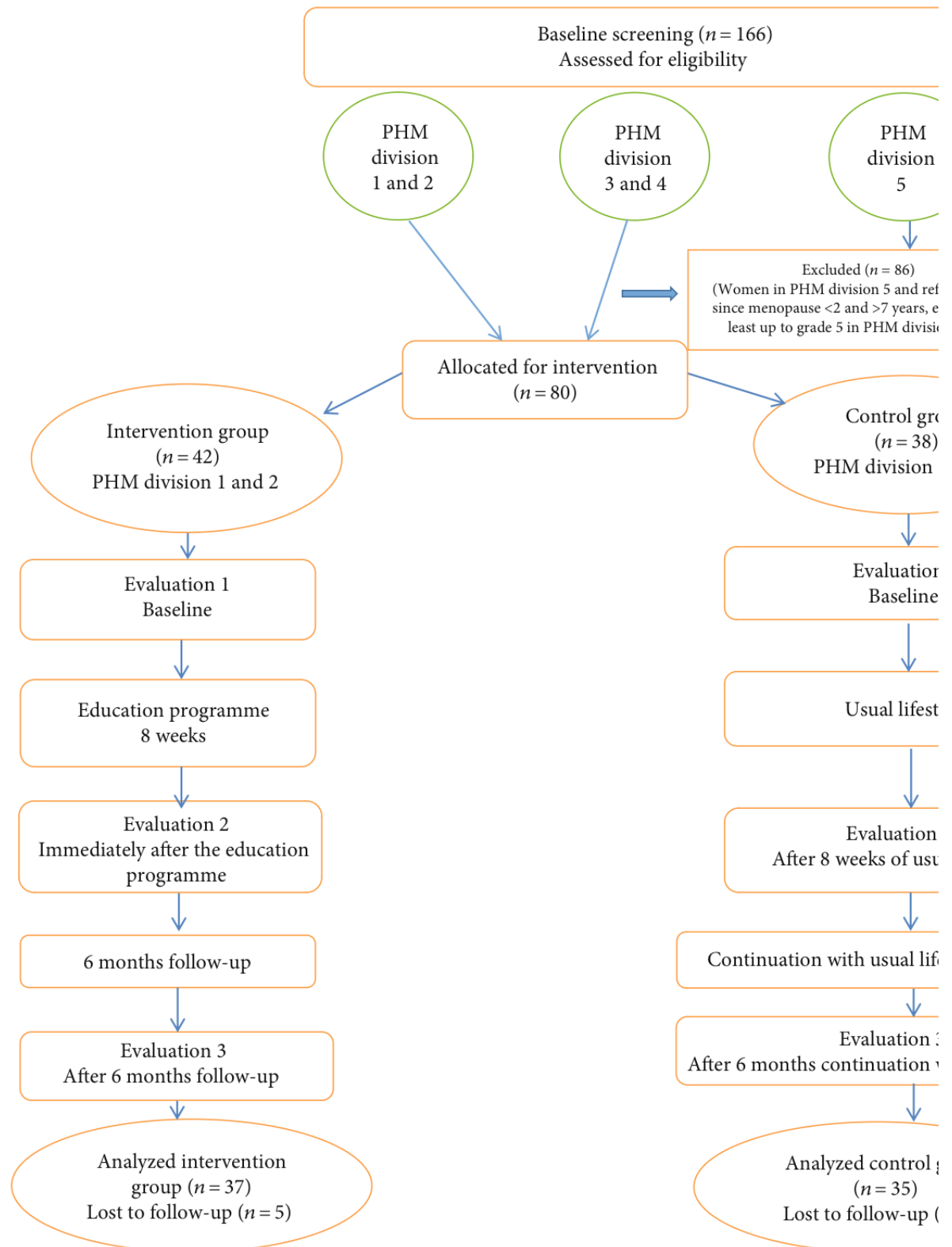


FIGURE 1: Flow diagram of the HPLEI (PHM area: public health midwifery area)

under two main dimensions (physical and psychological). In SF-36, each dimension is given a score ranging from 0 to 100 using the original coding algorithm and higher values indi

dent sample *t*-test. The follow-up intervention and control group repeated measure ANOVA *p*-valu

using the original coding algorithm and higher values indicate higher QOL [24]. It has been validated internationally [24] and locally [25]. Higher scores indicate higher QOL.

2.4. Statistical Analyses. For the final analysis, only 72 women were included (intervention group = 37 and control group = 35). Descriptive data were presented as means and standard deviations (SD). The data gathered in all questionnaires were analyzed with the standard guidelines provided by the respective authors and publishers [22, 24].

The differences of basic characteristics between the intervention and control groups were compared using indepen-

repeated measure ANOVA. p values were corrected for multiple comparisons using Bonferroni correction for multiple comparisons. Interaction and effect size was evaluated using partial eta square (Λ) and partial eta square.

Furthermore, the difference obtained at the end of the 6-month follow-up was further evaluated with one-way ANCOVA (ANCOVA) while eliminating the effects of the baseline value of each variable.

2.5. Ethical Considerations. Ethical approval for the study was obtained from the Ethics Review Board of the University of Ruhuna.

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Medicine, University of Ruhuna, Sri Lanka (Reference number; 31/05/2016:3.16). Informed written consent was obtained from all participants before the commencement of the study.

3. Results

3.1. Basic Characteristics of Participated Women. The mean (SD) age of the intervention and control groups was 54.6 (4.5) and 56.5 (3.4) years ($p = 0.06$), respectively. Age at menopause, time since menopause, and sociodemographic characteristics were not different between the intervention and control groups [18]. Knowledge, attitude, MENQOL, and overall QOL scores were not different between the intervention and control groups at the baseline (Evaluation 1) (p values are not shown in tables).

3.2. Changes of Knowledge, Attitude, MENQOL, and Overall QOL. Knowledge and attitude scores increased in the intervention group during the HPLEI ($p < 0.001$). In the control group, while a marginal increase in all dimensions of knowledge scores was seen, scores related to attitude remained unchanged. All scores of knowledge in the control group remained low when compared with the intervention group (Table 1).

All MENQOL scores decreased during the follow-up in

the intervention group. Since we observed significant gender differences, it is clear that the two groups changed in a different manner in all the variables studied. The effect size observed in all the variables were significant differences between the two groups.

Positive impact of education and health education programmes about menopause and its management on lifestyle management in improving the status of PMW are seen consistent with other studies. Health education programmes about menopause and its management have positive effects on knowledge [26], attitude towards menopause in PMW [27], and overall QOL [28]. Health education programmes focused on lifestyle management improved the MENQOL; vasomotor domain [16], psychosocial domain [31], and overall QOL [32–34]. Significant improvement in overall QOL has been observed [35, 36] indicating that health education programmes related to menopause are relevant. The increase in awareness in PMW did not change during the 6 weeks of follow-up, while other studies have shown that health education programmes have positive effects on overall QOL [37]. Further, health education programmes have positive effects on overall QOL [38]. Health education programmes and maintenance of PMW have positive effects on overall QOL [39, 40]. Our previous publication also showed that health education programmes are an effective way to establish good health status of PMW [18]. The duration, and intensity of the programme are the matter if the programme shows

the intervention group ($p < 0.001$) except the sexual domain ($p = 0.32$). However, scores increased in the control group ($p < 0.001$) with time (Table 2).

Except the social functioning and comfort domains, all other domains of QOL and the overall QOL scores increased ($p < 0.001$) in the intervention group during the study period. In the control group, except the vitality and comfort domains, all other domains and the overall QOL showed reduction ($p < 0.05$) (Table 3).

Between-group comparison at the end of the 6-month follow-up showed an improvement of knowledge ($p < 0.05$), attitude ($p < 0.001$) (Table 1), MENQOL except sexual domain ($p < 0.001$) (Table 2), and the overall QOL ($p < 0.001$) (Table 3) in the intervention group compared to the control group during the intervention.

The group*time interaction was significant ($\Lambda > 0.05$, $p < 0.001$), and the main effect size was large revealed with moderate to large ($\eta_p^2 > 0.2$) for all the measured variables indicating the significant difference between the repeated measures over time in two groups (Tables 1–3).

Results did not change materially after controlling the effect of baseline characteristics with one-way ANCOVA (Tables 1–3).

4. Discussion

The current study revealed a positive impact of a HPLEI which was based on HPM on knowledge and attitude, and ultimately on enhancement of MENQOL and overall QOL in PMW. The current study supports the view that the importance of specific knowledge and attitude on menopause is needed to achieve the higher QOL.

matter in the programme shows effects as reported by many studies [26–41].

The effectiveness of an interval, systematic design, guiding a useful progress monitoring [42]. The focus, the success of our lifestyle would be due to few reasons. It is generally accepted, well-designed programmatic framework. It also had the set regular approach, and regular follow-up a lengthy period of 8 weeks training [18].

The content validity of the education were ensured by a group of acceptance was assured with and content was not delivered as a workshop to emphasize the women to necessary skills gradually. Guiding to help the PMW to shape a positive attitude, teach them to overcome the behavior, and provoke high positive attitude through successful positive feedback through regular

Regular follow-up comprised of and motivating the women to engage appropriately. Individual attention of family members, and previous and evidences on the effectiveness of the positive outcomes.

The possible reason for having among the PMW in the intervention to the enhanced knowledge and

between group comparison at the end of 6 months follow-up (p value) ^b	<0.001	<0.001	<0.001	0.01	<0.001	<0.001	<0.001	Means between the
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TABLE 1: Comparison of mean scores of knowledge and attitude of intervention and control groups in three stages of evaluation ($n = 72$).

Parameter	Group	Evaluations			E3 Mean (SD)	Within group comparison (p value) ^a	Between group comparison (p value) ^a	Group* time interaction Δ (p value)	Effect size (η_p^2)	B _t comp of 6 n
		E1 Mean (SD)	E2 Mean (SD)	E3 Mean (SD)						
<i>Knowledge</i>										
Knowledge on physiology of menopause	C	2.34 (0.83)	2.31 (0.79)	2.45 (0.70)	0.20	<0.001	0.37 (<0.001)	0.62		
	I	2.02 (0.83)	3.56 (0.50)	3.62 (0.49)	<0.001					
Knowledge on short-term effects of menopause	C	1.22 (1.00)	1.00 (1.22)	1.48 (1.59)	0.03	<0.001	0.09 (<0.001)	0.90		
	I	1.18 (1.07)	7.21 (0.71)	7.29 (0.70)	<0.001					
Knowledge on long-term effects of menopause	C	0.31 (0.67)	0.85 (1.06)	1.22 (1.05)	<0.001	<0.001	0.10 (<0.001)	0.89		
	I	0.32 (0.66)	5.89 (0.31)	5.91 (0.27)	<0.001					
Knowledge on management of menopause-related issues	C	0.57 (0.55)	2.05 (1.05)	4.54 (1.01)	<0.001	<0.001	0.11 (<0.001)	0.88		
	I	0.27 (0.45)	4.83 (0.37)	4.86 (0.34)	<0.001					
Overall knowledge score	C	4.45 (1.44)	6.22 (1.84)	9.71 (2.21)	<0.001	<0.001	0.03 (<0.001)	0.97		
	I	3.81 (1.02)	21.51 (0.98)	21.70 (1.05)	<0.001					
<i>Attitude</i>										
Overall attitude score	C	24.42 (7.81)	24.74 (7.74)	23.91 (7.56)	0.58	<0.001	0.13 (<0.001)	0.86		
	I	24.05 (6.88)	27.35 (4.04)	44.02 (5.33)	<0.001					

: evaluation; Δ : Wilk's lambda; η_p^2 : partial eta squared. Groups: I: intervention; C: control. ^aMeans between and within the group were compared with two-way repeated measure ANOVA. ^t groups at the end of 6 months were compared with one-way ANCOVA while controlling the baseline characteristics.

s of MENQOL of intervention and control groups in three stages of evaluation ($n = 72$).

Evaluations		Within group comparison (p value) ^a	Between group comparison (p value) ^a	Group*time interaction Δ (p value)	Effect size (η_p^2)	Between-group comparison at the end of 6 months follow-up (p value) ^b
E2 Mean (SD)	E3 Mean (SD)					
10.28 (4.59)	12.80 (3.46)	<0.001	0.004	0.30 (<0.001)	0.69	<0.001
8.66(2.81)	7.89(3.49)	<0.001				
24.20 (8.03)	32.45 (7.40)	<0.001	0.001	0.10 (<0.001)	0.90	<0.001
20.59 (7.42)	19.16 (8.19)	<0.001				
7.57 (12.06)	83.34 (11.01)	<0.001	<0.001	0.05 (<0.001)	0.94	<0.001
6.48 (14.65)	54.32 (16.23)	<0.001				
11.22 (4.38)	9.91 (3.02)	<0.001	0.64	0.65 (<0.001)	0.34	0.94
11.00 (5.05)	10.67 (5.41)	0.32				
13.28 (18.54)	138.51 (18.47)	<0.001	<0.001	0.04 (<0.001)	0.95	<0.001
6.81 (25.80)	92.05 (28.87)	<0.001				

tion; C: control. ^aMeans between and within the group were compared with two-way repeated measure ANOVA. ^bMeans between the ile controlling the baseline characteristics.

of evaluation ($n = 72$).

Group* time interaction Δ (p value)	Effect size (η_p^2)	Between group comparison at the end of 6 months follow-up (p value) ^b
0.40 (<0.001)	0.59	<0.001
0.57 (<0.001)	0.42	<0.001
0.70 (<0.001)	0.29	<0.001
0.78 (<0.001)	0.21	<0.001
0.59 (<0.001)	0.40	<0.001
0.76 (<0.001)	0.29	<0.001
0.79 (<0.001)	0.20	<0.001
0.27 (<0.001)	0.72	<0.001
0.34 (<0.001)	0.65	<0.001
0.57 (<0.001)	0.42	<0.001

TABLE 2: Comparison of mean score

Menopause-specific quality of life	Group	E1	
		Mean	(SD)
Vasomotor domain score	C	9.45	(4.15)
	I	8.62	(2.83)
Psychosocial domain score	C	21.74	(7.21)
	I	20.81	(7.72)
Physical domain score	C	60.48	(11.17)
	I	57.10	(14.49)
Sexual domain score	C	10.25	(4.61)
	I	11.10	(5.07)
Overall menopause-specific QOL	C	101.94	(18.52)
	I	97.64	(25.94)

E: evaluation; Δ : Wilk's lambda; η_p^2 : partial eta squared. Groups: I: interven groups at the end of 6 months were compared with one-way ANCOVA whi

TABLE 3: Comparison of mean scores of overall QOL of intervention and control groups in three stages

QOL Scores	Group	Evaluations			E3 Mean (SD)	Within group comparison (p value) ^a	Between group comparison (p value) ^a
		E1 Mean (SD)	E2 Mean (SD)	E3 Mean (SD)			
Physical functioning	C	68.80 (25.06)	68.91 (24.02)	54.94 (18.52)	<0.001	0.37	
	I	64.89 (24.19)	65.00 (24.15)	76.35 (14.02)	<0.001		
Role performance due to physical problems	C	37.14 (43.45)	37.20 (42.51)	27.85 (32.59)	<0.001	0.01	
	I	37.16 (44.33)	37.50 (43.72)	89.18 (17.22)	<0.001		
Role performance due to emotional problems	C	49.52 (46.70)	49.50 (46.64)	37.14 (35.02)	<0.001	0.02	
	I	55.85(47.82)	56.71(47.19)	88.28(21.10)	<0.001		
Vitality (perception of energy or fatigue)	C	61.00 (21.37)	60.57 (20.92)	59.67 (19.99)	0.20	0.33	
	I	63.78 (21.06)	63.70 (21.00)	67.43 (17.30)	0.001		
Social functioning	C	73.57 (22.02)	71.78 (21.07)	64.28 (14.89)	<0.001	0.97	
	I	71.28 (23.54)	71.25 (22.51)	71.55 (23.05)	0.32		
Emotional well-being	C	75.88 (16.10)	75.65 (15.77)	69.94 (11.90)	<0.001	0.76	
	I	73.29 (19.27)	73.40 (19.30)	75.13 (17.28)	0.01		
Comfort (perception of pain)	C	58.21 (23.98)	57.51 (22.11)	53.21 (18.38)	0.25	0.08	
	I	64.52 (20.73)	63.81 (20.14)	66.28 (18.80)	0.16		
General health	C	56.00 (16.66)	55.57 (16.43)	41.24 (10.64)	<0.001	<0.001	
	I	59.18 (17.77)	59.15 (16.22)	64.59 (15.38)	<0.001		
Physical health dimension	C	56.29 (22.14)	55.56 (19.47)	45.93 (15.16)	<0.001	0.01	
	I	57.58 (21.59)	56.36 (19.31)	74.39 (9.24)	<0.001		
Psychological dimension	C	64.29 (20.95)	63.79 (20.47)	56.14 (14.50)	<0.001	0.07	
	I	66.24 (21.55)	66.48 (21.50)	75.31 (13.71)	<0.001		

regarding the management of menopausal effects satisfactorily and positive attitude towards menopause. The other reason could be that they were able to get rid of irritable menopausal discomforts and enhanced general health status including physical functions, cardiovascular risks, and adiposity status [18] by following up the taught programme made their lives happier and healthier than earlier.

Therefore, this positive impact of the menopause-specific education programme based on lifestyle modifications encourages its use at the individual and community levels. The programme had multiple benefits including greater level of acceptability, affordability since it was inexpensive, and enhanced the awareness of women achieved through readily available options and remedies.

Therefore, health care professionals can utilize this information for health promotion in PMW at the individual and community levels by advising and informing about menopause to maintain health through health promotion strategies for possible problems. Information delivered with such attempt should be culturally accepted with affordable and available options to achieve realistic outcomes. It should further focus on positive aspects of menopause by supporting each individual woman's agenda. Therefore, we recommend establishing units in the community for educating PMW to promote healthy postmenopausal age with optimum physical and mental stamina for own health and well-being and for social activities.

Our study has a few strengths and limitations. We used an adequate number of matched samples for the study using a previous evidence of QOL improvement which was manageable to monitor adequately, minimized the contacts between the two groups with cluster randomization, and supervised their compliance strictly for a lengthy period of time. However, the self-reporting of variables with structured questionnaires could be considered a limitation. Therefore, we propose further studies with objective measurements of the variables or qualitative analysis of the sample for studied variables in the same area.

5. Conclusions

This study proved that education intervention focused on health-promoting lifestyle management was effective in improving knowledge, attitude, MENQOL, and overall QOL of PMW. This programme may offer implications for designing and implementing such interventions in future studies in this nature. This approach is recommended as a health care intervention in postmenopausal health management

Conflicts of Interest

The authors declare that they have no conflict of interest.

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References

- [1] D. Nutbeam, "Health Promotion International", vol. 13, no. 4, pp. 1-10, 2003.
- [2] H. Waidyasekera, K. Wijewansa, and T. Naessen, "Menopausal symptoms and the menopausal transition in Sri Lanka", *Journal of Health, Population and Family Planning*, vol. 16, no. 1, pp. 164-170, 2009.
- [3] E. Daly, A. Gray, D. Barlow, K. M. Vessey, "Measuring the impact of hormone therapy on quality of life," *BMJ*, vol. 308, pp. 840, 1993.
- [4] The WHOQOL Group, "The WHOQOL: The quality of life assessment (WHOQOL) instrument," *The World Health Organization*, vol. 41, no. 10, pp. 1403-1409, 1993.
- [5] M. Khajehei, M. Moattari, M. M. Moattari, and S. Forouhari, "The effect of health education on the Quality-of-Life in postmenopausal women," *Journal of Community Medicine*, vol. 35, pp. 1-6, 2004.
- [6] P. Shakila, P. Sridharan, and S. Sridharan, "The impact of women's awareness and health education on their health status (a study with reference to academic staff of a university)," *Journal of Business & Economic Research*, vol. 124, 2014.
- [7] M. Nazari, S. Farmani, M. H. Nazari, "The effectiveness of lifestyle education in promoting health promoting behaviors and menopausal health in old women in Marvdasht, Iran," *Journal of Health, Population and Family Planning*, vol. 16, no. 1, pp. 164-170, 2009.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Disclosure

This manuscript was derived from the corresponding author's PhD study at University of Ruhuna, Sri Lanka.

- ence, vol. 8, no. 10, p. 34, 2016.
- [8] F. R. Pérez-López, "An evaluation of menopause information on the internet," *Menopausal Medicine*, vol. 49, no. 4, pp. 276–282, 2005.
- [9] V. M. Rice, "Strategies and issues related to menopause symptoms in diverse populations," *The American Journal of Nursing*, vol. 105, no. 12, pp. 142–147, 2005.
- [10] R. D. Galloway, "Health promotion interventions for menopause symptoms," *Clinical Medicine*, vol. 3, pp. 249–258, 2003.

- [11] F. X. Pi-Sunyer, L. J. Aronne, H. M. Heshmati, J. Devin, J. Rosenstock, and Group R-NAS, "Effect of rimonabant, a cannabinoid-1 receptor blocker, on weight and cardiometabolic risk factors in overweight or obese patients: RIO-North America: a randomized controlled trial," *JAMA*, vol. 295, no. 7, pp. 761–775, 2006.
- [12] N. J. Pender, C. L. Murdaugh, and M. A. Parsons, *Health Promotion in Nursing Practice*, 2006.
- [13] M. Yazdkhasti, M. Simbar, and F. Abdi, "Empowerment and coping strategies in menopause women: a review," *Iranian Red Crescent Medical Journal*, vol. 17, no. 3, article e18944, 2015.
- [14] B. Kalra, S. Agarwal, and S. Magon, "Holistic care of menopause: understanding the framework," *Journal of mid-life health*, vol. 3, no. 2, pp. 66–69, 2012.
- [15] L. Cusack, C. B. Del Mar, I. Chalmers, E. Gibson, and T. C. Hoffmann, "Educational interventions to improve people's understanding of key concepts in assessing the effects of health interventions: a systematic review," *Systematic reviews*, vol. 7, no. 1, p. 68, 2018.
- [16] M. Rotem, T. Kushnir, R. Levine, and M. Ehrenfeld, "A Psycho-Educational Program for Improving Women's Attitudes and Coping With Menopause Symptoms," *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, vol. 34, no. 2, pp. 233–240, 2005.
- [17] N. Rathnayake, J. Lenora, G. Alwis, and S. Lekamwasam, "Prevalence and severity of menopausal symptoms and the quality of life in middle-aged women: a study from Sri Lanka," *Nursing Research and Practice*, vol. 2019, Article ID 2081507, 2019.
- [26] M. Hunter and I. O'Dea, "An evaluation of a health education intervention for mid-aged women: effects upon knowledge, impact on self-efficacy and health status," *Patient education and counseling*, vol. 19, pp. 1–10, 1999.
- [27] K. Liao and M. Hunter, "Preparative evaluation of a health education program for mid-aged women," *Maturitas*, vol. 29, no. 1, pp. 1–10, 1998.
- [28] V. Patel, MSc Nursing Student, Sumandeep Vidyapeeth, Pipariya, India, S. Koshy, and H. N. Ravindran, "A teaching programme on knowledge and coping strategies among premenopausal women," *Journal of Nursing and Health Science*, vol. 1, no. 1, pp. 1–10, 2018.
- [29] M. Kharat and S. P. Kaur, "The effect of a health education module on knowledge and coping among premenopausal women in Wardha city," *International Journal of Nursing and Health Science*, vol. 2, no. 2, pp. 52–54, 2018.
- [30] M. Taherpour and F. Sefidi, "The effect of a health education module on the knowledge and attitude toward menopause and complications in postmenopausal women," *Maturitas*, vol. 21, no. 84, pp. 92–101, 2018.
- [31] C. Booth-LaForce, R. C. Thurston, and M. A. Cella, "A randomized study of a Hatha yoga treatment for menopause symptoms," *Maturitas*, vol. 57, no. 3, pp. 286–293, 2007.
- [32] S. Elavsky and E. McAuley, "The effect of a health education module on health outcomes during menopause: a randomized controlled trial," *Annals of Behavioral Medicine*, vol. 42, no. 1, pp. 1–10, 2012.

- 9 pages, 2019.
- [18] N. Rathnayake, G. Alwis, J. Lenora, and S. Lekamwasam, "Impact of Health-Promoting Lifestyle Education Intervention on Health- Promoting Behaviors and Health Status of Postmenopausal Women: A Quasi- Experimental Study from Sri Lanka," *BioMed Research International*, vol. 2019, Article ID 4060426, 9 pages, 2019.
- [19] G. Moridi et al., "Quality of life among Iranian postmenopausal women participating in a health educational program," *Chronic Diseases Journal*, vol. 1, no. 2, pp. 63–66, 2013.
- [20] FAO, "Human energy requirements report of a joint FAO/WHO/UNU expert consultation," in *Technical Report FAO Food and Nutrition Technical Report Series FAO*, Italy, 2001, <https://www.fao.org/3/y5686e/y5686e08.htm>.
- [21] A. A. Eslami, A. Hassanzadeh, S. Davari, E. Noroozi, and N. K. Dolatabadi, "Knowledge and attitude toward menopause phenomenon among women aged 40–45 years," *Journal of education and health promotion*, vol. 2, no. 1, p. 25, 2013.
- [22] J. R. Hilditch, J. Lewis, A. Peter et al., "A menopause-specific quality of life questionnaire: development and psychometric properties," *Maturitas*, vol. 24, no. 6, pp. 161–175, 1996.
- [23] N. Rathnayake, J. Lenora, G. Alwis, and S. Lekamwasam, "Cross cultural adaptation and analysis of psychometric properties of Sinhala version of Menopause Rating Scale," *Health and Quality of Life Outcomes*, vol. 16, no. 1, p. 161, 2018.
- [24] J. E. Ware Jr., "SF-36 health survey update," *Spine*, vol. 25, no. 24, pp. 3130–3139, 2000.
- [25] N. S. Gunawardena, R. de Alwis Seneviratne, and T. Athauda, "Functional outcomes of unilateral lower limb amputee soldiers in two districts of Sri Lanka," *Military Medicine*, vol. 171, no. 4, pp. 283–287, 2006.
- [33] F. Shobeiri, E. Jenabi, M. Khatil, G. Roshanaei, "The effect of education on quality of life in menopausal women: a cross-sectional study," *Menopausal medicine*, vol. 23, no. 2, pp. 142, 2007.
- [34] M. Yazdkhasti, M. Keshavarz, E. Khatil, "The effect of support group method on quality of life in menopausal women," *Iranian journal of psychogeriatrics*, pp. 78–84, 2012.
- [35] N. A. Phillips, "Female sexual dysfunction," *American Family Physician*, vol. 62, pp. 2000.
- [36] H. O. Osinowo, "Psychosocial factors affecting perceived psychological health, perceived physical health, and life satisfaction in menopausal women," *African journal of medicine and health sciences*, vol. 10, pp. 1–10, 2010.
- [37] A. Ağıl, F. Abıke, A. Daşkapan, "The effect of short-term exercise approach on psychological health, and quality of life in menopausal women," *Obstetrics and gynecology*, vol. 2010, <https://www.hindawi.com/abs/>.
- [38] F. Farokhi et al., "Effect of skill training on quality of life in menopausal women," *Scientific Research and Midwifery Faculty*, vol. 23, no. 1, pp. 1–10, 2010.
- [39] N. Senba and H. Matsuo, "Effect of exercise on climacteric women," *Climacteric*, vol. 13, pp. 569, 2010.
- [40] M. Ueda, M. Matsuda, K. Okano, "The effect of a health education program on quality of life in menopause," *Nursing & health sciences*, pp. 114–119, 2009.

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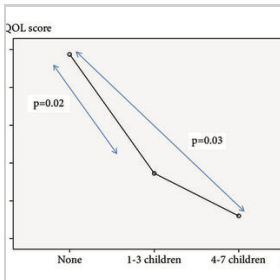
- [41] I. C. E. Sorpreso et al., "Health education intervention in early and late postmenopausal Brazilian women," *Climacteric*, vol. 15, no. 6, pp. 573–580, 2012.
- [42] P. Craig, P. Dieppe, S. Macintyre, S. Michie, I. Nazareth, and M. Petticrew, "Developing and evaluating complex interventions: the new Medical Research Council guidance," *BMJ*, vol. 337, p. a1655, 2008, <https://www.bmj.com/content/337/>

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