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Original Research Article

Effectiveness of deep breathing and walking exercise in reducing menopausal symptoms among post-menopausal women of Tripura, India

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ABSTRACT

Background: Menopause is the part of women's life. Menopausal symptoms refer any feeling of illness or physical or mental change caused by menopause. Purpose of the study; to evaluate the effectiveness of deep breathing and walking exercise in reducing menopausal symptoms among post-menopausal women in selected community, Tripura and to find out the association between the pre-test menopausal symptoms among post-menopausal women with their selected demographic variables.
Methods: A quantitative Quasi experimental research approach with short interrupted time series study design was used. The researcher selected 40 post-menopausal women as a sample by non-probability sampling technique. Data were collected with structured interview schedule on symptoms checklist and deep breathing and walking exercise practice checklist.
Results: The study results show that the pre-observation of post-menopausal symptoms in the experimental group were; 12 (60%) post-menopausal women belong to Moderate group, 8 (40%) belong to severe group and nobody belong to mild group. Post-observation of post-menopausal symptoms of the experimental group were; 1(5%) post-menopausal woman belong to mild, 19 (95%) belong to moderate group and nobody belong to severe group. The pre-observation of post-menopausal symptoms in the control group were; post-menopausal women belong to Mild, Moderate and Severe group were 2 (10%), 13 (65%) and 5 (25%) respectively. Post-observation of post-menopausal symptoms of the control group were; 2 (10%) post-menopausal women belong to mild, 15 (75%) belong to moderate and 3 (15%) belong to severe group.
Conclusions: The finding of present study revealed that breathing and walking exercise improved the post-menopausal symptoms in experimental group.

Keywords: Menopausal symptoms, Post-menopausal women, Deep breathing and walking exercise

INTRODUCTION

Menopause is a part of every woman's life. It is the stage when the menstrual period permanently stops. It is associated with hormonal, physical and psychological changes. It can start as early at the age of 30 and last until as late at the age of 60. Menopause is a normal change in a woman's body. The formal definition of menopause is the last menstrual period.[1]

The Indian Menopause Society's (IMS) 2008 Consensus Statement contains important statistics which showed that, the average age of menopause in Indian woman is 47.5 years, just slightly lower than the average age of 51

for North American and European women. This study also revealed that women in rural areas complain more about having hot flushes, mood swings, psychological problems and intercourse challenges.[2]

Symptoms of menopause include irregular menstruation, changes in sexual desire, hot flushes, vaginal dryness and urinary problems, mood changes, sleep disturbances, palpitation and backache. When the body produces less oestrogen and progesterone, the parts of the body that depends on oestrogen to keep them healthy will react and this often causes the discomfort in women. The duration, severity, and impact of menopausal symptoms vary from person to person, and population to population. Some women have severe symptoms that profoundly affect their personal and social functioning and quality of life.[3]

Menopausal transition makes the women more vulnerable to future health risks due to increase symptomatology and physiological changes. There are various pharmacological therapies available to treat the menopausal symptoms including hormone replacement therapy (HRT), which is bit costly and associated with adverse effects. Alternative methods including relaxation exercises, biofeedback, aerobic exercise, yoga, meditation and breathing techniques give women tools for dealing with their stressful lives. Exercise would probably help to decrease mood and increase sleep pattern among women in menopause. Exercise for 30 minutes for five times a week will probably make them feel better and help them maintain lean muscle and bone mass. Exercise may help them to navigate the pre-menopausal transition and may decrease the severity of hot flushes and other symptoms of menopause.[4]

Objectives of the study

To assess the menopausal symptoms before practicing deep breathing and walking exercises among experimental and control group. To evaluate the effectiveness of deep breathing and walking exercises on menopausal symptoms. To find out the association between the pre-test menopausal symptoms on experimental group with their selected demographic variables (Age of onset of menopause, marital status, life style, and duration of menopause).

Hypothesis

H1: There is a significant difference between pre-test and post-test menopausal symptoms score in post-menopausal women of experimental group and control group as evident from the symptom checklist at 0.05 level of significance.

H2: There is a significant association between the pre-test menopausal symptoms with their selected demographic (Age of onset of menopause, marital status, life style, and duration of menopause) variables at 0.05 level of significance.

Independent variables

Deep breathing and walking exercise was independent variable.

Dependent variables

In this study dependent variable was menopausal symptoms.

METHODS

Research design

Quasi-experimental, short interrupted time series design was used.

Research setting

The study was conducted in Kalyanpur, Gopalnagar, Khowai Tripura.

Study duration

The study was conducted from April 2017 to August 2018.

Sample

Post-menopausal women who have the natural cessation of more than 12 months and 1 day since her last menstruation and whose age are at 45 to 50 years.

Sample size

Sample size was 40 (20 were in experimental group and 20 were in control group).

Inclusion criteria

Who are willing to participate in the study. Those have natural cessation of more than 12 months and 1 day since her last menstruation and who are at the age group of 45-50 years. Who are available at the time of data collection.

Exclusion criteria

Women with un-natural menopause (surgical). Women not giving consent during data collection.

Description of the tool

The major task of the researcher was to develop instrument that accurately and precisely measure the variables of interest, for the present study following three tools were developed to achieve the aim of the study.

Section 1: It consists of background information. It was composed of 7 items to collect the information regarding

personal characteristics including: Age, age of onset of menopause, marital status, educational level, life style, prior information about menopausal symptoms, duration of menopause.

Section 2: Structured interview schedule on symptoms checklist. It consists of 18 items. Each item carries 1(one) for the present of the symptom and 0(zero) for absent of the symptoms. Maximum score was 18. Validators validate the tool without any correction.

Section 3: Deep breathing and walking exercise practice checklist. It consists of 12 steps. Maximum possible score 12.

Content validity and reliability

Content validity of the tools were obtained by submitting the tool to 11 experts to obtain their opinion and suggestions. They were requested to give their opinion and suggestion regarding the items of the tool and modified accordingly. The tool was tested for reliability by using inter-observer method. It was found as r= 92.88.

Pilot study

In pilot study post-menopausal women were divided into two groups as experimental (10) and control (10) group by random table method (odd & even number) before starting the main study.

Plan for data analysis

The data gathered were organized, tabulated and analysed with the help of descriptive statistics (frequency, percentage, mean, median and standard deviation). To evaluate the effectiveness of deep breathing and waking exercises and find out the association between the pre-test menopausal symptoms among post-menopausal women with their selected demographic variables, inferential statistics ('t' test and fishers exact test) was used based on the objectives. The p-value < 0.05 was considered as significant. The data were analysed by using SPSS software version 21.

RESULTS

The data had been organized tabulated, interpreted and presented as follows.

Table 1: Frequency and percentage distribution of post-menopausal women with respect to age, age of onset of menopause, life style of post-menopausal women and duration of menopause. n =40, experimental group (n^1) =20, control group (n^2) =20.

Sl. No.	Variables	Classification	Experimental group(n_1)		Control group(n_2)	
			Frequency	Percentage (%)	Frequency	Percentage (%)
1.	Age	a) 45-46 years	Nil	00	Nil	00
		b) 47-48 years	12	60	9	45
		c) 49-50 years	8	40	11	55
2.	Age of onset of menopause	a) 45-46 years	15	75	12	60
		b) 47-48 years	5	25	8	40
		c) 49-50 years	Nil	00	Nil	00
3.	Life style	a) Sedentary worker	12	60	11	55
		b) Moderate worker	6	30	5	25
		c) Heavy worker	2	10	4	20
4.	Duration of menopause	a) 1-2 years	5	25	4	20
		b) 2-3 years	13	65	5	25
		c) 3-4 years	Nil	00	9	45
		d) 4-5 years	2	10	2	10

Table 1 shows that 12 (60%) were between the age group of 47-48 years, 8 (40%) were between 49-50 years in the experimental group and none of them were in the age group 45-46 years. In the control group among the 20 post-menopausal women, 9 (45%) were between the age group of 47-48 years, 11(55%) were between 49-50 years of age and none of them were in the age group of 45-46 years.

It is evident from the findings that maximum 15 (75%) number of women in experimental group, the age of onset of menopause of 45 to 46 years, but in control group 12 (60%) were within this age of onset of menopause. Only 5 (25%) in experimental group and 8 (40%) in control group women's onset of menopause at the age of 47-48 years. In both groups no one were in the range of 49-50 years for age of onset of menopause.

This table shows that 12 (60%) were sedentary workers, 6 (30%) were moderate worker and 2 (10%) were heavy worker in experimental group. In control group 11 (55%) were sedentary workers, 5 (25%) moderate workers and 4 (20%) of them were heavy workers.

This table also represents that, the duration of menopause of 5 (25%) women comes under the age group of 1-2 years of age, 13 (65%) under 2-3 years, none of them belong to 3-4 years of age and 2 (10%) under the 4-5 years of age group in the experimental group. In the control group 4 (20%) under 1 to 2 years, 5 (25%) under 2 to 3 years, 9 (45%) under 3 to 4 years and 2 (10%) under the age group of 4 to 5 years.

Table 2: Mean, mean differences, standard deviation and paired t values showing difference between pre-test and post-test of post-menopausal symptoms scores in experimental group (n =20).

Observation	Mean	MD	SD	Paired 't'
Hot flush				
Pre-test				
Observation-1	3.65	-0.15	0.88	1.37^{NS}
Observation-2	3.8		0.89	
Post-test				
Observation-3	3	0.25	0.73	2.19^{*}
Observation-4	2.75		0.85	
Stress				
Pre-test				
Observation-1	2.45	-0.35	0.51	2.05^{NS}
Observation-2	2.8		0.7	
Post-test				
Observation-3	2.3	0.2	0.47	2.2^{*}
Observation-4	2.1		0.31	
Mood fluctuation				
Pre-test				
Observation-1	2.6	0	0.82	0^{NS}
Observation-2	2.6		0.75	
Post-test				
Observation-3	2.2	0.2	0.70	2.5^{*}
Observation-4	2		0.65	
Pain				
Pre-test				
Observation-1	2.25	-0.15	0.79	1.37^{NS}
Observation-2	2.4		0.88	
Post-test				
Observation-3	2.05	0.05	0.89	1^{NS}
Observation-4	2		0.92	

t' df (19) = 2.09, p < 0.05. * = Significant, NS= Not Significant

The marital status reveals that 2 (10%) were unmarried, 14 (70%) were married, 4 (20%) were widow and none of them were divorced in the experimental group. In the control group it shows that 14 (70%) were married, 6 (30%) were widow and none of them belong to unmarried and divorced.

Table 3: Mean, mean differences, standard deviation and paired t values showing difference between pre-test and post-test of post-menopausal symptoms scores in control group (n =20).

Observation	Mean	MD	SD	Paired 't'
Hot flush				
Pre-test				
Observation-1	3.45	-0.05	0.83	0.33^{NS}
Observation-2	3.5		1	
Post-test				
Observation-3	3.45	0.1	0.69	0.81^{NS}
Observation-4	3.35		0.93	
Stress				
Pre-test				
Observation-1	2.2	0	0.62	0^{NS}
Observation-2	2.2		0.70	
Post-test				
Observation-3	2	0.1	0.73	1^{NS}
Observation-4	1.9		0.72	
Mood fluctuation				
Pre-test				
Observation-1	2.75	0.5	0.97	1.46^{NS}
Observation-2	2.5		1	
Post-test				
Observation-3	2.4	0.1	0.94	0.81^{NS}
Observation-4	2.5		0.83	
Pain				
Pre-test				
Observation-1	1.65	0.25	0.59	1.68^{NS}
Observation-2	1.9		0.85	
Post-test				
Observation-3	1.75	0.05	0.97	1^{NS}
Observation-4	1.7		0.98	

t' df (19) = 2.09, p< 0.05. * = Significant, NS= Not Significant

Table 2 shows that in experimental group on hot flush, pre-test observations were not significant, but in post-test observations there were significant difference. Similarly, pre-test observations on stress and mood fluctuation were not significant but in post-test observations there were significant difference. But, for pain pre-test and post-test observations both were not significant.

Table 3 shows that in control group on hot flush, stress, mood fluctuation and pain between pre-test observations and post-test observations were not significant.

Table 4 shows that, there was statistically significant in the score of hot flush in experimental group compared to control group at fourth observation ('t' value 2.12) but there were no significant difference at first, second and third observations.

Table 4: Unpaired 't' test showing that difference between score on hot flush among post-menopausal women in experimental and control group. (n=40)

Symptom Hot flush	Mean	MD	SD	Unpaired 't'
Pre-test				
Experimental group (O_1)	3.65	0.2	0.88	0.74 ^{NS}
Control group (O_1)	3.45		0.83	
Pre-test				
Experimental group (O_2)	3.8	0.3	0.89	1 ^{NS}
Control group (O_2)	3.5		1	
Post-test				
Experimental group (O_3)	3	-0.45	0.73	2.02^{NS}
Control group (O_3)	3.45		0.69	
Post-test				
Experimental group (O_4)	2.75	-0.6	0.85	2.12*
Control group (O_4)	3.35		0.93	

t df (38) = 2.04, p< 0.05, NS = Not significant, * = significant

Table 5: Unpaired 't' test showing that difference between score on stress among post-menopausal women in experimental and control group. (n =40).

Symptom Stress	Mean	MD	SD	Unpaired 't'
Pre-test				
Experimental group (O_1)	2.45	0.25	0.51	1.40^{NS}
Control group (O_1)	2.2		0.62	
Pre-test				
Experimental group (O_2)	2.8	0.6	0.7	2.73*
Control group (O_2)	2.2		0.7	
Post-test				
Experimental group (O_3)	2.3	0.3	0.47	2.08*
Control group (O_3)	2		0.73	
Post-test				
Experimental group (O_4)	2.1	0.2	0.31	1.15 ^{NS}
Control group (O_4)	1.9		0.72	

t df (38) = 2.04, p< 0.05, NS = Not significant, * = significant

Table 5 shows that, there were statistically significant in the score of stress in experimental group compared to control group at second and third observation ('t' value 2.73 and 2.08) and first and fourth observations there were not significant difference.

Table 6: Unpaired 't' test showing that difference between score on mood fluctuation among post-menopausal women in experimental and control group. (n=40).

Symptom Mood fluctuation	Mean	MD	SD	Unpaired 't'
Pre-test				
Experimental group (O_1)	2.6	-0.15	0.82	0.53^{NS}
Control group (O_1)	2.75		0.97	
Pre-test				
Experimental group (O_2)	2.6	0.1	0.75	0.36^{NS}
Control group (O_2)	2.5		1	
Post-test				
Experimental group (O_3)	2.2	-0.2	0.70	1.18^{NS}
Control group (O_3)	2.4		0.94	
Post-test				
Experimental group (O_4)	2	0.5	0.65	2.14*
Control group (O_4)	2.5		0.83	

t df (38) = 2.04, p< 0.05, NS = Not significant, * = significant

Table 7: Unpaired 't' test showing that difference between score on pain among post-menopausal women in experimental and control group (n=40).

Symptom pain	Mean	MD	SD	Unpaired 't'
Pre-test				
Experimental group (O_1)	2.25	0.6	0.79	2.73*
Control group (O_1)	1.65		0.59	
Pre-test				
Experimental group (O_2)	2.4	0.5	0.88	1.82^{NS}
Control group (O_2)	1.9		0.85	
Post-test				
Experimental group (O_3)	2.05	0.3	0.89	1.2^{NS}
Control group (O_3)	1.75		0.97	
Post-test				
Experimental group (O_4)	2	0.3	0.92	1.10^{NS}
Control group (O_4)	1.7		0.98	

t df (38) = 2.04, p< 0.05, NS = Not significant, * = significant

Table 8: Frequency and percentage distribution of pre-observational and post-observational level of symptoms of post-menopausal women in experimental and control group (n=40).

Level of symptoms (Score)	Experimental group (n_1 =20)				Control group (n_2 =20)			
	Pre-observation		Post-observation		Pre-observation		Post-observation	
	(F)	(%)	(F)	(%)	(F)	(%)	(F)	(%)
Mild (0-6)	Nil	00	1	5	2	10	2	10
Moderate (7-12)	12	60	19	95	13	65	15	75
Severe (13-18)	8	40	Nil	00	5	25	3	15

Maximum scoring: - 18, Minimum scoring: - 0

Table 9: Fisher's Exact Test represents the association between the pre-test menopausal symptoms on experimental group with their selected demographic variables (Age of onset of menopause, marital status, life style, and duration of menopause) (n=20).

SL. NO.	Characteristics	Category	Below Median	Equal or above median	Calculated value	'p' - value	Remarks
1	**Age of onset of menopause**	a) 45-46 years	3	12	0.259	0.05	NS
		b) 47-48 years	3	2			
		c) 49-50 years	0	0			
2	**Marital status**	a) Unmarried	0	2	0.586	0.05	NS
		b) Married	4	10			
		c) Widow	2	2			
		d) Divorced	0	0			
3	**Life style**	a) Sedentary worker	4	4	0.3238	0.05	NS
		b) Moderate worker	2	8			
		c) Heavy worker	1	1			
4	**Duration of menopause**	a) 1-2 years	6	8	0.845	0.05	NS
		b) 2-3 years	1	2			
		c) 3-4 years	0	1			
		d) 4-5 years	0	2			

P< 0.05, NS = Not significant

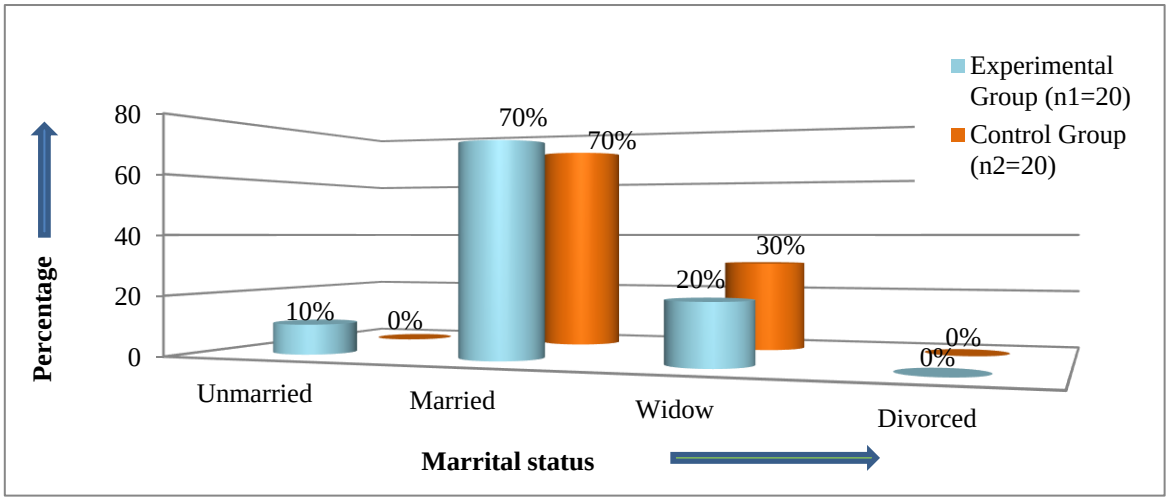

Figure 1: Distribution of marital status of post-menopausal women between experimental and control group.

The marital status reveals that 2 (10%) were unmarried, 14 (70%) were married, 4 (20%) were widow and none of them were divorced in the experimental group. In the control group it shows that 14 (70%) were married, 6 (30%) were widow and none of them belong to unmarried and divorced.

Table 6 shows that, there was statistically significant in the score of mood fluctuation in experimental group compared to control group at fourth observation ('t' value 2.14) but there were no significant differences at first, second and third observations.

Table 7 shows that, there was statistically significant in the score of pain in experimental group compared to control group at first observation ('t' value 2.73) but there were no significant differences at second, third and fourth observations.

Table 8 shows that the pre-observation of post-menopausal symptoms in the experimental group were; 12 (60%) post-menopausal women belong to Moderate group, 8 (40%) belong to severe group and nobody belong to mild group. Post-observation of the experimental group revealed that; 1(5%) post-menopausal women belong to mild, 19 (95%) belong to moderate group and nobody belong to severe group.

The pre-observation of post-menopausal symptoms in the control group were; post-menopausal women belong to Mild, Moderate and Severe group were 2 (10%), 13 (65%) and 5 (25%) respectively. Post-observation of post-menopausal symptoms of the control group were; 2 (10%) belong to mild, 15 (75%) belong to moderate and 3 (15%) belong to severe group.

Hence the inference was drawn that the above-mentioned demographic variables were not associated with pre-test menopausal symptoms. Therefore, research hypothesis(H2) was rejected and null hypothesis (H0) was accepted.

DISCUSSION

The study finding among post-menopausal women shows that in demographic variables majority of respondents 12 (60%) belongs to age group of 47-48 years in experimental group and in control group majority 11 (55%) belongs to 49-50 years of age group. For age of onset of menopause among the respondent's majority 15 (75%) belongs to 45-46 years in experimental group and in control group majority 12 (60%) belongs to 45-46 years. Majority of samples 14 (70%) were married in experimental group and 14 (70%) in control group were married. Regarding educational level majority 8 (40%) and 8 (40%) belongs to primary education and higher education respectively in experimental group and in control group majority 12 (60%) belongs to primary education. Regarding life style majority 12 (60%) belongs to sedentary worker in experimental groups and in control group majority 11 (55%) belongs to sedentary worker. Majority of samples 13 (65%) had duration of menopause between 2-3 years in experimental group and majority 9 (45%) had duration of menopause between 3-4 years in control group.

Paired – 't' test value in experimental group on hot flush in pre-observations were not significant (1.37) and in post -observations were significant difference. Similarly, pre-test observations on stress and mood fluctuation were not significant but in post-test observations there were significant difference. But, for pain pre-test and post-test observations both were not significant. Paired 't' test value in control group on hot flush, stress, mood fluctuation and pain of pre-test observations and post-test observations were not significant.

Unpaired 't' test score on hot flush between experimental and control group at 1st, 2nd and 3rd observations there were not significant (0.74,1, and 2.02 respectively), but at 4th observation there was significant difference (2.12). Unpaired 't' test score on stress between experimental and control group at 2nd and 3rd observations there were significant difference (2.73 and 2.08), but at 1st and 4th observation there were significant difference (1.40 and 1.15). Unpaired 't' test score on mood fluctuation between experimental and control group at 1st, 2nd and 3rd observations there were not significant (0.53,0.36, and 1.18 respectively), but at 4th observation there was significant difference (2.14). Unpaired 't' test score on pain between experimental and control group at 1st observations there was significant (2.73), but at 2nd, 3rd and 4th observation there were not significant difference (1.82,1.2 and 1.10 respectively).

Regarding severity of pre-observation of post-menopausal symptoms in the experimental group 12 (60%) post-menopausal women belong to moderate group and post-observation of post-menopausal symptoms in the experimental group is the moderate menopausal symptoms have been seen among 19 (95%). The pre-observation of post-menopausal symptoms in the control group; the moderate menopausal symptoms have been seen among 13 (65%) and post-observation of post-menopausal symptoms of the control group; 15 (75%) post-menopausal women belong to moderate group.

Similar result was found in a study conducted by Jayadeepa whereas, concluded that "STP and yoga therapy was effective in improving the knowledge scores & reduces the menopausal symptoms among menopausal women".[5] Another study carried by Sreerenjini shows that "deep breathing and walking exercise was helpful in reduction of menopausal symptoms among menopausal women".[6]

Limitations

The limitations of the study findings were, the study was confined to 40 subjects, which resulted in reduced power in statistical analysis. The study was limited to post-menopausal women who were willing to participate in the study. The setting of timing for exercise was quite difficult for rural women.

CONCLUSION

We can conclude based on the above data that post-menopausal symptoms were significantly reduced in experimental group after practicing deep breathing and walking exercises than control group.

Recommendation

Similar study can be conducted through other teaching strategies like video-assisted teaching, structured teaching programme. A comparative study can be conducted with urban and rural areas. A correlation study could be done to assess the perception of menopausal problems among those who underwent a surgical menopause and to those who had a natural menopause.

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