



Comparative effect of reflex therapy, autogenic training, support group method on psychosomatic impact and salivary cortisol among menopausal women: An Original Research

Arul Annuncia D^{1*} Dr. N. Hephzibah Kirubamani² and Dr. S. Vasantha³

¹PhD Scholar, Saveetha Institute of Medical And Technical Sciences, Chennai, Thandalam, Tamil Nadu, India, annunc@yahoo.com

***Corresponding Author**

²Professor, Department of Obstetrics and Gynecology, SIMATS, Thandalam, Chennai, Tamil Nadu, India hepsi1002@yahoo.co.in

³Principal, Bhaarith College of Nursing, Bharath Institute of Higher Education & Research, Selaiyur, Chennai, Tamil Nadu, India vasanthishanju@gmail.com

Abstract

Introduction:

Women experience menopausal transition when there is an increase in life expectancy. Menopause is a natural phase in a female's life, like puberty but also as a biomarker to the loss of fertility and an increased risk for various mid-life diseases and problems. The primary motive of the present study is to compare the effect of reflex treatment, autogenic training, and support group methods on psychosomatic impact among menopausal women.

Materials and Methods: For this study, a quantitative research strategy was used using a genuine experimental design that included intervention and control groups as well as a pre-test-post-test control group strategy. Based on the inclusion criteria, a total of 180 individuals were chosen with age groups of 45 and 60 and with cessation of menstrual period for 12 months. The participants were divided into 3 experimental groups (E1- Reflex therapy n= 30, E2- Autogenic training n= 30 & E3- Support group method n= 30) and a control group (n= 90). The interventions (E1- Reflex therapy, E2- Autogenic training, and E3- Supportive group method) were administered once a week for six weeks.

Results: The outcome of the study results identified Pre-test to Post-test in the control group there was no difference. Experimental 1, Experimental 2, and Experimental 3 groups 10.4, 5.1, 4.2 % decrease was observed. This shows that reflexology (Experimental 1) is very effective in decreasing psychosomatic impact among menopausal women compared to Control and the other two interventions (autogenic training and support group method).

Conclusion: This study showed that reflex therapy effectively reduces psychological and

somatic symptoms among menopausal women. Hence this study reinforces when women perceive lifestyle modifications as a proactive and non-pharmacological approach to manage menopausal symptoms.

Key Words: Reflex Therapy, Autogenic Training, Support Group Method, Psychosomatic Impact, Salivary Cortisol, Menopausal Women.

DOI: 10.48047/ecb/2023.12.8.813

Introduction

Women experience menopausal transition when there is an increase in life expectancy. Menopause is a natural phase in a female's life, like puberty but also as a biomarker to the loss of fertility and an increased risk for various mid-life diseases and problems [1]. It represents the cessation of the menstrual cycle, typically marking the end of reproductive capability. Women's reproductive life involves biopsychosocial growth where a majority of women experience physiological and psychological changes, during her midlife years influenced by the different ethical aspects of their cultures. There is increasing evidence that such aspects (diet, exercise, socioeconomic status, body mass index, mood, cognition) attributes to menopausal symptoms [2].

The number of middle-aged women is growing rapidly. In 1990, the number of women aged 50 years and over was approximated at 467 million globally, and this is anticipated to increase to about 1200 million by 2030 [3]. Most women experience menopause between the ages of 40 and 58 years [4]. The mean age of menopause in Western Counterparts is 51 years [5], and the average Indian women's age is 46.2 years [5]. Increased life expectations, women are presently spending around a third of their lives in postmenopause, which gradually affects their health and quality of life [6]. Better medical and living facilities have led to an increased life expectancy in India, and in fact, 130 million Indian women are expected to live beyond menopause by 2015[7].

The poor quality of life among these menopausal women sets a worthy of attention on women's health care in developing countries like India [8].

The beginning of menopause phase marks by decreasing the estrogen levels, which have immediate and long-term connection of health and overall well-being. Studies indicates that more than 80% of women has experienced hot flashes by transient sensations of heat, sweating, flushing, mood swings and chill lasting for 1-5 minutes. Although these are often ignored due to its benign nature regardless of its life-threatening situation [9-10]. Most of the women with modification of daily life will be suffice to treat mild menopausal symptoms.

While Hormone replacement either with estrogen and progesterone is recommended as a first line therapy for the treatment of menopausal symptoms [11]. Given the increasing number of options such as Vitamin E in low doses, weight loss and Cognitive behavior therapy can potentially decrease vasomotor menopausal indications [12-13].

Women especially in the rural area are less aware of the information about the different methods of managing the symptoms using alternative therapies. The resources of effective and reliable source of communicating these methods can strongly motivate the menopausal women to engage self-care and improve their quality of life. This research aimed to relate the post-test levels of psychosomatic impact among menopausal females within and among the intervention and control group. Moreover, the study aimed to relate the prior as well as post-test levels of salivary cortisol between menopausal females within and among the intervention and control group. Furthermore, the effectiveness of reflex therapy compared to autogenic training and support group methods on psychosomatic impact among menopausal women within and among the intervention and control group was assessed. Lastly, the research purpose is to compare the levels of psychosomatic impact between menopausal females within and among the intervention and control group.

Materials and Methods:

A community based experimental study was conducted in a rural block in Villupuram District, Tamil Nadu, India from March - May 2023. Women between the age groups of 45-60 years were selected based on the average Indian women's age for menopause. Inclusion Criteria were who had experienced a natural cessation of menstrual periods for at least 12 months and those who gave consent to participate in the study.

Exclusion Criteria:

Women who are under Hormone Replacement Therapy or psychoactive medication and unattained un-natural menopause, e.g., surgical or radiotherapy for cervix cancer. Women who have any abnormalities in the hand and foot like fracture, foot ulcer, wound and selected psychiatric illness but controlled with drugs. Women who are already undergoing other complementary therapy for menopausal symptoms.

Undertaking the prevalence of menopausal symptoms with an allowable error 10% at level of significance of 95% , the sample size calculated was 180. A total of 180 participants were selected by convenient sampling depending on the eligibility requirements and availability of participants. The participants were divided into 3 experimental groups (E1- Reflex therapy n= 30, E2- Autogenic training n= 30 & E3- Support group method n= 30) and

a control group (n= 90). The participants were explained about the purposes of the research and consent was obtained. This study was approved by the Institutional Ethics Committee of Saveetha Institute of Medical and Technical Sciences (003/09/2019/IEC/SMCH) Chennai, Tamil Nadu, India.

Data Collection

The study compares the effect of reflex therapy, autogenic training, and support group method on psychosomatic impact among menopausal women through an experimental and control group. Bio-physiological parameters (salivary Cortisol), demographic variables, and psychosomatic impact among women were assessed using the Menopausal Rating Scale and Utian Quality of Life Scale. Salivary cortisol levels were assessed using a highly sensitive salivary cortisol enzyme immunoassay (EIA) kit, specifically the ELAB Science kit, through the process of enzymatic immunoassay, following the manufacturer's protocol. The interventions were administered for six weeks with 2-hour sessions per week.

Experimental 1: Reflex therapy: The researcher applied pressure to the feet for 15 minutes for each woman once a week. Reflexology was given according to the stick pressures (100%, 75%, and 50%) with the use of sesame oil on an empty stomach. Therefore, when the researcher presses on the corresponding reflex zone(s), women will undergo discomfort. This discomfort is asserted to stem from the accumulation of crystals in the reflex area, and through the application of pressure at those specific points, these crystalline formations can be dissolved, leading to relief from pain. Concurrently, the pressure administered to the reflex zones by the investigator is purported to transmit through the nerves, releasing obstructions in the flow of energy. Women started experiencing a sense of well-being and relaxation. Four women reported feeling lethargic, nauseous, or tearful, but this is transitory and part of the healing process.

Experimental 2: Autogenic Training: AT encompasses acquiring a series of simple cognitive techniques employing specified phrases that are silently repeated six times while assuming a seated position with closed eyes for support. This relaxation technique was done once a week for six weeks. The **Six-standard formulas used was**

1. First standard exercise: Heaviness formula e.g. My right arm is heavy
2. Second standard exercise: Warmth formula e.g. My right arm is warm
3. Third standard exercise: Cardiac formula e.g. Heartbeat calm and regular.
4. Fourth standard exercise: Respiratory formula e.g. Breathing calm and regular.
5. Fifth standard exercise: Abdominal formula e.g. My solar plexus is warm
6. Sixth standard exercise: Coolness formula e.g. My forehead is cool.

Experimental 3: Support Group Method: This program was performed to the group once a week six sessions of 120 minutes each. Subsequently, the participants engaged in a conversation on the topic for approximately 70 minutes, with the researcher undertaking the classification of subjects during the final 20 minutes of the session. Recognizing the significance of direct interpersonal interaction, the chairs were arranged in a circular formation. The topics discussed were the first session: the menopause and its symptoms, stress, memory problems during menopause and the meaning of happiness and social relationships and the effect of menopause on them. The second session: purpose of the menopausal vasomotor symptoms and causes of them. The third session: vaginal dryness, consistency, and appearance of the skin after menopause and incontinence of urine while coughing or sneezing and frequent urination in postmenopausal women. The fourth session: sleep disorders and their causes after menopause. The fifth session: reduced physical strength and joint problems associated with menopause. The sixth session: relaxation techniques, importance of relaxation training and the importance of exercises and relaxation training.

Data Analysis

The collected data were expressed as mean \pm SE and was compared by two-way repeated measures analysis of variance (2-way RM ANOVA) for one factor repetition. For post hoc multiple comparisons, Bonferroni 't' test was carried. A probability of 0.05 or less was considered statistically significant. SigmaPlot 14.5 version (Systat Software Inc., San Jose, USA) was used for the statistical analysis and graph plotting. The demographic variables among menopausal females in the experimental and placebo groups (n=180) were analysed and presented as frequency and percentage distributions.

Results:

The demographic variables among menopausal females in the intervention and control groups (n=180) were analyzed and presented as frequency and percentage distributions. The frequency distribution of various demographic variables is given in Table 1. The percentage of 45-50 age in control, experimental 1, experimental 2 and experimental 3 were 30.0, 46.7, 46.7 and 40.0 respectively. Similarly, the percentages of 51-55 and 56-60 age were also comparable (P = 0.163). The percentage of Marital Status in control, experimental 1, experimental 2 and experimental 3 were 68.8, 63.3, 66.6 and 73.3 respectively. Similarly, the percentage of Marital Status is comparable (P = 0.594). The percentage of education in primary school in control, experimental 1, experimental 2 and experimental 3 were 72.2, 70, 83.3 and 73.3 respectively. Similarly, the percentage of education in primary school were comparable (P = 0.932). The percentage of Occupation in General work and House wife in control, experimental

1, experimental 2 and experimental 3 were 58.8,63.3,66.6,60 & 41.1,12.2,33.3,40 respectively. Similarly, the percentages Occupation are also comparable (P = 0.884). The percentage of type of family with Nuclear family in control, experimental 1, experimental 2 and experimental 3 were 54.4,63.3, 36.3 and 63.3 respectively. Similarly, the percentage of Nuclear Family were comparable (P = 0.125). The percentage of Onset of menopause 45-50 years in control, experimental 1, experimental 2 and experimental 3 were 53.3,73.3,46.6 and 46.6 respectively. The percentage of Onset of menopause were comparable (P = 0.196). The percentage of Body Mass Index of 25 – 30 kg/m² (Over weight) in control, experimental 1, experimental 2 and experimental 3 were 40,33.3,40 and 36.6 respectively. The percentage of 25 – 30 kg/m² Over weight were comparable (P = 0.936).

Table 1: Demographic variables of control (Con) and experimental groups (Exp) for homogeneity.

S.No.	Variable	Category	Con	Exp 1	Exp 2	Exp 3	Statistics
1.	Age group	45 – 50 years	27	14	14	12	$\chi^2 = 9.201$ P = 0.163
		51 – 55 years	17	9	6	7	
		56 – 60 years	46	7	10	11	
2.	Marital Status	Unmarried	0	0	1	0	$\chi^2 = 7.418$ P = 0.594
		Married	62	19	20	22	
		Separated	6	2	1	3	
		Widow	22	9	8	5	
3.	Education	Primary school	65	21	25	22	$\chi^2 = 1.857$ P = 0.932
		Secondary school	15	5	3	5	
		Graduate	10	4	2	3	
4.	Occupation	General work	53	19	20	18	$\chi^2 = 0.655$ P = 0.884
		House wife	37	11	10	12	
5.	Type of family	Nuclear	49	19	11	19	$\chi^2 = 5.734$ P = 0.125
		Joint	41	11	19	11	
6.	Onset of Menopause	45 – 50 years	48	22	14	14	$\chi^2 = 8.615$ P = 0.196
		51 – 55 years	34	8	13	11	
		56 – 60 years	8	0	3	5	
		< 25 kg/m ²	31	10	12	12	

7.	Body Index	Mass	25 – 30 kg/m ²	36	10	12	11	$\chi^2 =$ 1.819 P = 0.936
			> 30 kg/m ²	23	10	6	7	
(n)			Control	=	90			
			Experimental 1	=	30			
			Experimental 2	=	30			
			Experimental 3	=	30			

Comparison of reflex therapy (experimental 1), autogenic training, experimental 2), and support group method (experimental 3) on psychosomatic impact among menopausal women.

The mean scores control, intervention 1, intervention 2, and intervention 3 groups Pre-test are 14.8, 19.2, 19.7, and 19.2, correspondingly. The mean scores Control, intervention 1, intervention 2, and intervention 3 groups Post-test are 15.2, 17.2, 18.7, and 18.4, respectively. Two-way RM ANOVA presented no significance for the group (Control and Experimental) comparison ($P < 0.001$). Statistical significance was observed for the tests (Pre-test and Post-test) comparison, as well as the group X test interaction ($P < 0.001$ and < 0.001 , respectively).

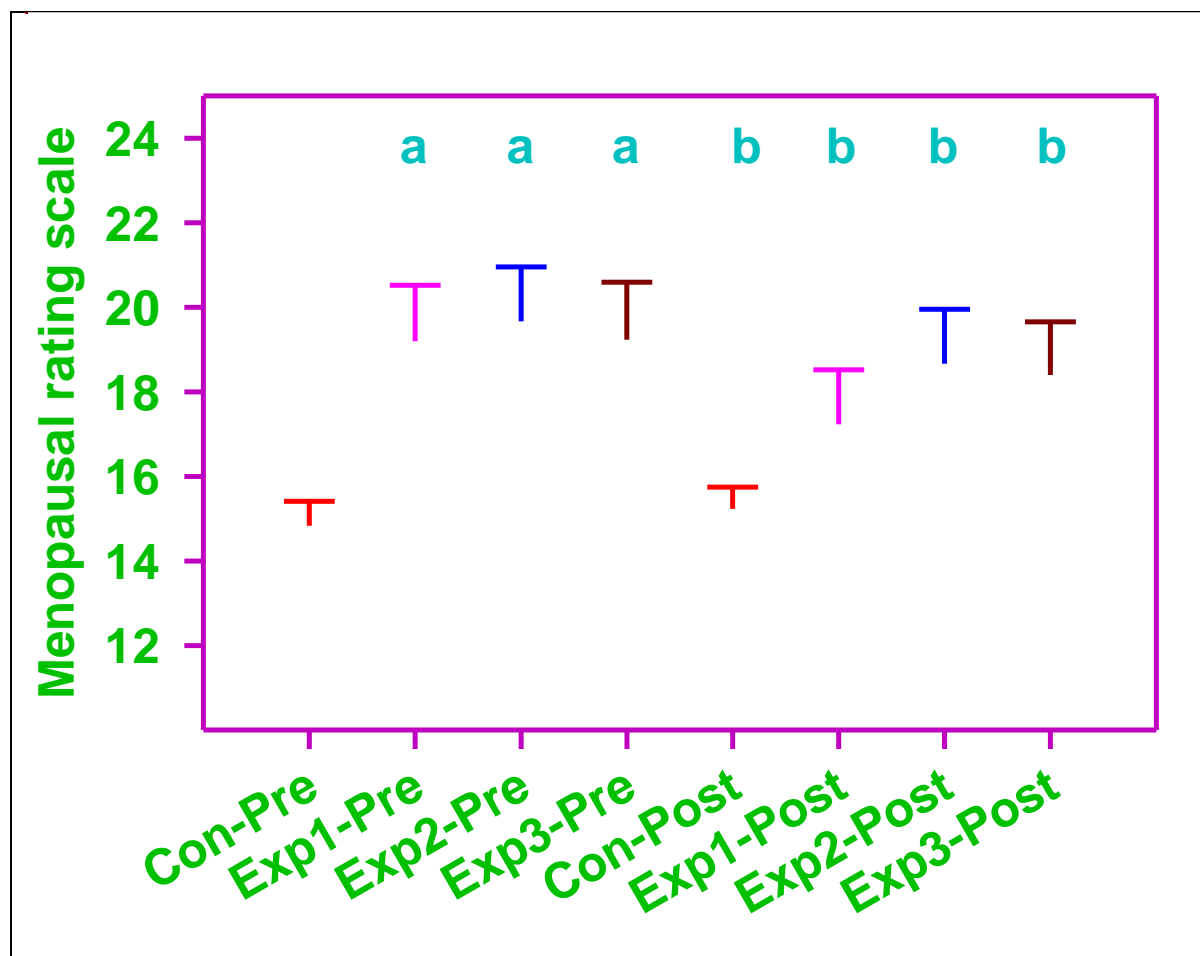


Figure 2: Comparison of control (Con), reflex therapy (Exp1), autogenic training (Exp2) and support group method (Exp3) on menopausal rating scale among menopausal women.

The values are mean \pm SE.

n = Control = 90; Experimental 1, 2 and 3 = 30 each; Total = 180.

The data was analysed by two-way RM ANOVA with Bonferroni 't' test for multiple comparisons.

aSignificantly different from the respective control group (between group)

bSignificantly different from the respective pre-test (within group).

Comparison of reflex therapy (experimental 1), autogenic training, experimental 2), and support group method (experimental 3) on Quality of Life among menopausal women.

The mean scores interpretation of Control, intervention 1, intervention 2, and intervention 3 groups Pre-test are 54.4, 63.2, 63.3, and 63.8, respectively. The mean scores Control, intervention 1, intervention 2, and intervention 3 groups Post-test are 54.9, 61.6, 62.2, and 62.9, respectively. Two-way RM ANOVA showed no significance for the group (control and intervention group) comparison ($P = 0.780$). Significant statistical differences were found when comparing the pre-test and post-test results, as well as for the interaction between the group and the test (P -values of 0.001 and < 0.001 , respectively).

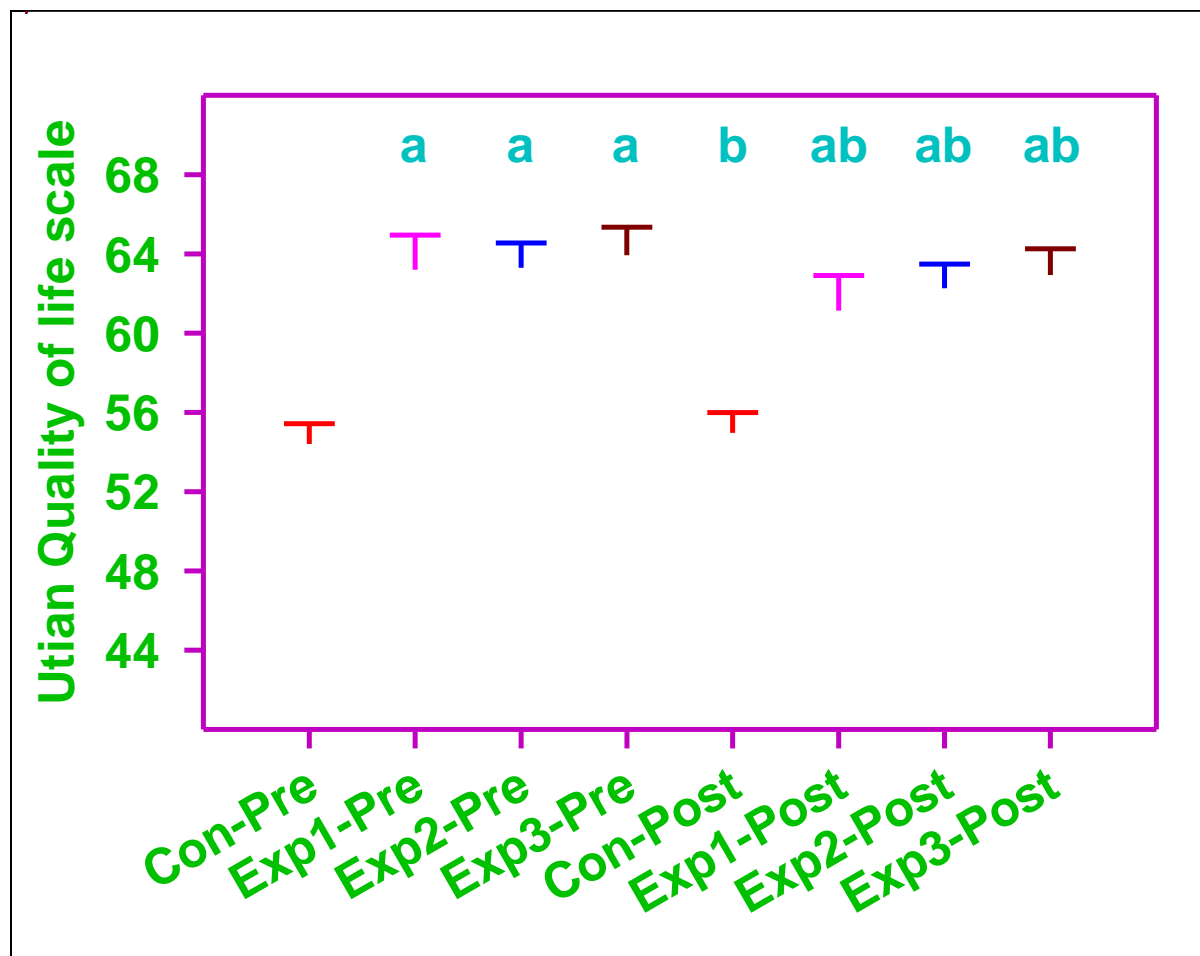


Figure 3: Comparison of control (Con), reflex therapy (Exp 1), autogenic training, (Exp 2), and support group method (Exp 3) on the Utian Quality of Life (UQoL) scale among menopausal women.

The values are mean \pm SE.

n = Control = 90; Experimental 1, 2 and 3 = 30 each; Total = 180.

The data was analysed by two-way RM ANOVA with Bonferroni 't' test for multiple comparisons.

aSignificantly different from the respective control group (between group)

bSignificantly different from the respective pre-test (within group).

Comparison of reflex therapy (experimental 1), autogenic training, experimental 2), and support group method (experimental 3) on Salivary Cortisol (Sal. cort) among menopausal women.

The mean scores interpretation of Control, intervention 1, intervention 2, and intervention 3 groups Pre-test is 6.8, 6.7, 5.9, and 5, respectively. The mean scores Control, Experimental 1, Experimental 2, and Experimental 3 groups Post-test are 6.7, 5.6, 5.2, and 4.9 respectively. Two-way RM ANOVA indicated no significance for the group (Control and intervention) assessment ($P = 0.092$). The comparison between the pre-test and post-test results, as well as the interaction between the group and the test, showed statistically significant findings with p-values of < 0.001 and < 0.001 , correspondingly.

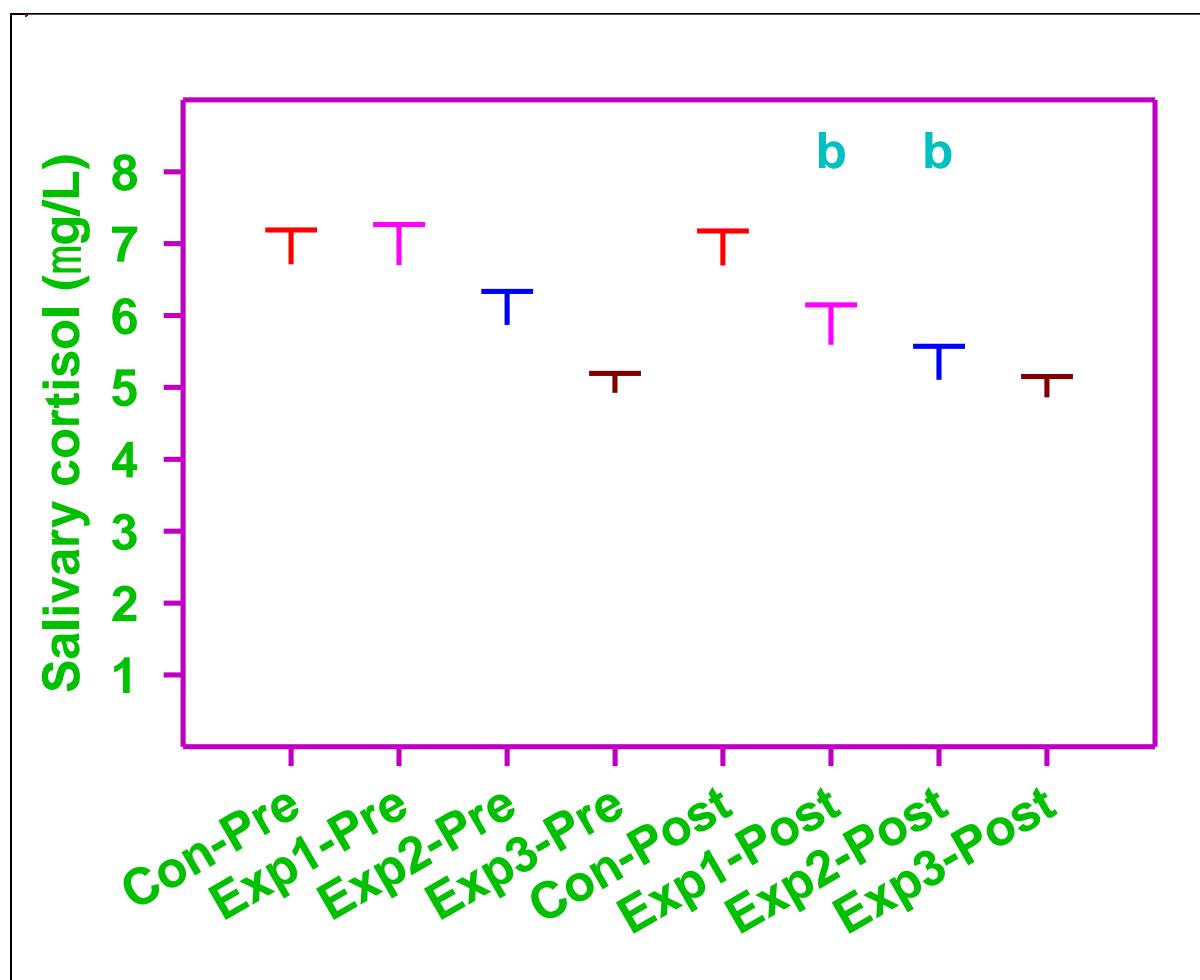


Figure 4: Comparison of control (Con), reflex therapy (experimental 1), autogenic training, experimental 2), and support group method (experimental 3) on Salivary Cortisol (Sal. cort) among menopausal women.

The values are mean \pm SE. n = Control = 90; Experimental 1, 2 and 3 = 30 each; Total = 180. The data was analyzed by two-way RM ANOVA with Bonferroni ‘t’ test for multiple comparisons. a. Significantly different from the respective control group (between group) b. Significantly different from the respective pre-test (within group).

Discussion

Menopause signifies the cessation of menstruation for a continuous period of 12 months due to the depletion of ovarian follicles and the decrease in estrogen levels [14-15]. The average mean age of menopause in our study is 45- 50 years. The average mean of menopause in rural areas of India in other studies ranged from 44.06 ± 3.06 to 48.26 ± 4.86 years [16]. 9 The age of menopause in Indian urban women is comparable and ranged from 43.94 to 47.35 years. [17]. Studies conducted in Iran have reported a prevalence of hot flashes ranging from 48.9% to 87% and anxiety ranging from 22.7% to 54% [18]. Various management options are available, they are not without complications and may have limited therapeutic effect. As a result, there is a growing need for complementary methods to address menopausal indications.

The current research results showed that reflex therapy was effect on psychological and somatic symptoms among menopausal women. It was observed that there is a significant reduction on the psychosomatic impact after the administration of reflex therapy when compared to the autogenic training and support group method in the experimental group. A study conducted by Ebru Gozuyesil and Muruvvet basern(2016) The mean scores for hot flashes, sweats, and night sweats, were lower in the reflexology group than the control group after the practice; and the difference between the groups was statistically significant ($p < 0.001$). The mean scores demonstrated improvements in both groups after the application ($p < 0.001$). As for the sexual domain, there was a significant improvement in the reflexology group ($p < 0.05$), but no improvements were found in the control group ($p > 0.05$).[19]

The mean post-test score for quality of life among the subjects was 61.1, which was expressively higher in the mean pre-test score of 63.2 in control group. Furthermore, there was a significant decrease observed in the mean post-test score for menopausal symptoms (17.2) compared to the mean pre-test score (19.2). The mean difference between the pre-test and post-test quality of life scores was 6.7, for the biochemical parameter. The calculated 't' value for the quality-of-life score, obtained through a paired 't' test, was 19.08, exceeding the table value of 2.97 at a significance level of 0.05 ($p < 0.05$). These findings indicated a significant improvement in reducing the somatic and psychological symptoms through Reflex therapy [20].

Reflex therapy is one of the non-medication approaches, including complementary and alternative medicine that can be administered by healthcare professionals such as physicians, midwives, nurses, or even self-administered by patients themselves. The present study also examined the effectiveness of autogenic training and support group method as an alternative therapy for menopausal women and it showed that there was a significant decrease of 5.1 and 4.2 % on psychosomatic impact among the menopausal women. The study showed that there was a decrease in the psychological and somatic symptoms among the menopausal and bio-physiological parameter at the end of the interventions. The experimental group showed more effectiveness compared to the control group, indicating that complementary therapies are effective in reducing psychological and somatic symptoms during menopause.

Conclusion

Menopause is an inevitable turning point in a woman's life. These symptoms may last for few years and affects the women's health both physically and psychologically. Menopause holds a significant place in the female life cycle, alongside menstruation and pregnancy. Encouragement for health promotion can be reinforced when women perceive lifestyle

modifications as a proactive and non-pharmacological approach to managing menopausal symptoms. However, there remains a pressing need for additional evidence to ascertain the effectiveness and efficacy of lifestyle changes, including complementary therapies like

In regard to the obtained results of the research, the effect of reflex therapy, autogenic training, and support group method was effective in reducing hot flashes, and alleviating other symptoms, among menopausal women. Whereas Reflex therapy with regular menopausal care is suggested as one of the complementary therapies to enhance the overall quality of life among these women.

Additional Information:

Disclosures:

Human subjects: Consent was obtained or waived by all participants in this study. **Animal**

subjects: All authors have confirmed that this study did not involve animal subjects or tissue

Acknowledgment: We are grateful to the study participants. **Conflict Of Interest:** None.

Source of Funding: None

REFERENCES:

1. Cooper GS, Sandler DP. Age at natural menopause and mortality. *Ann Epidemiol.* 1998;8:229–35.
2. Sheila O’Neil, John Eden. The Pathophysiology of menopausal symptoms. *Obstetrics, Gynecology & Reproductive Medicine* 2017; 27[10]: 303-310.
3. Research on the menopause in the 1990s, https://apps.who.int/iris/bitstream/handle/10665/41841/WHO_TRS_866.pdf?sequence=1&isAllowed=y
4. Menopause 101: A primer for the perimenopausal <https://www.menopause.org/for-women/menopauseflashes/menopause-symptoms-and-treatments/menopause-101-a-primer-for-the-perimenopausal>
5. Manider Ahuja. Age of Menopause and determinants of menopause age: A PAN India survey by IMS. *J Midlife Health* 2016 Jul-Sep; 7(3): 126–131. doi: [10.4103/0976-7800.191012](https://doi.org/10.4103/0976-7800.191012)
6. El Khoudary SR, Greendale G, Crawford SL, Avis NE, Brooks MM, Thurston RC, Karvonen-Gutierrez C, Waetjen LE, Matthews K. The menopause transition and women’s health at midlife: a progress report from the Study of Women’s Health Across the Nation (SWAN). *Menopause* (New York, NY). 2019;26(10):1213–27.
7. Sengupta A. The emergence of the menopause in India. *Climacteric.* 2003;6:92–5.

8. Meenakshi Kalhan, Komal Singhania, Priyanka Choudhary, et al.: Prevalence of Menopausal Symptoms and its Effect on Quality of Life among Rural Middle Aged Women (40–60 Years) of Haryana, India. *Int J Appl Basic Med Res.* 2020 Jul-Sep; 10(3): 183–188. [10.4103/ijabmr.IJABMR_428_19](https://doi.org/10.4103/ijabmr.IJABMR_428_19)
9. de Zambotti M, Colrain IM, Javitz HS, Baker FC. Magnitude of the impact of hot flashes on sleep in perimenopausal women. *Fertil Steril.* 2014;102:1708–150.
10. Freeman EW, Sammel MD, Sanders RJ. Risk of long-term hot flashes after natural menopause: Evidence from the Penn Ovarian Aging Study cohort. *Menopause.* 2014;21:924–32.
11. The NAMS 2017 Hormone Therapy Position Statement Advisory Panel. The 2017 hormone therapy position statement of the North American menopause society. *Menopause.* 2017;24:728–53.
12. Barton DL, Loprinzi CL, Quella SK, Sloan JA, Veeder MH, Egner JR, et al. Prospective evaluation of Vitamin E for hot flashes in breast cancer survivors. *J Clin Oncol.* 1998;16:495–500.
13. Ziaei S, Kazemnejad A, Zareai M. The effect of Vitamin E on hot flashes in menopausal women. *Gynecol Obstet Invest.* 2007;64:204–7
14. Lawton B, Rose S, Mcleod D, Dowell A. Change in use of hormone replacement therapy after the report from the Women’s Health Initiative: cross sectional survey of users. *Br Med J* 2003; 327: 845-6 [10.1136/bmj.327.7419.845](https://doi.org/10.1136/bmj.327.7419.845)
15. Hersh A, Sfenack M, Stafford R. National use of postmenopausal Hormone replacement therapy: annual trend and response to recent evidence. *JAMA* 2004; 291:47-53 [10.1001/jama.291.1.47](https://doi.org/10.1001/jama.291.1.47)
16. Avin Alva BR, Chethan TK. A study to assess the average age of menopause and menopause associated symptoms among rural women in Mangalore, Karnataka. *Ntl J Community Med* 2016 May;7(5):404-408.
17. Sharma S, Tandon V, Mahajan A. Menopausal symptoms in urban women. *J K Sci* 2007;9(1):13-17.
18. Million Women Study Collaborators. Breast cancer and hormone replacement therapy in the Million Women Study. *Lancet* 2003;362:419-27
19. Ebru Gozuyesil, Muruvvet Baser. The effect of foot reflexology applied to women aged between 40 and 60 on vasomotor complaints and quality of life. *Complement Ther Clin Pract.* 2016 aug; 24: 78-85.

20. Zhou J, Qu F, Sang X, Wang X, Nan R. Acupuncture and auricular acupressure in relieving menopausal hot flashes of bilaterally ovariectomized chinese women: A randomized controlled trial. *Evid Based Complement Alternat Med.* 2011 2011:713274 [10.1093/ecam/nep001](https://doi.org/10.1093/ecam/nep001)