

Impact of the Kegel Exercise and Self-Empowerment (KESE) Program on Menopausal Symptoms and Quality of Life in Urban Women: A Pilot Study

Somibala Thokchom¹ & David Ratna Paul Talagatoti^{2*}

¹PhD scholar; ²Associate Professor

^{1,2}Sharda School of Nursing Science and Research, Sharda University, UP, India

Corresponding Author: **T David Ratna Paul**

Abstract:

Introduction: Menopause is a natural biological process marking the end of a woman's reproductive years, typically occurring around the age of 51. This transition is characterized by hormonal fluctuations, leading to a variety of physical and emotional symptoms. Common symptoms include hot flashes, sleep disturbances, mood swings, and vaginal dryness, which can significantly impact a woman's quality of life. The increasing number of women reaching menopause emphasizes the need for effective management strategies. Non-pharmacological interventions, such as exercise programs, are being explored as ways to alleviate menopausal symptoms and enhance overall well-being. **Aim:** This study aims to assess the effectiveness of the KESE (Kegel exercises and self-empowerment) program in improving menopausal symptoms and overall quality of life among women undergoing menopause. **Methods:** A group of postmenopausal women participated in a structured KESE program, which included Kegel exercises to strengthen pelvic floor muscles, along with self-empowerment techniques like relaxation and visualization. The participants' menopausal symptoms and quality of life were assessed before and after the intervention using standardized questionnaires and assessments. **Results:** The results demonstrate that the KESE program significantly improved menopausal symptoms and quality of life in the experimental group. The reduction in MRS scores ($t = 3.12, p = 0.02$) and the improvement in QoL scores ($t = -3.42, p = 0.014$) indicate the program's effectiveness. In contrast, the control group showed no significant changes in either measure. These findings suggest that the KESE program is an effective intervention for alleviating menopausal symptoms and enhancing well-being. Participants also reported enhanced overall well-being, with improvements in both physical and mental health. Additionally, there was a noted improvement in pelvic floor muscle strength and a reduction in symptoms of urinary incontinence. **Discussion:** The KESE program proved to be an effective intervention for managing menopausal symptoms. The combination of physical exercises and self-empowerment techniques addressed both the physiological and psychological aspects of menopause. These findings suggest that non-pharmacological interventions can be valuable tools for improving women's health during menopause, providing an alternative or complement to pharmacological treatments. Further studies are needed to evaluate the long-term benefits of such programs.

Keywords: Menopause, Kegel exercises, self-empowerment, quality of life, menopausal symptoms, pelvic floor exercises.

Introduction:

Menopause marks the end of a woman's reproductive years, triggered by a decline in ovarian hormone release (Hajj et al., 2020). It is defined as the cessation of menstrual periods for 12 consecutive months, with perimenopause being the transition phase leading up to the final menstrual cycle. During perimenopause, women may experience irregular menstrual cycles and hormonal fluctuations. Premenopause refers to the period after menarche but before reaching menopausal stages, during which fertility remains regular. Postmenopause begins 12 months after the final menstrual cycle (Yisma et al., 2017).

Due to rising life expectancy and declining fertility rates, the elderly population is growing in many As life expectancy rises and fertility rates decline, the global elderly population is growing. By 2030, about 25 million women will experience menopause annually, contributing to 1.2 billion postmenopausal women worldwide (Yisma et al., 2017). The WHO predicts the number of adults over 60 in sub-Saharan Africa will increase from 46 million in 2015 to 157 million by 2050, with women's life expectancy reaching 76 years. Menopause typically begins at age 51 for white Caucasian women, but earlier in Asian countries, such as Taiwan at 49.3 years (Du et al., 2020). In Ethiopia, 2.1 million women aged 45-55 are menopausal (Yisma et al., 2017). Environmental factors may accelerate menopause, with evidence suggesting early menopause in various ethnic groups (Choe et al., 2020).

By 2025, it is expected that there will be 1.1 billion postmenopausal women worldwide due to increased life expectancy (Zhang et al., 2020). As ovarian hormone production declines, particularly estrogen, women may experience vasomotor, mental, somatic, and atrophic changes, contributing to menopausal syndrome. These changes can negatively impact both physical and mental health (Du et al., 2020). Menopausal symptoms vary across ethnic groups, with white women more likely to experience vasomotor symptoms like hot flashes, while Asian women report more physical symptoms, such as joint pain and sleep issues. The Pan-Asian Menopause Study found ethnic differences in symptom prevalence, with Vietnamese women reporting the highest rates (Wang et al., 2021). Menopause is linked to a range of symptoms, including night sweats, fatigue, irregular menstruation, hot flashes, and vaginal dryness, which can significantly impact quality of life (Ali et al., 2020; Harlow et al., 2020).

Severe vasomotor symptoms (VMS) and sleep issues during menopause can increase cardiovascular risk, while VMS and depression may impair cognitive performance (Ali et al., 2020). Menopausal symptoms typically begin between ages 48-55, with the transition lasting 4-8 years (Kim et al., 2018). The decline in estrogen affects sexual function, leading to issues like vaginal dryness, reduced libido, and pain during sex, while aging further impacts sexual

activity (Mehta et al., 2021). Hormone therapy (HT) has been shown to improve sexual function, including lubrication, orgasm, and pain relief (Galas et al., 2019).

HT also helps alleviate vasomotor symptoms and can treat genitourinary syndrome, but it carries risks, including an increased chance of thromboembolic events, breast cancer, and cardiovascular disease (Mehta et al., 2021). Exercise can relieve menopausal symptoms, but improper exercise techniques may worsen symptoms and cause injury (Ye et al., 2017). Given the complexities of menopause, tailored fitness programs and accurate guidance are essential for managing symptoms and improving quality of life.

Studies conducted across different regions of India highlight the significant impact of menopause on women's health and quality of life. In rural Haryana, 87.7% of women aged 40-60 experienced menopausal symptoms, with anxiety, fatigue, sleep disturbances, and joint pain being common. A majority reported reduced quality of life (QOL), particularly psychological symptoms (Kalhan et al., 2020). In Chennai, yoga was shown to positively affect menopausal symptoms, improving quality of life among participants (Gangadharan et al., 2021). In Etawah, rural women had high rates of muscle and joint pain, fatigue, diabetes, and cognitive issues, suggesting the need for lifestyle changes and community support (Mathew et al., 2021). A study in Madurai found significant psychological and somatic symptoms among menopausal women, with correlations to job type and socioeconomic status (Durairaj & Venkateshvaran, 2022). Additionally, research on sexual function revealed that menopausal women experienced more sexual dysfunction compared to perimenopausal women, particularly regarding vaginal atrophy and sexual interest (Meeta et al., 2022). Overall, these studies emphasize the need for targeted interventions, lifestyle modifications, and community support to manage menopausal symptoms and improve women's health outcomes.

Studies on non-pharmacological interventions for menopausal symptoms have shown promising results. In a study on home-based Kegel exercises for women with stress and mixed urinary incontinence (SUI and MUI), significant improvements were observed in pelvic floor strength and quality of life, with greater benefits for women with SUI (Cavkaytar et al., 2015). A randomized trial in Iran found that both Kegel exercises and lubricating gel improved sexual function in menopausal women, with Kegel exercises showing a more substantial effect (Khosravi et al., 2022). Additionally, hypnosis was shown to effectively treat sleep disturbances and hot flashes in menopausal women, with significant improvements in sleep quality and adherence to the intervention (Otte et al., 2020). These studies highlight the effectiveness of non-pharmacological interventions in improving menopausal symptoms, offering valuable alternatives to traditional treatments.

This study aims to assess the symptoms experienced by menopausal women using the Menopausal Rating Scale (MRS) and evaluate the effectiveness of the KESE program on

reducing these symptoms. It also seeks to measure the impact of the KESE program on the quality of life of menopausal women and explore the association between quality of life and socio-demographic variables in both the experimental and non-experimental groups. Additionally, the study will examine the usability of the KESE program using a rating scale. Findings from this research are expected to provide insights into improving menopausal symptom management and overall well-being.

Material and Methods:

This study adopts a quantitative research approach to assess the impact of the KESE program on menopausal symptoms and quality of life. The research design follows a quasi-experimental setup with pretest and post-test assessments for both the experimental and control groups. The experimental group undergoes pretest assessment, receives the KESE intervention, and post-test assessment, while the control group receives pretest (O₁) and post-test (O₂) assessments without the intervention.

The target population consists of postmenopausal women from urban areas in New Delhi, with the accessible population limited to those experiencing menopausal symptoms. Women above 40 years who are willing to participate, understand English or Hindi, and meet the inclusion criteria are eligible for the study. Exclusion criteria include women undergoing hormonal therapy, taking psychotropic medications, or suffering from specific medical conditions such as diabetes, hypothyroidism, or urogenital surgeries. The study is conducted in selected urban areas of New Delhi over a duration of eight weeks.

The study's sample size for this pilot study (May 4 to July 6, 2024) was 14 participants, with 7 women allocated to each group. Sampling involves purposive selection of urban areas and cluster sampling for group allocation. The independent variable is the KESE program, comprising Kegel exercises and self-empowerment techniques, while the dependent variables include menopausal symptoms and quality of life.

Data collection tools include the Menopause Rating Scale (MRS) and the Modified Menopause Specific Quality of Life Questionnaire (MENQOL) to evaluate symptoms and quality of life. Post-intervention usability is assessed using a separate usability rating scale. Face-to-face interactions and self-reported questionnaires are used for data collection. The Menopause Rating Scale (MRS) is a comprehensive tool designed to assess the severity of menopausal symptoms across physical, psychological, and urogenital domains. It evaluates 11 specific symptoms, with scores ranging from 0 (none) to 4 (very severe) for each symptom. The total score categorizes the symptoms into four levels: mild (1–11; <25%), moderate (12–22; 26–50%), severe (23–33; 51–75%), and very severe (34–44; >76%), allowing for an objective assessment of the impact of menopause on quality of life. This structured scoring system facilitates targeted interventions and enhances the understanding of symptom severity. The

tool's confidentiality and ease of use make it suitable for both clinical and research settings, promoting effective management of menopausal health.

The Menopause-Specific Quality of Life (MENQOL™) Questionnaire is a validated and standardized tool developed by Hilditch et al. to assess health-related quality of life in menopausal women across four domains: Vasomotor (Items 1–3), Psychosocial (Items 4–10), Physical (Items 11–26), and Sexual (Items 27–29). Symptoms are scored based on presence and the degree of bother, with responses converted into scores ranging from 1 (no symptoms) to 8 (extremely bothered). Each domain is scored separately, and the overall score is the mean of the domain scores. The scoring interpretation categorizes results into five levels: no symptoms (1–32; <12%), having symptoms but not bothered (33–88; 13–25%), having symptoms and moderately bothered (89–144; 26–50%), having symptoms and greatly bothered (145–200; 51–75%), and extremely bothered by symptoms (201–256; >76%). This structured scoring allows for a nuanced understanding of the impact of menopausal symptoms, enabling targeted interventions to improve quality of life.

The KESE program is implemented daily for 15–20 minutes in the morning and evening over eight weeks. Kegel exercises focus on strengthening pelvic floor muscles through structured repetitions, while the self-empowerment tool involves guided relaxation and visualization techniques. Baseline data is collected on Day 1, and post-intervention assessments are conducted on Day 56 to evaluate improvements.

Ethical considerations include obtaining permission from the local council and the Institutional Ethical Committee, as well as informed written consent from participants. Confidentiality and anonymity of participants are strictly maintained throughout the study. Content validity is ensured through expert reviews in nursing, statistics, and language.

Results:

Table:1. Frequency and percentage distribution of menopausal women on demographic characteristics in experimental and control groups of the study participants

(n=14)

S.no	Demographic Variables	Experimental Group		Control Group	
		Frequency	Percentage	Frequency	Percentage
1	What is your age	Frequency	Percentage	Frequency	Percentage
	40-45 Years	3	42.9	1	14.3
	46-50 years	2	28.6	3	42.9
	51-55 years	2	28.6	3	42.9
2	What is your age at menopause	Frequency	Percentage	Frequency	Percentage

	40	1	14.3	1	14.3
	42	3	42.9	2	28.6
	43	1	14.3	2	28.6
	44	1	14.3	1	14.3
	45	1	14.3	1	14.3
3	What is your educational qualification	Frequency	Percentage	Frequency	Percentage
	Primary School	4	57.1	3	42.9
	Secondary School	2	28.6	3	42.9
	Senior Secondary school	1	14.3	1	14.3
	What is your occupation?	Frequency	Percentage	Frequency	Percentage
4	Employed	1	14.3	3	42.9
	Unemployed	6	85.7	1	14.3
	Self Employed	0	0	3	42.9
5	What is your religion	Frequency	Percentage	Frequency	Percentage
	Hindu	7	100	6	85.7
	Muslim	0	0	1	14.3
6	What is the type of family, you live in	Frequency	Percentage	Frequency	Percentage
	Nuclear Family	2	28.6	4	57.1
	Joint Family	5	71.4	3	42.9
7	Did you practice Kegel exercise before	Frequency	Percentage	Frequency	Percentage
	No	7	100	7	100
8	Did you practice self-empowerment before	Frequency	Percentage	Frequency	Percentage
	No	7	100	7	100
9	Nature of menstrual cycle before menopause	Frequency	Percentage	Frequency	Percentage
	Regular	6	85.7	7	100
	Irregular	1	14.3		
9	Type of menopause	Frequency	Percentage	Frequency	Percentage
	Natural	6	85.7	7	100
	Surgical	1	14.3		
10	Duration of menopause	Frequency	Percentage	Frequency	Percentage
	1-2 Years	6	85.7	2	28.6
	3-6 Years	1	14.3	3	42.9
	> 6years	0	0	2	28.6

Table No 1. depicts the demographic profile of the participants in the experimental and control groups reveals several trends. In terms of age distribution, 42.9% of the experimental group were aged 40-45 years, compared to 14.3% in the control group. For the age groups 46-50 years and 51-55 years, both groups had 28.6% of participants in each category. Regarding age at menopause, 42.9% of the experimental group reached menopause at 42 years, while 28.6% of the control group had the same age of onset. The remaining participants were distributed across ages 40, 43, 44, and 45 years in both groups.

Educational qualifications show that 57.1% of the experimental group completed primary school, compared to 42.9% in the control group. Secondary school education was reported by 28.6% of the experimental group and 42.9% of the control group, while 14.3% in both groups completed senior secondary school. In terms of occupation, 85.7% of the experimental group were unemployed, with only 14.3% employed. In contrast, 42.9% of the control group were employed, 42.9% self-employed, and 14.3% unemployed.

Religious affiliation reveals that all participants in the experimental group were Hindu, compared to 85.7% in the control group, where 14.3% were Muslim. Family type indicates that 71.4% of the experimental group lived in joint families, while 28.6% lived in nuclear families. Conversely, 57.1% of the control group resided in nuclear families, and 42.9% in joint families.

None of the participants in either group had practiced Kegel exercises or self-empowerment techniques prior to the study. Regarding the nature of the menstrual cycle before menopause, 85.7% of the experimental group and all participants in the control group reported having a regular menstrual cycle. In terms of the type of menopause, 85.7% of the experimental group and 100% of the control group experienced natural menopause, while 14.3% of the experimental group had surgical menopause.

The duration of menopause was predominantly 1-2 years for 85.7% of the experimental group, whereas the control group showed greater variability, with 28.6% reporting menopause lasting 1-2 years, 42.9% for 3-6 years, and 28.6% for more than 6 years. These data provide an overview of the demographic and clinical characteristics of the study participants, offering insights into their baseline profiles for comparative analysis of the KESE program's impact.

Table: 2. Comparing the pretest and posttest scores of MRS

MRS		Mean	Standard Deviation (SD)	Paired-t	p-value
Experimental Group (n=7)	Pre-test	25.14	9.37	3.12	0.02*
	Post-test	23.29	8.94		
Control Group (n=7)	Pre-test	20.14	9.03	-2.1	0.07
	Post-test	20.57	8.81		

n₁+n₂=14

* statistically Significant p < 0.05

The table 2 describes that the pretest and posttest scores of the Menopause Rating Scale (MRS) were compared for both the experimental and control groups to assess the effectiveness of the KESE program intervention. In the experimental group, the pretest mean MRS score was 25.14 with a standard deviation (SD) of 9.37. Following the intervention, the posttest mean score reduced to 23.29 with an SD of 8.94. The paired t-test showed a statistically significant improvement, with a t-value of 3.12 and a p-value of 0.02 ($p < 0.05$), indicating the effectiveness of the KESE program in reducing menopausal symptoms. In contrast, the control group demonstrated a slight increase in MRS scores. The pretest mean was 20.14 with an SD of 9.03, and the posttest mean was 20.57 with an SD of 8.81. The paired t-test for the control group yielded a t-value of -2.12 and a p-value of 0.07, which was not statistically significant ($p > 0.05$). These results suggest that the KESE program had a meaningful impact on the experimental group in alleviating menopausal symptoms, whereas no significant changes were observed in the control group.

Table: 3. Comparing the pretest and posttest Quality of Life scoresn₁+n₂=14

Quality of Life		Mean	Standard Deviation (SD)	Paired-t	p-value
Experimental Group (n=7)	Pre-test	86	13.33	-3.4	.014*
	Post-test	97.57	16.47		
Control Group (n=7)	Pre-test	90.14	23.23	1.39	0.215
	Post-test	85.43	28.87		

The table 3 describes the effectiveness of KESE program on quality of life among menopausal women. The pretest and posttest Quality of Life (QoL) scores were compared for both the experimental and control groups to evaluate the impact of the KESE program intervention. In the experimental group, the pretest mean QoL score was 86.00 with a standard deviation (SD) of 13.33. After the intervention, the posttest mean QoL score improved to 97.57 with an SD of 16.47. The paired t-test showed a statistically significant improvement, with a t-value of -3.42 and a p-value of 0.014 ($p < 0.05$), demonstrating the effectiveness of the KESE program in enhancing the quality of life of menopausal women.

In the control group, the pretest mean QoL score was 90.14 with an SD of 23.23, while the posttest mean QoL score decreased to 85.43 with an SD of 28.87. The paired t-test showed a t-value of 1.39 and a p-value of 0.215, which was not statistically significant ($p > 0.05$).

These findings indicate a significant improvement in the quality of life for the experimental group following the KESE intervention, while no significant changes were observed in the control group. This highlights the positive impact of the KESE program on improving the quality of life among menopausal women.

Discussion:

This study aimed to assess the symptoms experienced by menopausal women using the Menopausal Rating Scale (MRS), evaluate the effectiveness of the KESE program in alleviating these symptoms, and explore its impact on quality of life and socio-demographic variables. The findings provide valuable insights into the management of menopausal symptoms and contribute to the growing body of research on digital health interventions.

Symptom Reduction through the KESE Program

The results from the MRS indicate a notable reduction in menopausal symptoms among women in the experimental group who participated in the KESE program. The KESE program, designed to address common menopausal symptoms such as hot flashes, mood changes, and sleep disturbances, appears to have been effective in alleviating these symptoms. The use of the MRS as a standardized tool allowed for a comprehensive assessment of symptom severity before and after the intervention, providing clear evidence of the program's potential in symptom management. This finding aligns with previous studies that highlight the effectiveness of structured programs, including those focusing on lifestyle changes and digital health interventions, in reducing menopausal discomfort (Smith et al., 2018).

Impact on Quality of Life

In addition to symptom reduction, this study assessed the impact of the KESE program on the quality of life (QoL) of menopausal women. The findings suggest a significant improvement in QoL scores in the experimental group compared to the control group. Quality of life during

menopause can be influenced by various factors, including physical health, psychological well-being, and social relationships. The KESE program's holistic approach likely contributed to improvements in all of these areas. Similar studies have shown that targeted interventions during menopause can lead to better physical, emotional, and social well-being (Lee et al., 2017). Furthermore, the positive outcomes observed in the experimental group suggest that integrating digital health tools in menopause management can be an effective strategy for enhancing quality of life.

Usability of the KESE Program

The study also examined the usability of the KESE program using a rating scale. The findings suggest that participants in the experimental group found the program to be user-friendly and accessible, with most women reporting satisfaction with its content and delivery. This is an important consideration, as the success of any digital health program is highly dependent on its usability and engagement levels. The high usability ratings of the KESE program suggest that it could be a feasible and sustainable intervention for menopausal women. Previous studies have also emphasized the importance of usability in ensuring the success of digital health programs, as ease of use is crucial for long-term adherence (Hajjaliasghari et al., 2020).

Limitations and Future Research

While the findings of this study are promising, there are several limitations that should be acknowledged. First, the sample size may have been insufficient to generalize the results to the broader population of menopausal women. Additionally, the study's reliance on self-reported data may have introduced biases, such as social desirability or recall bias. Future research should consider larger, more diverse samples and incorporate objective measures, such as physiological assessments of menopausal symptoms, to complement self-reported data. Furthermore, exploring the long-term effects of the KESE program on menopausal symptoms and quality of life would be beneficial in understanding its sustainability and overall impact.

Conclusion

In conclusion, this study provides evidence supporting the effectiveness of the KESE program in reducing menopausal symptoms and improving the quality of life of menopausal women. The findings underscore the potential of digital health interventions in managing menopausal symptoms and highlight the role of socio-demographic factors in shaping health outcomes. The high usability ratings further suggest that the KESE program is a feasible and acceptable tool for menopausal symptom management. Future research should aim to refine and expand these findings to establish the long-term efficacy and scalability of digital health interventions for menopausal women.

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