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A STUDY TO ASSESS THE EFFECTIVENESS OF KEGEL EXERCISE ON INCREASED FREQUENCY OF MICTURITION AMONG PREGNANT WOMEN AT SELECTED RURAL AREAS OF BANGALORE, KARNATAKA

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ABSTRACT

A study to assess the effectiveness of Kegel exercise on increased frequency of micturition among pregnant women at selected rural areas of Bangalore, Karnataka. Urinary incontinence is a common problem among pregnant women due to hormonal changes and increased pressure on the pelvic floor muscles. It can negatively affect a woman's comfort and quality of life, yet it often remains underreported. Kegel exercises are simple pelvic floor strengthening exercises that help improve bladder control and reduce urinary leakage.

This pre-experimental study focused to resolve whether Kegel exercises might relieve urinary incontinence in pregnant women residing in rural Bangalore, Karnataka. Urinary incontinence is a prevalent but underreported issue among pregnant women. Strengthening the pelvic floor muscles with Kegel exercises is a simple, non-invasive way to address this problem. Theobjectiveis to assess the level of incontinence in the urine in pregnant women before performing Kegel exercises. To determine whether performing Kegel exercises enhances the quality of life related to incontinence. To compare pregnant women's urine incontinence scores before and after tests using the ICQ (International Consultation on Incontinence Questionnaire) scale. Methodology: 30 pregnant women with urinary incontinence were selected by a simple random sampling method. The ICIQ scale was used to gather data before and after a one-week Kegel exercise training. The intervention included a structured teaching program that included demonstrations and daily guided practice. Pretest findings from the ICIQ scale revealed that 3.3% had mild, 86.7% had moderate, 10.0% had severe, and 0.0% had severe urinary incontinence. The post-test results showed improvement, with 50% mild, 43.3% moderate, 6.7% severe, and 0% very severe. The mean urine incontinence reduced from 9.50 to 5.83 ($t=4.600$, $P<0.05$), indicating a significant improvement. The study concluded that Kegel exercises are effective in preventing urine incontinence in pregnant women.[1]

Introduction:

Pregnancy is a normal physiological condition that brings various physical and hormonal changes in a woman's body. These changes affect many body systems, including the urinary system. Increased frequency of micturition is one of the most common discomforts experienced by pregnant women, especially during the first and third trimesters. This occurs due to hormonal changes and pressure of the growing uterus on the urinary bladder, leading to reduced bladder capacity. [2]

Increased urinary frequency is recognized as a common symptom of pregnancy; however, it can lead to significant discomfort, sleep disturbances, fatigue, and difficulties in performing daily activities. Many pregnant women, particularly those living in rural areas, are unaware of simple management strategies for this problem and therefore do

not seek medical care.[3] Previous research has shown that urinary frequency and other lower urinary tract symptoms are reported by a high proportion of pregnant women, with one study finding that 70.3% of women in the third trimester experienced urinary frequency and another reporting increased urinary frequency in 40.8% of pregnant women compared with before pregnancy.[4]

Kegel exercises are pelvic floor muscle exercises that enhance control over the bladder and strengthen the pelvic muscles. These activities are affordable, secure, non-invasive, and safe to perform during pregnancy. Urinary difficulties during pregnancy and following delivery can be avoided by regularly performing Kegel exercises. Regular Kegel exercises enhance pelvic floor muscle tone and bladder control, which reduces urination frequency. It is a safe, non-invasive, and simple approach that pregnant women can acquire easil[5]

NEED FOR THE STUDY:

Pregnant women often experience an increased frequency of micturition because of hormonal changes and pressure of the growing uterus on the bladder. Although this condition is thought to be a natural physiological shift, pregnant women's quality of life may be impacted by discomfort, sleep disturbances, tiredness, and problems carrying out everyday tasks. Various studies were conducted across the globe, studies like A pre–post quasi-experimental study in three Port Said hospitals included 292 women with urinary incontinence[6]

Various studies were conducted across the globe, studies like A pre–post quasi-experimental study in three Port Said hospitals included 292 women with urinary incontinence. The purpose of this pre-experimental study was to determine whether Kegel exercises could help pregnant women living in rural Bangalore, Karnataka, with their urine incontinence. A simple random sampling technique was used to choose 30 pregnant women with urine incontinence for the sample size. Ten questions on knowledge assessment make up the International Consultation on Incontinence Questionnaire (ICIQ) scale. 3.3% were mild, 86.7% were moderate, 10.0% had severe, and 0.0% had severe urinary incontinence, according to pretest results from the ICIQ scale. The post-test findings revealed improvement, with 50% mild, 43.3% moderate, 6.7% severe, and 0% very severe. There was a considerable improvement as the mean urine incontinence dropped from 9.50 to 5.83 (t=4.600, P<0.05)

A quasi-experimental study was conducted in Kavita and Badgaon villages, Udaipur (4th March–1st April 2021). Sixty rural women above 45 years with urinary incontinence were selected using purposive sampling. The experimental group showed improvement from pre-test (28.96) to post-test (17.06). The t-value (12.73) was significant at 0.05 level. This proves Kegel exercises were effective in reducing urinary incontinence. Therefore, the purpose of this study is to evaluate the effectiveness of Kegel exercises on increased frequency of micturition among pregnant women in certain rural areas. To increase maternal comfort and quality of life, the study's findings will help nurses in educating expectant mothers to perform Kegel exercises as part of standard prenatal support.[7]

OBJECTIVES:

- To assess the level of frequency of micturition among pregnant women before administering Kegel exercise.
- To determine the improvement in quality of life related to urinary incontinence among pregnant women after practicing Kegel exercise.
- To compare the pre-test and post-test urinary incontinence score using the ICIQ [international consultation on incontinence questionnaires] scale among pregnant women.
- To associate post-test frequency of micturition scores with selected demographic variables.

Hypothesis:

H1: There is a significant reduction in the frequency of micturition among pregnant women after the practice of Kegel exercise.

METHODOLOGY:

Research Approach

A quantitative research approach.

Research design:

A Pre-experimental one-group pre-test and post-test design was used to evaluate the effectiveness of Kegel exercises on urinary incontinence among pregnant women.

Sample size:

30 pregnant women

Sampling techniques:

The non-probability purposive sampling technique is used for collecting the data.

Inclusion criteria: The study includes women who are

- Pregnant women
- Willing to participate in the study
- Present during the time of data collection
- Able to understand Kannada, English, Hindi

Exclusion Criteria: Pregnant women who

- Had high-risk pregnancy
- Had urinary tract infection or neurological disorders
- Had previous pelvic surgery

Description of Tool:

A structured interview questionnaire was developed by the researchers to collect the required data. It consisted of two sections.

Section A: socio demographic variables:

It included sociodemographic and obstetric variables of pregnant women such as age, education, occupation, type of family, age of menarche, year of marriage, religion, number of pregnancies, history of delivery, and gestational week.

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Section B: International Consultation on Incontinence Questionnaire (ICIQ) scale

which was used to assess urinary incontinence. The scale focused on the presence of urinary incontinence, frequency of urine leakage, amount of urine leakage, conditions associated with leakage, and the impact of urinary incontinence on quality of life.

Description of intervention: Kegel exercises were taught to the participants, and re-demonstration was carried out to assess their level of understanding. Follow-up was conducted to evaluate the effectiveness of the Kegel exercises. Kegel exercises were taught to the participants using a structured teaching programme with demonstration, followed by re-demonstration to assess their level of understanding. The exercises were advised to be performed 10–15 times per day for a duration of one week. Follow-up was conducted through telephone calls and a post-test to evaluate the effectiveness of the Kegel exercises.

Interpretation: The ICIQ scale consisted of four items with a minimum score of 0 and a maximum score of 21.

Scoring Interpretation (ICIQ)

Score Range Level of Urinary Incontinence

0- No Incontinence

1- 1-5 mild

2- 6–12 Moderate

3- 13–18 Severe

4- 19–21 Very severe

Higher scores indicate greater severity and poorer quality of life.

Urinary symptoms were assessed using structured rating scales. The frequency of urinary leakage was measured on a 6-point scale ranging from never (0) to all the time (5). The amount of urinary leakage was evaluated using a 4-point Likert scale from none (0) to large amount (6). The interference of urinary incontinence with daily life was rated on a scale of 1 to 10, where higher scores indicated greater interference. The occurrence of urine leakage was assessed through multiple response options, ranging from never (0) to all the time (7), including situations such as before reaching the toilet, during coughing or sneezing, while asleep, during physical activity, after urination, or without an obvious reason.

Data analyses:

The data of the study were analyzed using both descriptive and inferential statistics. Frequency, percentage distribution, mean, and standard deviation were used to describe the sample characteristics. A paired t-test was used to assess the effectiveness of Kegel exercise in reducing the urinary incontinence. The Chi-square test was applied to determine the association between pre-test scores and selected socio-demographic variables.

Table 1: Demographic characteristics of the study participants

Characteristics		Frequency	Percentage (%)
Age	18-21	3	10.00%
	22-26	13	43.30%
	27-31	12	40.00%
	32-35	2	6.70%
Education	Primary	2	6.70%
	Secondary	11	36.70%
	Higher secondary	14	46.70%
	Graduate	3	10.00%
Occupation	government	0	0.00%
	Private	1	3.30%
	Self employed	0	0.00%
	Housewife	29	96.70%
Type of family	Nuclear	21	70.00%
	Joint	9	30.00%
Age of menarche	11	3	10.00%
	12	12	40.00%
	13	14	46.70%
	Other	1	3.30%
Married years	01-Feb	14	46.70%
	03-May	14	46.70%
	More than 5	2	6.70%
Religion	Hindu	24	80.00%
	Muslim	6	20.00%
	Christian	0	0.00%
	Other	0	0.00%
Number of pregnancies	1	17	56.70%
	2	13	43.30%
	3	0	0.00%

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	More than 3	0	0.00%
History of delivery	Normal	12	40.00%
	Caesarean	1	3.30%
	None	17	56.70%
Gestational week	1-13 weeks	6	20.00%
	14-27 weeks	8	26.70%
	28-40 weeks	16	53.30%

Description: Most participants were aged 22–31 years, had secondary or higher secondary education, and were housewives from nuclear families. The majority attained menarche at 12–13 years, had 1–5 years of married life, and belonged to the Hindu religion. More than half were primigravida with no previous delivery, and many were in the third trimester (28–40 weeks) of pregnancy.

Table 2: Test score I

Characteristics		N	%
Pre-test interpretation	Mild	1	3.30%
	Moderate	26	86.70%
	Severe	3	10.00%
	Very severe	0	0.00%
Post test interpretation	Mild	15	50.00%
	Moderate	13	43.30%
	Severe	2	6.70%
	Very severe	0	0.00%

Description: The pre-test findings showed that most participants had moderate symptoms (86.7%), with 10.0% experiencing severe symptoms, while only 3.3% had mild symptoms. In contrast, post-test results demonstrated a clear improvement, with 50.0% of participants shifting to the mild category and a reduction in moderate (43.3%) and severe (6.7%) symptoms, highlighting the effectiveness of the intervention.

Figure 1: Shows the pre-test score interpretation graph

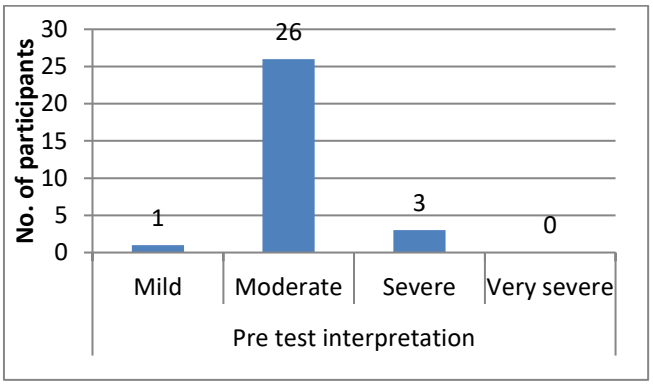


Figure 1 illustrated that the majority of participants had moderate symptoms, followed by severe and mild symptoms, with no participants in the very severe category.

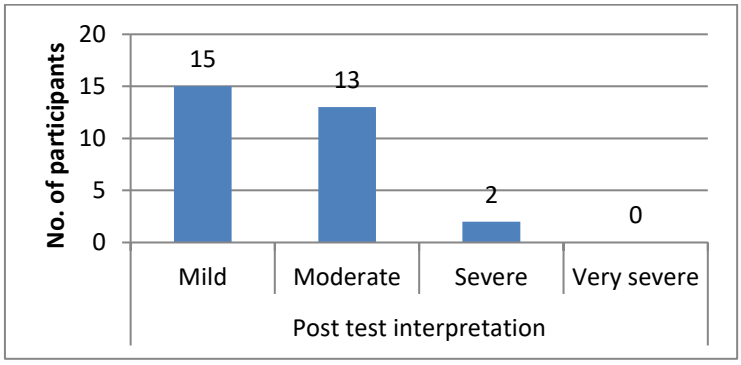


Figure 2 indicates, there was a noticeable improvement in the symptom's severity levels, from moderate and severe categories towards mild symptoms following interventions, indicating an overall improvement in participants 'condition.

Table 3: Effectiveness of Kegel exercise in reducing the urinary incontinence

Characteristics	Mean	Std. Deviation	Std. Error Mean	t value	P value
pre-test score	9.5	2.713	0.495	4.6	P <0.05
post-test score	5.83	3.806	0.695	DF=29	Significant

Table 3 depicts that the paired samples t-test revealed a statistically significant improvement in reducing the urinary incontinence following the intervention, with a mean difference of 2.8 ($t = 4.600$, $p < .005$).

Table 4: association between post-test and demographic variables

Characteristics		posttest score				Chi square	P value
		<= median		Above median			
		n	%	n	%		
Age	18-21	2	13.30%	1	6.70%	2.359 DF=3	0.531
	22-26	8	53.30%	5	33.30%		
	27-31	4	26.70%	8	53.30%		
	32-35	1	6.70%	1	6.70%		
Education	Primary	0	0.00%	2	13.30%	3.152 Df=3	0.369
	Secondary	7	46.70%	4	26.70%		
	Higher secondary	7	46.70%	7	46.70%		
	Graduate	1	6.70%	2	13.30%		
Occupation	government	0	0.00%	0	0.00%	1.034 DF=1	0.309
	Private	0	0.00%	1	6.70%		
	Self employed	0	0.00%	0	0.00%		
	None	15	100.00%	14	93.30%		
Type of family	Nuclear	10	66.70%	11	73.30%	0.159 Df=1	0.69
	Joint	5	33.30%	4	26.70%		
Age of menarche	11	1	6.70%	2	13.30%	1.333 DF=3	0.721
	12	6	40.00%	6	40.00%		
	13	7	46.70%	7	46.70%		
	Other	1	6.70%	0	0.00%		
Married years	01-Feb	6	40.00%	8	53.30%	2.286 DF=2	0.319
	03-May	7	46.70%	7	46.70%		
	More than 5	2	13.30%	0	0.00%		
Religion	Hindu	13	86.70%	11	73.30%	0.833	0.361
	Muslim	2	13.30%	4	26.70%	Df=1	
	Christian	0	0.00%	0	0.00%		
	Other	0	0.00%	0	0.00%		
Number of pregnancies	1	5	29.40%	12	70.60%	6.65	0.009*
	2	10	76.90%	3	23.10%	Df=1	
	3	0	0.00%	0	0.00%		
	More than 3	0	0.00%	0	0.00%		
History of delivery	Normal	6	40.00%	6	40.00%	1.059	0.589
	Cesarean	1	6.70%	0	0.00%	Df=2	
	None	8	53.30%	9	60.00%		
Gestational week	1-13 weeks	3	20.00%	3	20.00%	3	0.223
	14-27 weeks	2	13.30%	6	40.00%	DF=2	
	28-40 weeks	10	66.70%	6	40.00%		

Description: The chi-square analysis revealed no significant association between post-test scores and most demographic variables ($p > 0.05$). Only the number of pregnancies showed a significant association with post-test scores ($\chi^2 = 6.65$, $p = 0.009$).

Results and Discussion:

Among the 30 pregnant women, the pre-test assessment showed that 86.7% had moderate urinary incontinence, 10.0% had severe, and 3.3% had mild urinary incontinence, with a mean score of 9.50 ± 2.71. Following Kegel exercise training, the post-test results indicated improvement, with 50.0% experiencing mild urinary incontinence, 43.3% moderate, and 6.7% severe, with a reduced mean score of 6.70 ± 3.81.The overall mean difference was 2.8, and the paired t-test value was 4.600, which was statistically significant ($p < 0.001$). Hence, the research hypothesis (H_1) was accepted. The findings conclude that Kegel exercise training is effective in significantly reducing urinary incontinence among pregnant women.

Conclusion:

The study concludes that Kegel exercise training was effective in significantly reducing urinary incontinence among pregnant women. A marked improvement was observed in post-test urinary incontinence scores compared to pre-test scores, and the difference was statistically significant. These findings support the use of Kegel exercises as a simple, safe, and non-pharmacological intervention to manage urinary incontinence during pregnancy, particularly in rural settings. The study concludes that Kegel exercises should be included in routine antenatal care to improve maternal comfort and quality of life.

Reference:

1. Podila VL, Myneni M. A study to assess the effectiveness of Kegel exercises in reducing urinary incontinence among elderly women residing in selected old age homes in Eluru. Int J Sci Res. 2025;14(9):0409530. doi:10.36106/Jisr.
2. Cunningham, F. G., Leveno, K. J., Bloom, S. L., Dashe, J. S., Hoffman, B. L., Casey, B. M., &Spong, C. Y. (2018). Williams Obstetrics (25th ed.). McGraw -Hill Education. Bo, K., &Mørkved, S. (2010). Pelvic floor muscle training during pregnancy and after childbirth. Current Women's Health Reviews, 6(2), 71–78.
3. Dunglison CL, Silva J, Vitta L, Dib M, Carbognin G. Prevalence of urinary symptoms in the third trimester of pregnancy [Internet]. 2003 [cited 2026 Jan 25]; Available from: https://pubmed.ncbi.nlm.nih.gov/16847521/ In this study, 70.3% of women in the third trimester presented with urinary frequency.
4. Nishimura K, Toma A, Takahashi S, et al. Prevalence of urological symptoms during pregnancy compared with before pregnancy: a questionnaire-based study [Internet]. 2008 [cited 2026 Jan 25]; Available from: https://pubmed.ncbi.nlm.nih.gov/19018548/ Increased urinary frequency was found in 40.8% of pregnant women (>10 times/day) compared with 3.8% before pregnancy
5. Lowder JL, Ghetti C, Nikolaj ski C, Oliphant SS, Zyszynski HM. Body image perceptions in women with pelvic floor disorders. Am J Obstetric Gynecol. 2011;204(5): 441.e1–441.e6. 3.Bø K, Mørkved S. Pelvic floor muscle training during pregnancy and after childbirth. Curr Women's Health Rev. 2010;6(2):71–7
6. Sambas EK, Nurliawati E, Salsabilla TA, Yuningsih A. Implementation of Kegel exercises for pregnant women with urinary incontinence in the third trimester at Kahuripan Public Health Center, Tasikmalaya City. KIAN Journal. 2025;4(1):11–18. doi:10.56359/Kian. v4i1.613.
7. Chaturvedi P, Deepak Y. A study to assess the effectiveness of Kegel exercise on the management of urinary incontinence among rural women in Kavita and Badgao villages, Udaipur, Rajasthan. IOSR Journal of Nursing and Health Science (IOSR-JNHS). 2021;10(6):34–38. DOI:10.9790/1959-1006033438.