International Journal of Gynaecology and Obstetrics Research
www.gynaecologyjournal.in
E-ISSN: 2663-3612, P-ISSN: 2663-3604
Received: 01-02-2025, Accepted: 01-03-2025, Published: 17-03-2025
Volume 7, Issue 1, 2025, Page No. 4-10

Assessing the knowledge, attitude and practice of pelvic floor muscle exercises among women attending obstetric and gynaecology clinic in a Tertiary Care Hospital: A comprehensive study

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Abstract
Background: Pelvic floor muscle exercises are increasingly acknowledged for their crucial role in preserving women's reproductive and overall health. Weak pelvic floor muscles can result in dysfunction, heightening the likelihood of urinary and fecal incontinence, prolapse, and sexual dysfunction. This study focuses on evaluating the knowledge, attitudes, and practices concerning pelvic floor muscle exercises among women visiting a tertiary care hospital setting.
Materials and methods: A cross-sectional study was conducted among women attending the Obstetrics and Gynaecology OPD at ESIC Medical College and Hospital in Sanath Nagar, Hyderabad, between July and August 2024. A total of 253 participants were included, and data were collected after obtaining informed consent. The data was analyzed using SPSS software.
Results: Majority of the women belonged to the age group of 26–30 years. Among them, 58.1% were multigravida, 29.8% were primigravida, and 15.9% were nulliparous. Most participants received information about pelvic floor muscle exercises from healthcare professionals [30%).
Of the total, 125 [49.6%) participants demonstrated good KNOWLEDGE, while 48 [19%) lacked adequate knowledge. 56.3% disagreed with the idea that exercise could damage the pelvic muscles. Additionally, 41.9% disagreed with the notion that during the postpartum phase, rest and nourishment should come before exercise. This ATTITUDE thus favoured exercises. Regarding PRACTICE, 135 [53.7%) participants had never performed Kegel exercise, whereas 118 [46.3%) had experience practicing them.
Conclusion: The study highlighted that while many women were aware of pelvic floor muscle exercises, only a small proportion actively practiced them. Although most participants expressed willingness to receive further guidance, their attitudes toward the exercises varied The results highlight the need for improved training and assistance from medical professionals to promote the successful uptake of pelvic floor muscle workouts.
Overall, the study emphasizes the importance of tailored interventions to address the knowledge gaps, promote constructive attitudes, and encourage the consistent practice of these exercises In the long run, this easy intervention can ultimately contribute to enhanced pelvic health and general well-being of women.

Keywords: Pelvic floor muscle exercise (PFME), Kegel exercise.

Introduction

The "pelvic floor" refers to a group of muscles and ligaments facilitating attachment to the bones of the Pelvis, which supports the organs in the pelvis that include the bladder, urethra, vagina, uterus, rectum and anus. [1] These are the key muscles for bladder and bowel control, but just like any other muscle, they can become weak or injured.
Factors like pregnancy, vaginal childbirth, obesity, certain surgeries, and the natural aging process can be the risk factors leading to this weakening in females which can further cause urinary and anal dysfunction, leading to incontinence, reproductive organ prolapsed, [2] sexual dysfunction, and can affect sexual arousal and orgasm. [3] Pregnancy and childbirth are the most significant contributors in this respect. [4]
Pelvic floor muscle exercises (PFME), commonly known as Kegel exercises, were first described by Arnold H. Kegel in 1948. These can help to strengthen these muscles and thus alleviate symptoms of dysfunction. Correct identification & contraction of pelvic floor muscles is important to perform these exercises effectively, focusing on the muscles around the vagina and anus—without engaging the abdominal, buttock or thigh muscles. This targeted approach increases the efficacy of the exercises in improving pelvic floor strength and functionality. [5]

The Kegel exercises involves three simple steps:

1. **Contract**: *Squeeze* the pelvic floor muscles.
2. **Hold**: *Maintain the contraction* for 8 to 10 seconds.
3. **Relax**: *Fully release* the pelvic floor muscles.

These exercises can be executed at any time of day and in any posture, including standing, sitting, and lying down. It is advised to be performed eight to twelve times a session, ideally three times a day, for at least 15 to 20 weeks. Frequent use of these exercises improves mobility, reduces pain, and strengthens the pelvic floor muscles, which helps manage prolapse. [7] By strengthening the pelvic muscles, these exercises assist reduced urinary incontinence by regulating urine flow.

It is recommended to start pelvic floor exercises in the second half of pregnancy and then carry them out from the second day after delivery to make the muscles strong. [6] Practicing in this way, it can prevent and treat these dysfunctions effectively, greatly improving the quality of life. [4] These exercises can also enhance psychological well-being, aid in natural childbirth, and reduce the risk of cesarean delivery. [8] They are commonly advised to reduce the occurrence of urinary incontinence during the postnatal period and to treat stress, urge or mixed urinary incontinence.

In women of reproductive age group, these exercises are useful in both the Prevention and the treatment of vaginal prolapse. The application of tools like weighted vaginal cones, biofeedback devices and electrical stimulation can help carry out Kegel exercises. [9] However, Kegel exercises are not recommended for people with hypertonic pelvic floor muscles, myofascial pelvic pain syndrome, urinary retention, recent post-op hysterectomy or pelvic floor surgeries, severe pelvic floor dysfunctions, high-risk pregnancy, preterm labor or chronic constipation.

The definitions of pelvic floor dysfunction varies across studies, resulting in variations in the reported incidence and prevalence rates. The previous Indian studies have found a prevalence of 20.7%**.** [10] Additionally, there is limited research on the awareness and understanding of the importance of Kegel exercises among Indian women.

Knowledge and attitude about Kegel exercises among women are crucial to enhance practice in routine life. Familiarity with socio-cultural, educational, and economic determinants is necessary for enhancing compliance with them. Detection of the determinants of behaviors and beliefs can facilitate a favorable attitude shift, enhancing participation in Kegel exercises in both prenatal and postnatal care.

The present study attempts to evaluate knowledge, attitude, and practice about pelvic floor muscle exercises in women presenting to the Department of Obstetrics and Gynaecology in a tertiary care teaching hospital.

Aim

To Assess the knowledge, attitude, and practice regarding pelvic floor muscle exercise.

Objectives

1. To determine the level of awareness about Kegel exercises.
2. To explore the attitudes and perceptions of these women towards the above recommended exercises.
3. To assess the consistency and adherence of women to these pelvic floor exercise routines.

Materials and Methods

This cross-sectional study was conducted among women attending the OPD in the department of Obstetrics and Gynecology at ESIC Medical College Hospital, Sanathnagar. After obtaining informed consent, data collection was done, between may and june 2023 with a total of 253 participants being included in the study.

With the confidence interval of 95%, and a margin of error (E) set at 5% or 0.05, the estimated sample size for our research was calculated using the formula.

$$n = Z^2 \times p \times (1 - p) \div E^2.$$

Inclusion criteria

All women between 18-45 years of age irrespective of the marital status & parity.

Exclusion criteria

Women with h/o of haemorrhoids.

Women diagnosed with grade 3 or grade 4 pelvic organ prolapse.

Women with status post hysterectomy.

Tools of data collection

Three tools were used for data collection:

Tool 1: A structured interview, covering the Patient's information

Part 1: Woman's socio-demographic characteristics, such as age, marital status, employment, education, monthly income, and background.

Part 2: Previous pregnancy history, including births, miscarriages, and mode of delivery.

Part 3: Source of knowledge about Kegel exercises.

Tool 2: To gauge women's understanding of kegel exercises. It consisted of nine items covering the definition, timing of initiation of exercise, and the benefits for pelvic muscles, healing, incontinence, as well as prevention of vaginal atrophy and uterine prolapse. Women scored 2 for correct answers & 1 for incorrect / unknown answers.

Total KNOWLEDGE score was grouped into three levels: Good (>75%), Fair [50% - 75%), and Weak (<50%).

Tool 3 covered two Aspects

Part one: Pertained to women's attitudes toward kegel exercises. It comprised of six items with responses in 5 Likert-scale scores ranging from 0 (strongly agree) to 4 (strongly disagree). Higher scores indicated favourable attitudes. Based on the scores for all attitudinal statements, women were categorised as having 'unfavourable,' 'somewhat favourable,' or 'favourable' attitudes regarding Kegel exercises.

Overall ATTITUDE scoring was as follows: Unfavorable: 1-8, Somewhat favourable: 9-16, Favorable: 17-24.

Part two: Related to women's practices regarding kegel exercises. It included questions about reasons for performing the exercises and the frequency and their effects. The scoring given was as follows: Score of 2 for practices performed, 1 for practices not performed or if the participant didn't know.

Total Practice score level was grouped as: Satisfactory practices > 60%, Unsatisfactory practices < 60%.

The data was analyzed using SPSS software, a widely used tool for statistical analysis in research. The correct answers were summarized to calculate knowledge scores. The sample was then divided based on average scores, and the chi-squared test was used to assess the association of demographic factors with knowledge. Variables such as age and education level were grouped to prevent empty categories. A p-value of 0.05 was considered significant.

Results

Table1: Distribution according to socio-demographic characteristics.

Sociodemographic Data		N	%
Age	20-25	42	16.7%
	26-30	106	42.3%
	31-35	67	26.4%
	>35	38	15.6%
	Total	253	100.0%
MaritalStatus	Married	234	92.5%
	Unmarried	19	7.5%
	Total	253	100.0%
Education	Illiterate	24	9.8%
	Primary	26	10.2%
	Highschool	23	9.0%
	Inter	101	40%
	Degree	79	31.5%
	Total	253	100.0%
Employment	Employed	139	54%
	Housewife	99	39%
	students	15	6%
	Total	253	100.0%
Background	Rural	57	22.8%
	Urban	196	77.2%
	Total	253	100.0%

Table 1 provides a demographic breakdown of the 253 respondents.
Regarding age distribution, 42.3% were aged 26–30 years, 26.4% were 31–35 years, 15.6% above 35 years, and 16.7% were between 20–25 years.
92.5% of the participants were married.
Education levels varied among the respondents. 31.5% were graduates & above, 40% had completed intermediate education. Only 9.8% were illiterate.
54% of the participants were employed.
Geographically, 77.2% of respondents were from urban areas.

Table 2: Distribution according to Obstetric History

Gestationalhistory		N	%
Miscarriage	NoMiscarriage	168	66.4%
	1-3Miscarriage	77	30.4%
	>3Miscarriage	8	3.2%
	Total	253	100.0%
Gravida	Primigravida	82	32.4%
	Multigravida	147	58.1%
	Nulli para	24	9.5%
	Total	253	100.0%
Type of delivery	Vaginal delivery	142	62%
	Caesarean Section	87	38%
	Total	229	100.0%
Number of children	1 or 2Children	177	77.3%
	3 Children and more	52	22.7%
	Total	229	100.0%

Table 2 shows the Obstetric History of the participants.
Of the 253 participants, 66.4% had no previous miscarriages. 30.4% women had 1-3 miscarriages while 3.2% experienced more than 3early pregnancy losses.
32.4% were primigravida & 58.1% multigravida. 9.5% women had no previous births.
Of 229 parous women in the study, 62% had vaginal deliveries while 38% had LSCS.
Of the 229 women with children, 77% had 1-2 children, and 23% had three or more children.

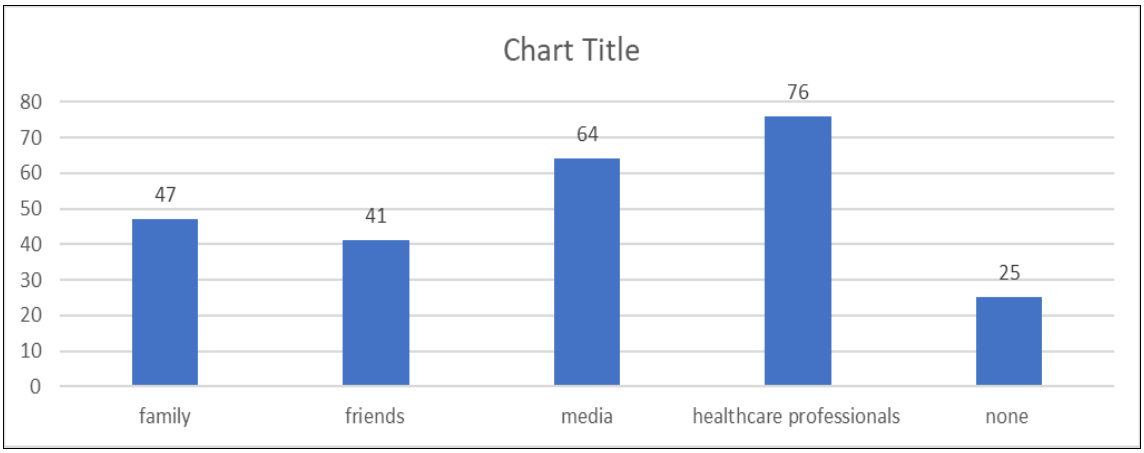


Fig 1: Distribution according to source of information

Fig 1 Illustrates that healthcare professionals were identified as the primary source of information about Kegel exercise by 30% of the women studied. This was followed by the Media, Family and Friends as other significant sources of information.

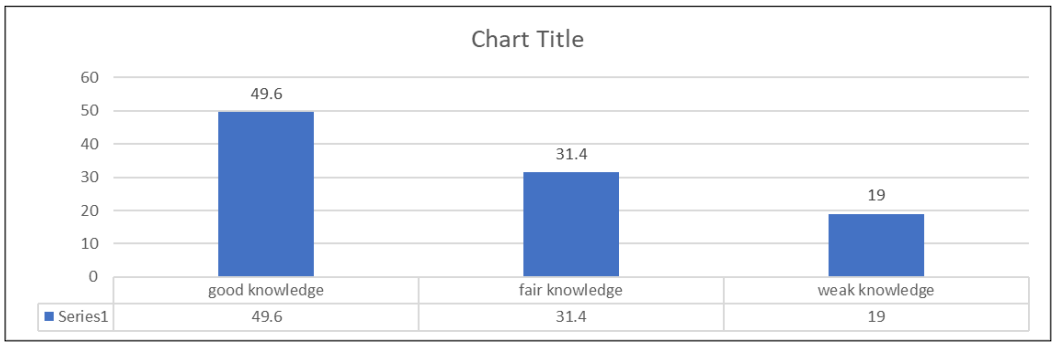
Table 3: Correct answers regarding the knowledge of the Kegel exercise

Knowledge Items	Correct Responses (N)	%
Definition of Kegel exercises	158	62.5%
Time to start the exercise	110	43.4%
Benefits for pelvic muscles	161	63.7%
Benefits for healing	113	45.6%
Benefits for incontinence	144	56.8%
Benefits for intimacy	123	48.6%
Benefits for prevention of vaginal atrophy and uterine prolapse	146	57.6%
Benefits for prevention of pelvic organ prolapse	155	61.4%

Table 3 highlights the Participants' Knowledge about Kegel exercise. Among them, 62.5% accurately defined Kegel exercise. Additionally, 63.7% recognized the advantage of Kegel exercise for pelvic muscles, 45.6% for healing advantages, and 56.8% were aware of their role in managing incontinence.

57.6% were aware about the role of kegel exercise in preventing vaginal atrophy and uterine prolapse, and 61.4% acknowledged their effectiveness in preventing pelvic organ prolapse.

Fig 2 Distribution of responses regarding the total knowledge



Good knowledge: >75%; Fair knowledge: 50%-<75%; Weak knowledge: <50%

Fig 2: Among the respondents, 49.6% demonstrated good knowledge, 31.4% displayed fair knowledge and 19% exhibited weak knowledge.

Table 4: Distribution according to the attitudes regarding Kegel exercise.

Attitudes	SA		A		N		D		SD	
	N	%	N	%	N	%	N	%	N	%
Whether an antenatal woman does the recommended Kegels exercise or not will Not affect labour	35	13.9	87	34.4	59	23.2	52	20.6	20	7.9
Though the recommended exercise make recovery easy, they may also harm to the pelvic muscles.	3	1.2	40	15.9	67	26.6	111	43.7	32	12.6
Postnatal mothers performing Kegels Exercise do not suit our culture	22	8.6	23	9.0	62.2	24.5	71.1	28.0	75	29.6
Any postnatal mother can perform exercise with the advice and recommendations of health care professionals	93	36.7	42	16.8	50	19.7	53	20.9	5	5.9
During postpartum, the priority should be improvement of nutrition and rest and not exercise	22	8.6	65	25.7	62	24.5	74	29.3	30	11.9
Performing day-to-day household activities gives adequate physical exercises to postnatal women, and they do not have to perform the recommended Exercise	22	8.6	32	12.5	48	18.9	93	36.8	59	23.2

SA: Strongly agree, A: Agree, N: Neutral, D: Disagree, SD: Strongly Disagree,

Table 4 highlights Participants' Attitudes toward Kegel exercise.

Specifically, 43.7% disagreed, and 12.6% strongly disagreed with the notion that exercise could harm pelvic muscles.

Also, a total of 41.9% disagreed with the idea that nutrition and rest should take precedence over exercise during the postpartum period.

In Addition, 36.8% disagreed, and 23.2% strongly disagreed with the statement that household chores provide sufficient physical activity, making exercises unnecessary.

All these women were thus in favour of Exercises.

Conversely, 48.3% women felt that Kegel exercise has no impact on labour,

Moreover, 36.7% strongly agreed that any postnatal mother can safely perform these exercise under professional guidance.

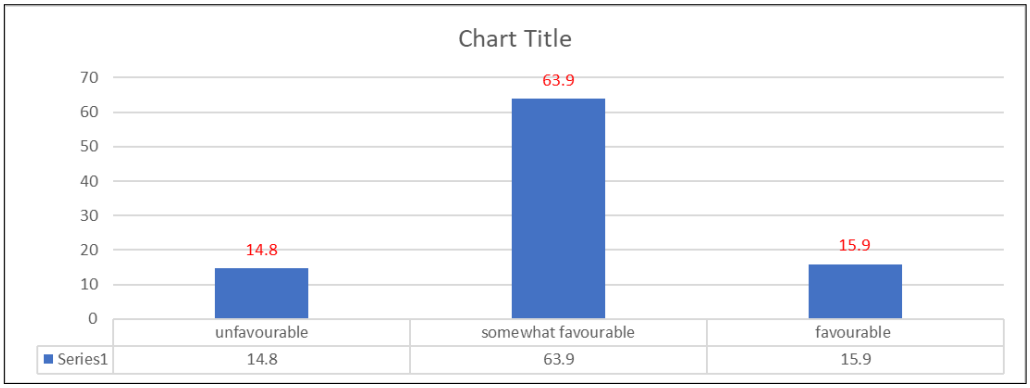


Fig 3: Distribution according to the overall attitudes related to kegel exercise

Table 5: Distribution according to the Practices of Kegel Exercises

Kegel Practice		Count	%
Have practised the Kegel exercise	No	136	53.7%
	Yes	117	46.3
	Total	253	100.0%
	For preventive purposes	23	19.6%
	Recommendations from friends and relatives	33	28.2%
	Recommendation of the doctor to practice Kegels after birth	61	52.1%
	Total	117	100.0%
The frequency of Kegel exercise	1-3times a week	68	58.10%
	4-6times a week	23	19.7%
	Daily	26	22.2%
	Total	117	100.0%

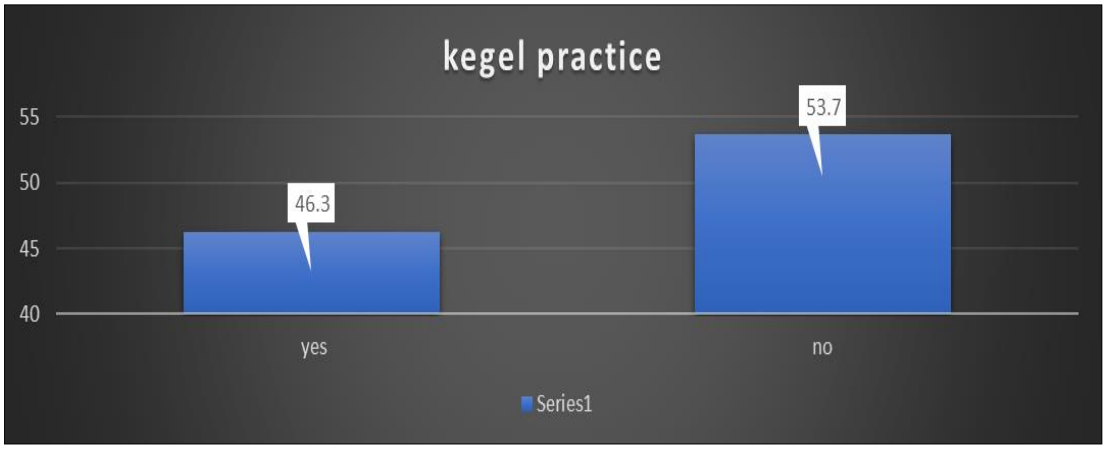
Table 5 provides insights into the practice of Kegel exercise among the 253 participants.

Of these, 46.3% reported engaging in Kegel exercise, with the majority [52.1%) initiating them based on a doctor's recommendation after childbirth.

Other motivations included preventive purposes [19.6%) advice from friends or relatives [28.2%).

Among those who practiced, 58.1% performed the exercises 1-3 times a week, 19.7% did so 4-6 times weekly, and 22.2% practiced daily.

Fig 4: Sample's responses on 'Have you ever practiced Kegel exercises?'



Total Practice score: Satisfactory practices > 60%, Unsatisfactory practices < 60%.

Fig 4 shows that 46.3% of women have ever practised kegel exercise.

Fig 5: Distribution according to the positions of performing the Kegels exercise.

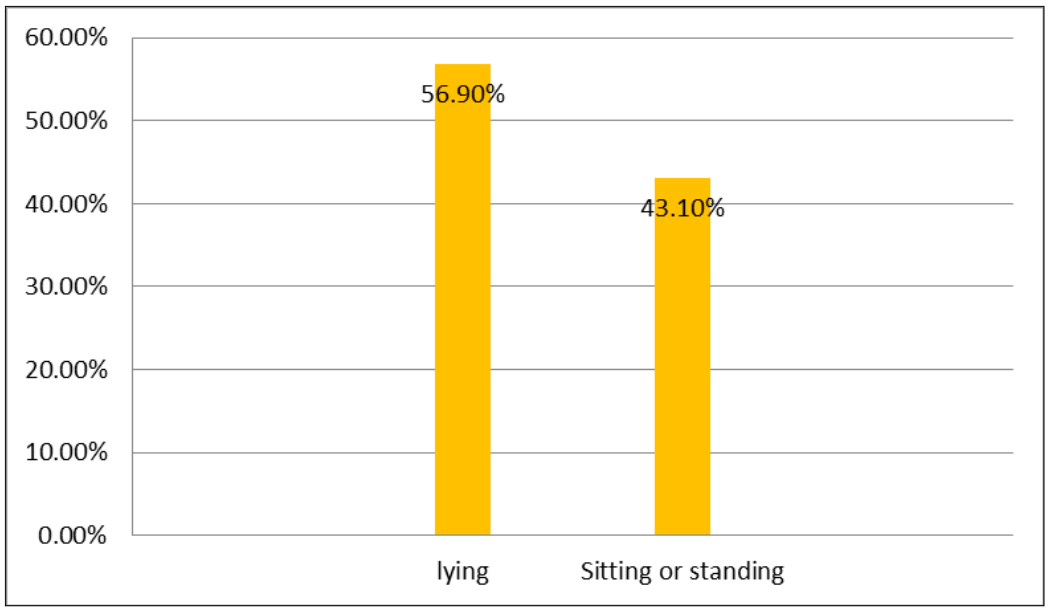


Fig 5: Shows that 56.9% of the studied women performed kegel exercise in lying down positions, while 43.1% performed them in sitting or standing positions.

Discussion

The prevalence of Pelvic Floor Dysfunction in previous Indian studies is 20.7%. [11]

This study evaluated the knowledge, attitude, and practice (KAP) of Kegel exercise among women, focusing on the factors influencing their adherence to pelvic floor muscle exercises.

Knowledge of Kegel Exercises

The study revealed that 49.6% of the participants were aware of Kegel exercises, including its benefits in preventing pelvic floor dysfunctions such as urinary & faecal incontinence, as well as pelvic organ prolapse. Education levels in our study varied among the respondents. 31.5% were graduates & above, 40% had completed intermediate education.

According to a study by Kozakiewicz *et al.* [11] conducted among Polish women, 79.3% of them showed a good degree of awareness of Kegel exercises. The majority of the participants in this survey had at least a bachelor's degree or intermediate education, which explains their high level of expertise. Research by Ibrahim *et al*. [60% educated) [12] and Alharqi *et al*. [91.8% educated) [13] showed that women with higher education levels were more likely to be aware of Kegel exercises and their advantages, which is in line with this finding. Promoting health literacy requires education, especially when it comes to topics like pelvic floor exercises and other preventative health practices.

Media was mentioned as their primary source of information by 64% women, which echoes the findings from other studies in Saudi Arabia. [12, 13]

Nonetheless, the most important role in sharing this information is still played by healthcare practitioners [76% in our study, which also correlates with other studies).

Attitude Towards Kegel Exercises

There was a discernible discrepancy between the individuals' positive attitudes on Kegel exercises and their actual practice, even with high levels of understanding. According to the study, the majority of women had favorable or somewhat favorable opinions on Kegel exercises, which is consistent with the optimistic assessment given by Ibrahim *et al*. **[21]** in their Medinah study. Women's positive attitudes on pelvic floor exercises indicate that they understand how important these exercises are for long-term health and postpartum recovery. However, the disconnect between attitude and practice indicates that knowledge alone may not be enough to inspire behavioral change. As noted by Kozakiewicz *et al*, [11] this discrepancy could be caused by a number of factors, including forgetfulness, time constraints, and a lack of confidence in one's ability to complete the tasks successfully.

Practice of Kegel Exercises

Despite their knowledge and positive attitudes, 46.3% of women in this study consistently practiced Kegel exercises. This Fig is higher than the 32% reported by Ibrahim *et al* [12] and the 11% found by Hill *et al*. [14]

The advice from medical professionals, especially following childbirth, was a major motivator for the use of Kegel exercises in this study. This is consistent with research by Kozakiewicz *et al*. [11] that found the majority of women started Kegel exercises after being advised to do so by their physicians, midwives, or physiotherapists. The promotion of Kegel exercises is greatly aided by obstetricians, who can teach the exercises in prenatal classes and throughout the postpartum hospital stay. The disparity in adherence, however, emphasizes the necessity of more methodical reinforcement and follow-up.

The percentage of women who performed Kegel exercises varied, with 22.2% doing so everyday and 58.1% doing so one to three times per week. This result is in line with Burkhard *et al*. **[15]** and Culbertson & Davis *et al*. **[16]** Nevertheless, there is room for improvement, as more women should incorporate these exercises into their routines regularly to achieve best possible health outcomes.

Barriers to Practice

This study revealed several obstacles in regularly practising Kegel exercises, including nonchalant attitude towards health, uncertainty about the correct technique and misconceptions. These difficulties align with the findings of Mbada *et al*. [17] who observed that despite being aware of the advantages of Kegel exercises, many women find it difficult to include them in their regular routines. The biggest contributing factor to the decreased adherence rates seems to be time constraints, especially for working women or those with several children.

Additionally, the study discovered that women who had vaginal deliveries or were older were less likely to routinely perform Kegel exercises. This negative correlation with age may be attributed to a decreased sense of urgency regarding preventive care or the discomfort associated with pelvic floor dysfunction that may deter older women from engaging in the exercises. In contrast, multiparous women demonstrated greater adherence to Kegel exercises, possibly because of heightened awareness of the importance of pelvic floor health after experiencing the ill effects of multiple deliveries.

Socio-Demographic Influences

Sociodemographic characteristics and KAP of Kegel exercises were found to be significantly correlated in this study. Better knowledge and more favorable attitudes toward Kegel exercises were linked to higher educational attainment, work status, and a history of miscarriage. This result is consistent with study by Alharqi and Albattawi [13] that showed women who were working and had more education were more knowledgeable about Kegel exercises.

It is interesting that the study discovered that women's opinions on Kegel exercises were significantly impacted by miscarriage. Despite the absence of evidence to support this assumption, these women tended to be more cautious and frequently saw Kegel exercises as a possible risk factor for future miscarriages. This highlights the significance of focused educational initiatives to address concerns and debunk myths regarding Kegel exercises, especially for women who have lost a child. These kinds of interventions might help allay unwarranted worries and motivate more women to perform pelvic floor exercises.

Conclusion

This study has shown us that though most women are aware of pelvic floor muscle exercises (PFMEs), a large number have limited understanding and are under misconceptions about their correct application and benefits. While most ladies recognize the association of PFMEs and bladder control, they lack a clarity on the preventive role of

exercises in the postpartum period. Majority of participants wanted further guidance on the issue. The evidences point towards more targeted educational programs and healthcare interventions to apprise women and healthcare providers about the importance of Kegel exercises, leading to a widespread and effective adoption of these practices.

Women's well being, particularly in postpartum period is of utmost importance and addressing knowledge gaps and demystifying myths can be pivotal in prevention of pelvic floor dysfunction. The study reinforces the need for increased awareness among women in order to help encourage the appropriate practice of PFMEs.

Recommendations

Educational Programs: Integrate PFME education into antenatal and postnatal care.

Healthcare Involvement: Ensure obstetricians and midwives actively promote PFMEs.

Awareness Campaigns: Use media to spread awareness, especially in rural areas.

Postpartum Care Plans: Make PFMEs a routine part of postpartum recovery.

Rural Outreach: Create programs to educate rural and low-income populations.

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