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Evaluating the Efficacy of Kegel Exercises in Reducing Postoperative Urinary Incontinence Among Elderly Patients Following Pelvic Surgery

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Abstract

Background: UI continues to affect elderly patients considerably after pelvic operation, leading to 40-60% prevalence rates. The evidence supporting the effectiveness of Kegel exercises (pelvic floor muscle training) for elderly surgical patients is not substantial because research in this area remains scarce.

Aim: This study evaluated the effectiveness of structured Kegel exercises in reducing UI severity and improving self-management confidence among elderly patients undergoing pelvic surgery.

Methods: The research employed a quasi-experimental design to study 50 elderly patients (minimum age 60) at a tertiary medical institution. Patient participants conducted Kegel exercises with standard protocols consisting of three daily sessions of ten to fifteen concentrated repetitions for four weeks. Valid questionnaires measured UI severity and confidence levels through a 5-point Likert scale before and after the intervention. A statistical analysis of paired t-tests and chi-square tests was conducted through SPSS version 26.

Results: The outcomes of this study showcased an essential decrease in urinary incontinence severity since participants started from 3.6 (±0.8) but ended at 2.1 (±0.9) ($p<0.001$, $d=1.38$). Participants who performed Kegel exercises twice daily achieved an 87.5% improvement while participants with minimal exercise reported only 38.9% improvement in urinary incontinence severity ($p=0.001$). Participant confidence in performing Kegel exercises showed a significant improvement based on the "Very Confident" ratings, increasing from 4% to 36%. A significant reduction in incontinence occurred most prominently in the patients who started with moderate to severe incontinence, since they comprised 60% of the cohort.

Conclusion: The success of Kegel exercises for UI management highly depends on patient adherence frequency when used by elderly surgical patients. The intervention helps patients feel more confident and incorporates postoperative care as a standard practice.

Keywords: Kegel exercises, postoperative urinary incontinence, elderly patients, pelvic floor muscle training,

Introduction

The involuntary leakage of urine known as urinary incontinence affects patients heavily after pelvic surgeries, most notably elderly patients, because of its negative influence on their quality of life [1]. Kegel exercises represent pelvic floor muscle training (PFMT) through individual

contractions of these muscles to build strength for bladder and rectal and uterine support structures [2]. Kegel exercises are an economical treatment option that helps patients maintain bladder control while decreasing incontinence [3]. The pelvic floor muscle damage or weakening, which stems from prostatectomy, hysterectomy, and colorectal surgeries, results in postoperative urinary incontinence. The growing number of surgical procedures on older people requires identifying well-established non-invasive treatments like Kegel exercises [4]

UI represents a common postoperative complication that affects older adults who have had pelvic surgical procedures such as prostatectomy and hysterectomy or colorectal operations. Research shows urinary incontinence develops in between 40% and 60% of elderly surgical patients after their operations and stress incontinence emerges most frequently among urinary issues [5]. Postoperative incontinence rates within the female population surpass the male population mainly because of birth experiences, hormonal fluctuations, pelvic organ prolapse, and prostate surgery effects on the male population. UI impacts 30–50% of people in the general elderly population, yet surgical interventions cause this rate to surge because the patient's pelvic floor muscles become weak and recovery takes longer [6]. The widespread occurrence of urinary incontinence remains poorly diagnosed and inadequately treated because society associates it with normal aging processes, as well as because people do not understand the problem or fear its associated stigma. The situation requires efficient non-invasive treatment options such as Kegel exercises because urinary incontinence affects populations at high rates but frequently goes unnoticed [7].

Urinary incontinence affects older adults more frequently because their pelvic floor muscles weaken through aging, and they have health problems and experience reduced physical movement. Pelvic surgical procedures intensify various factors that lead to disrupted bladder control systems [8]. The presence of urinary incontinence among senior citizens results in physical medical issues while simultaneously generating emotional challenges and social seclusion plus increased need for caregiver support [9] The available medical procedures alongside drugs offer treatment. Still, these methods may not be appropriate for all senior patients because of potential risks associated with side effects and complications. The medical community now recognizes Kegel exercises as a promising treatment for preventing and treating UI while avoiding other health burdens. [10].

According to past research findings, pelvic floor exercises demonstrated their ability to alleviate stress and urge incontinence among different age groups [11]. Research on treating UI using Kegel exercises in elderly patients after surgery stands at an insufficient level since results show various inconsistencies. The results of this intervention depend on patient compliance with exercise routines, mental abilities, and individual variations in surgery types [12]. Medical professionals today agree that starting Kegel exercises early during postoperative recovery will strengthen pelvic floor muscles and enhance urinary continence results. Additional evidence-based studies must verify how well these interventions affect elderly surgical patients [13].

Practice professionals tend to avoid including pelvic floor rehabilitation in their postoperative care strategies, particularly when treating elderly patients whose physical abilities or motivation levels receive a negative assessment [14]. The postoperative care plans must implement standardized Kegel exercise training methods because this approach will improve patient recovery trajectories. Including this exercise program carries the potential benefit of minimizing hospital admission rates while simultaneously decreasing patient dependence and creating more positive perceptions about treatment success [15]. To achieve successful implementation, elderly patients together with their caregivers need comprehensive training about pelvic floor importance and training methods [16].

The research analyses Kegel exercise effectiveness as a postoperative urinary incontinence prevention method for elderly patients recovering from pelvic surgery [17]. The study evaluates structured pelvic floor muscle training programs to create evidence-based protocols for adding Kegel exercises in post-surgical care for elderly patients [18]. This research establishes a basis

which might improve modern conservative treatment procedures thus delivering better life quality for patients in this high-risk group.

Methodology

A quantitative quasi-experimental design was utilized at Saidu Teaching Hospital in Swat to study Kegel exercise effectiveness in treating postoperative urinary incontinence of elderly pelvic surgery patients. The research took place in surgical wards alongside urology units to study patient understanding, performance, and outcomes of Kegel exercises after surgery. The research focus was on elderly patients aged 60 years and older who required pelvic surgical procedures, including prostatectomy, hysterectomy or colorectal operations and experienced urinary incontinence after their surgery. The two-month recruitment effort through the purposive sampling method enrolled 50 participants who satisfied all inclusion requirements: age 60 years or older, pelvic surgery no more than three months ago, experienced urinary leakage following surgery, ability to do Kegel exercises physically and mentally and voluntary consent. The research excluded patients who had cognitive impairments, terminal illnesses, or severe complications outside urinary functions. The researchers conducted a detailed assessment of incontinence symptoms by administering questionnaires and clinical tests before and after participation in the study. Nurses provided standardized Kegel training to participants who tracked their exercise performance through exercise logs. The statistical examinations for symptom improvement followed procedures in SPSS by adjusting for surgery type and baseline pelvic floor strength measurements. Ethical approval provided essential assurances for participant privacy and their free choice to participate in the entire research period.

Data Collection Tools and Procedure

The data collection method was a self-administered questionnaire with a structured format and a follow-up assessment. The research instrument contained different sections to collect information about demographical factors, urinary incontinence descriptions, and Kegel exercise awareness and practice. A fixed-choice and Likert-type scale survey allowed measuring incontinence events and their intensity alongside recording participant Kegel exercise practice. The research provided standardized illustrations and written instructions to all patients for Kegel exercise execution. The study performed a four-week assessment to check for modifications in urinary incontinence manifestations.

Intervention

All participants attended a short training with a nurse who guided them through the correct Kegel exercise execution. The training procedure incorporated visual imagery and simplified printed educational materials specifically serving elderly patients. The exercise instruction included performing three daily sessions containing ten to fifteen exercises per session. Our team checked for exercise compliance through weekly meetings that combined personal visits and phone conversations.

Data Analysis

Data entry for quantitative information occurred inside SPSS version 26 to perform statistical analysis. Researchers presented participant demographics and baseline characteristics through descriptive statistics containing mean values, standard deviations, and frequency distributions. The research used paired t-tests and chi-square tests to assess urinary incontinence scores before and after intervention while measuring the connection between Kegel exercise practice and incontinence severity. The research rejected statistical significance at a p-value below 0.05.

Ethical Considerations

The study obtained approval through the Institutional Review Board (IRB) of Saidu Teaching Hospital in Swat. All participants provided written consent following an explanation of the

study purpose, together with detailed descriptions of procedures and confidentiality procedures. The study participation was optional, while patients received notification about their freedom to exit the study at any time, without experiencing any adverse effects on their medical care. During every stage of the project, identifiers were replaced with coding numbers, which protected patient privacy through complete anonymity.

Results and analysis

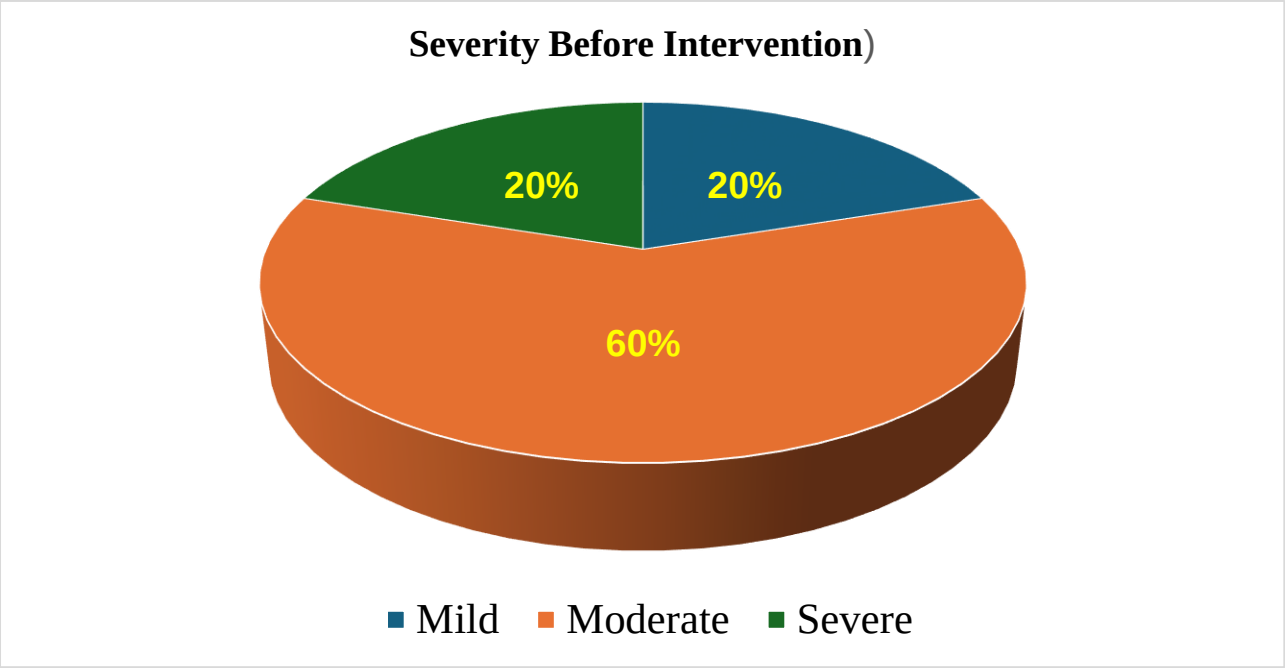
Demographic Characteristics of Participants: 50 patients formed the study sample, but primarily consisted of patients aged between 60 and 70 years, with males prevailing at 56%. Surgeries on the colon or prostate represented 40% and 36% of cases among participants whereas patients with primary education or less made up 60% of the group. The patient characteristics illustrate why specific education methods should be designed to address differences in patient age, as well as gender and educational background, when delivering care after operations.

Table 1: Demographic Characteristics of Participants (n = 50)

Variable	Frequency (n)	Percentage (%)
Age Group		
60–65 years	20	40%
66–70 years	15	30%
71–75 years	10	20%
76 years and above	5	10%
Gender		
Male	28	56%
Female	22	44%
Type of Surgery		
Prostatectomy	18	36%
Hysterectomy	12	24%
Colorectal Surgery	20	40%
Educational Level		
No formal education	14	28%
Primary	16	32%
Secondary	12	24%
Higher education	8	16%

Baseline Urinary Incontinence Severity Before Intervention: Results showed that postoperative urinary incontinence severity affected 60% of patients (n=30) with moderate symptoms, and 20% (n=10) exhibited mild and severe symptom levels. Most elderly patients who undergo pelvic surgery present significant incontinence symptoms, yet moderate degrees of incontinence appear as the most common manifestation in clinical settings. A targeted intervention program must be developed because the findings show that patients with moderate severity (60%) most require structured Kegel exercises.

Figure 1: Baseline Urinary Incontinence Severity Before Intervention



Incontinence Scores Pre and Post-Kegel Intervention: An analysis reveals that Kegel exercise treatment effectively reduced urinary incontinence intensity since participants decreased their mean scores from 3.6 (±0.8) to 2.1 (±0.9) ($p<0.001$). Kegel exercises produced a clinically significant improvement of 1.5 points, which corresponds to a large effect size of $d=1.38$. The treatment resulted in successful outcomes proven through study results, especially among participants with moderate-severe incontinence (60% of the total group).

Table 2: Comparison of Urinary Incontinence Scores Pre and Post-Kegel Intervention

Time Point	Mean Score ± SD	Mean Difference	t-value	p-value
Pre-Intervention	3.6 ± 0.8			
Post-Intervention	2.1 ± 0.9	**1.5**	9.74	**<0.001**

Association Between Kegel Exercise Adherence and Improvement in Incontinence: The results showed a statistically significant improvement in urinary incontinence when patients followed Kegel exercises two sessions per day or more (87.5% successful outcomes, $p=0.001$). However, only 38.9% of patients who did not perform two sessions daily achieved effective results. Exercise frequency strongly correlates to treatment success based on the obtained χ^2 value of 10.25. The research results demonstrate that elderly patients must perform Kegel exercises twice daily for maximum benefits in their postoperative recovery.

Table 3: Association Between Kegel Exercise Adherence and Improvement in Incontinence (Chi-Square Test)

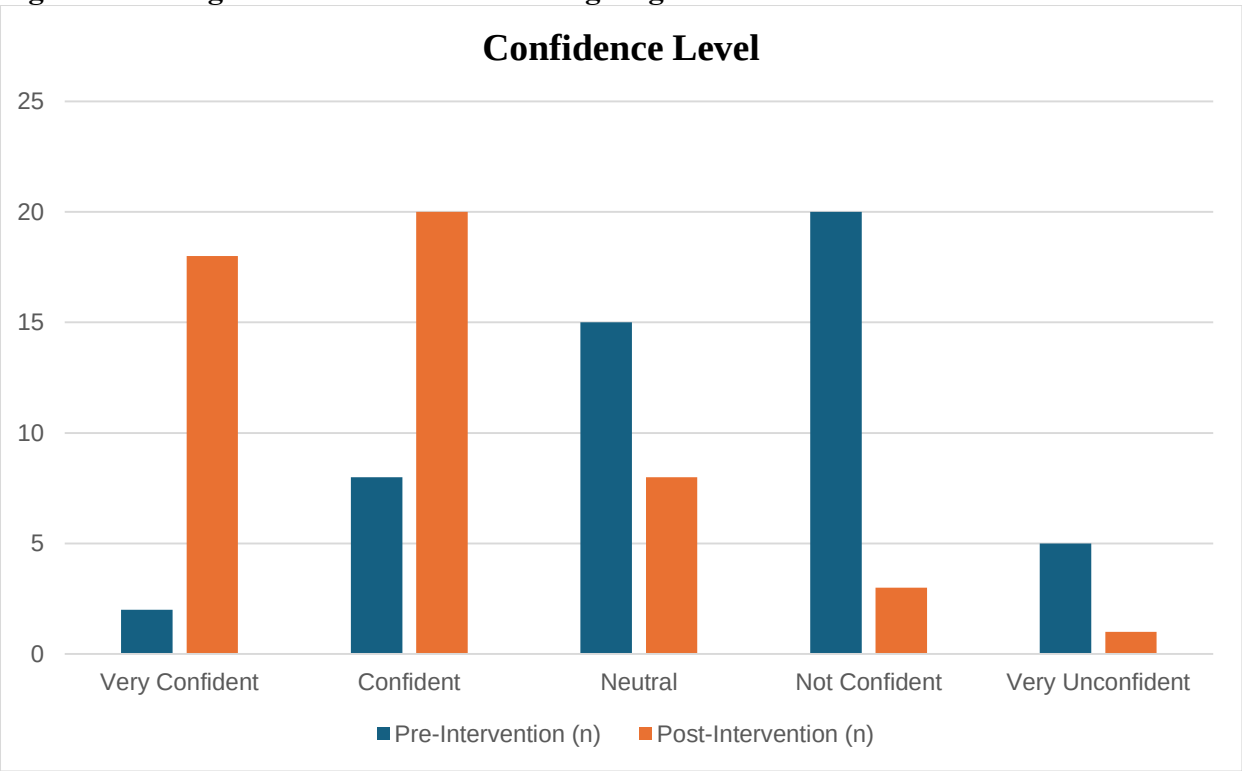
Adherence Level	Improved (n=35)	Not Improved (n=15)	Total (n=50)	χ^2 Value	p-value
High (≥ two sessions/day)	28	4	32	10.25	**0.001**
Low (<2 sessions/day)	7	11	18		

Change in Confidence Performing Kegel Exercises Over 4 Weeks

The participants who underwent Kegel exercise training showed remarkable improvements in urinary incontinence management confidence since "Very Confident" ratings increased from two respondents (4%) to eighteen subjects (36%). An analysis of participants showed the elimination of neutral to unconfident ratings from 70% (n=35) to 22% (n=12) after

intervention, indicating higher self-efficacy. The intervention showed an 80% reduction in "Very Unconfident" ratings because participants decreased from five to one person who felt that way after the study period.

Figure 2: Change in Confidence Performing Kegel Exercises Over 4 Weeks



Discussion

The research results show Kegel exercises succeed at reducing postoperative urinary incontinence specifically for elderly patients who have pelvic surgery. The research findings indicate that sustained PFMT training demonstrates strong evidence ($p<0.001$) for improving urinary control parameters measured through incontinence scores, which reduced from 3.6 to 2.1. The results of [19]. support the findings by showing that elderly prostate surgery patients experience enhanced continence rates after starting PFMT during their recovery period of six weeks. Older female participants in [20]. performed Kegel exercises following hysterectomy, leading to significant decreases in stress incontinence occurrences.

The observed demographic traits highlight essential aspects for educational intervention creation. Since the study participants mostly belong to the age group of 60–70 years with a limited educational background, researchers emphasize that Kegel training must use simple verbal language and visual aids. Support this finding by stating that elderly patients need literacy-based education to achieve proper pelvic floor technique and treatment adherence [15]. Adequate patient adherence proved to be essential for achieving positive treatment results. The participants who did Kegel exercises twice daily showed better treatment success (87.5% improvement, $p=0.001$) than those who exercised less frequently. The results verify the study of [21]. This demonstrated that the number of times patients perform Kegel exercises determines their muscle strength progression and symptom management outcomes. The current research advocates double-session Kegel exercises for elderly postoperative patients, but [22]. Noted that once-daily Kegel exercises could generate improvements according to earlier research. The present study contends that elderly patients need two sessions daily because age-related muscle weakness and surgical trauma factor into the results.

According to self-efficacy measurements, participants experienced a significant increase in their ability to handle their incontinence issues. After the intervention, 36% of participants

demonstrated "Very Confident" labels in Kegel exercises compared to an initial 4% rate. This supports the findings of [23], who explained the crucial role of exercising confidence in sustaining behavioral changes. The improvement in psychological benefits follows Bandura's Self-Efficacy Theory principles because people who believe in their power to shape outcomes will maintain challenging courses of action [24].

This research diverges from [25], which showed that elderly patients needed extended training with steady support because of their health conditions and age-related physiological variations. This effectiveness differs slightly from the [26] research, which showed low patient compliance in elderly subjects. The study provided structured education with frequent follow-up to improve adherence.

Kegels were shown to be effective for reducing postoperative urinary incontinence. Still, the research supports that elderly care demands appropriate teaching methods, consistent monitoring, and behavior-based supplementation for the best possible outcomes [27, 28]. The study strengthens information backing the incorporation of pelvic floor exercises into standard operative care pathways for elderly surgical patients since these strategies are economical and mirror patient-centred approaches.

Conclusion

The research findings show Kegel exercises to be an effective treatment against postoperative urinary incontinence among elderly patients after pelvic surgery without requiring invasive procedures. The participant data shows significant improvement in incontinence scores and confidence level changes, demonstrating the clinical significance of pelvic floor muscle training for geriatric surgical patients. Patient results were directly improved by sticking to twice-daily exercises, which confirms that custom and active patient involvement matter. The study demonstrates that population characteristics like age and gender, as well as education levels, need consideration in developing interventions, together with their educational materials, for effective outcomes.

Recommendations

After assessing the data, healthcare providers should include structured Kegel exercises in their post-operative care plans for elderly people having pelvic surgery. Standardized training with hands-on experiences combined with visual educational tools should be available to patients with low literacy due to ensure understanding at hospitals. The monitoring process, along with routine follow-up sessions, should become standardized to help patients maintain their compliance program and resolve any encountered challenges. Research in the future needs to examine both long-term results and evaluate mobile apps and video tutorials for their effects on Kegel exercise adherence rates across various healthcare environments among elderly patients.

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