Research Article

Impact of physical activity on pelvic floor dysfunction in older women: A cross-sectional study in type D hospital, Khanpur, Khyber Pakhtunkhwa

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Abstract

This longitudinal research investigates the effect of physical activity on abdominal disorders, resulting in incontinence of urine (UI) and sexual dysfunction (FSD), among older women. Conducted at Type D Hospital, Khanpur, District Haripur, Khyber Pakhtunkhwa, the study involved women aged 60 and above, divided into physically active and non-active groups. Data was collected using information about physical activity, The Worldwide Conference on Female Incontinence Questionnaire - Short Form (ICIQ-UI-SF) for UI evaluation, and the Female Sexual Function Index (FSFI) for evaluating reproductive activity. The abdominal muscle contraction was evaluated using the Perfect Scheme. Results revealed that physical activity did not significantly influence UI or FSD severity in the study population. Despite high prevalence rates of UI (48.6%) and FSD (45.7%) and some variations in PFM function, no substantial differences were observed between physically active and non-active groups regarding UI frequency, severity, or sexual function. These findings suggest that while physical activity may improve PFM functionality, its impact on UI and FSD in older women may be limited. Further research is needed to explore integrated treatment approaches and validate these results.

Keywords: Pelvis Organ Contraction of muscles, Urinary Incontinence; Sexual Disorders; Older Women; Pelvic Floor Dysfunction; Women's Health; Quality of Life

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Introduction

Focusing on long-lasting and practical abnormalities of the pelvis floor muscles (PFM) connected by aging is important [1]. PFM dysfunctions are a major problem among the senior population [2-4]. Female sex problems and incontinence of urine are common and have a detrimental influence on the standard of life [5]. It affects 26.2% of Brazilian women over 60 years old. FSD has been

defined as a deficiency in the excitement, plateau, orgasm, and resolution-based female sexual response cycle [6, 7]. Recent research implies that the female sexual response is irregular and includes a personal element, challenging earlier linear ideas. The incidence of FSD in Brazil is around 68%. Elderly women are more likely to experience symptoms during the climate-sensitive phase. Aging leads to hormonal alterations in female organisms. Adipose tissue eliminates skeletal muscles, resulting in muscular atrophy. Mutations to the PFM can reduce muscular contraction strength and cause dysfunctions like FSD and UI [8]. Research shows that exercising helps the elderly population, including improved PFM functionality. Researchers studied 39 elderly women more than 60 years old. They were separated into 2 categories: practitioners (PG) who participated in physical activities and non-practitioners (NPG) who did not. The study indicated that older women in PG had more repetitions, faster PFM contractions, and stronger perineal muscles. This study sheds light on how PFM dysfunctions affect physically active older women, potentially impacting therapeutic practice.

A specialist investigates PFM-related dysfunctions. This study contributes to future scientific research and improves treatment for older women. The present research examined the dependent relationship between perineal muscle tension with UI and FSD in physically healthy elderly females. The study also aims to compare the strengthening of PFM and UI in physically healthy elderly ladies who have and lack FSD and the relationship between perineal Muscular spasm and reproductive function.

Methodology

This cross-sectional research investigated the connection between UI, FSD, and constriction of PFM physically healthy elderly females. The study included women over 60 in Type D Hospital, Khanpur, District Haripur, Khyber Pakhtunkhwa for 1 year from 1st July 2023 to 30 June 2024. The participants were practically autonomous, sexually engaged, and specified to do a walk/physical workout for no less than five consecutive days in a week, including an aggregate of 10 hours of exercise each day. This study excluded women who had been on therapy for hormone replacement, had a cough that persisted, had bodily handicaps or illnesses of the brain, were getting treatment for UI, and remained sex-wise dormant, or engaged in water-based activities such as swimming, water aerobics or hydrotherapy.

The data was analyzed through Gpower programs, edition 3.1. To investigate associations among variable quantities, an a priori assessment was conducted with a difference magnitude of 0.5 and a p-value of 0.95.

To contrast the parameters, an analysis of sensitivity was performed using the present sample size, through a p-value of 0.80 and a threshold for implication of 0.05. The intensity of the consequence was 0.97. The Mini Mental State Examination (MMSE) evaluates mental capacity.

The study comprised older women without cognitive impairment. Katz score was designed to measure Tasks of everyday existence and dependent status. To evaluate how much aerobic activity (PA), old females agreed to undertake walking/ physical exercise for no more than five consecutive days, having an average of one hour per day, before data collection. The threshold limit for regular daily physical activity was 1.041 amounts per minute or above, using the standard values. After implementing the criteria for inclusion or exclusion, 235 older women

were selected. Contestants agreed upon the Free and Informed Consent Form (FICF).

Information was acquired at a Rehabilitation Center warmed to 24°C. The investigators were taught and graded blindly, with one conducting the interview and another evaluating the PFM. The evaluation paper had twenty inquiries divided into 4 sections: identifying data, sociodemographic factors, health problems, and workouts. The approach was updated to add urogynecological data for clients. The International Consultation on Incontinence Questionnaire - Short Form (ICIQ-UI-SF) was then cast off to assess the prevalence, seriousness, and effects of incontinence of the bladder on the standard of health. The rating operates from 0 to 21; the bigger the number, the more severe the Urinary incontinence [10].

The Female Reproductive Activity Index questionnaire has nineteen queries separated mad about six categories: erotic attraction, excitement, Genital lube, sensual desire, satisfaction, and discomfort. Every query had a potential value of 0 to 5. The weighted points were added together to produce the total score, which could be no more than 36. Standards equivalent toward or less than 26.55 suggest disease [11].

Subsequently completing the surveys, individuals remained asked to evaluate PFM physically using the Perfect Scheme [12]. A trained physiotherapist performed an intravaginal palpation on a patient undergoing lithotomy. The treatment entailed putting the second and third 3-4cm digits hooked on the vaginal channel using hands covered in gloves and composed of water moisturizers and lotion to decrease pain [12]. The character "P" denotes strength and is assessed on the Oxford measure as null to five, taking into account the existence and strength of spontaneous Constriction of muscles. The durability of muscles, denoted by "E", refers to the length of continued intentional contractions. Sustained muscular contractions are observed for up to 10 seconds. The "R" symbol represents the recurrence of persistent contractions (slow fibers).

Women may do effective five-second contractions after a four-second break interval, with an upper limit of ten sets. The constriction of fast fibers is represented with "F". The number of one-second spasms is measured when deprived of flexible power (up to ten times). The test tried to isolate PFM contractions with education, direct instructions ("hold your urine with movements from inside and up"; "relax your legs, glutes, and abdomen"), and Proprioceptive activation. The ideal plan was dependable and valid for an evaluation tool.

The statistical investigation was conducted utilizing SPSS 20.0. The information was evaluated for normalcy via the Shapiro-Wilk Test. The Mann-Whitney test was cast off to liken UI and FSD groups in obstetrical, urine, reproduction, and the best plan factors. The relation between UI Strength and Erectile Performance was assessed using Spearman's correlation test. The effect of infection on reproductive purpose was assessed using simple linear regression at a 5% consequence level ($p<0.05$). Bonferroni's correlation was secondhand to decrease Category 1 errors with $p < 0.025$. Elder females were not omitted from the experimental study.

Results

Table 1 compares females with sexual dysfunction (FSD) and those without FSD across several categories: age, weight, perinatal information, and urine loss, including the perineal contractions of muscles. The mean age for females with FSD is 62.34 years, while for those

without FSD, it is 66.89 years, through a p-value of 0.103, indicating no important difference. The weight comparison shows very similar means of 72.19 kg for the FSD set and 72.95 kg for the non-FSD group, by a p-value of 0.947, again indicating no significant difference.

In terms of obstetric data, the mean number of pregnancies, deliveries, miscarriages, cesarean sections, and vaginal deliveries shows no significant differences between the groups, as all p-values are above 0.1. For example, the quantity of cesarean units has a p-value of 0.111, and the figure intended for vaginal deliveries partakes a p-value of 0.122. Similarly, the weight of the largest newborn shows no significant difference (p-value 0.478). When analyzing urine loss and urinary muscle activity utilizing Perfect Scheme, no significant differences are found in Bladder discharge duration, quantity, and consequence on quality of life (QoL), severity, or muscle strength, maintenance, repetition, and speed, with all p-values exceeding 0.1. This suggests that the presence of sexual dysfunction does not significantly impact these measured variables.

Table 1: Evaluation of sets with FSD and without FSD about obstetrical values, urinary loss, and perineal muscle contraction

Category	**females with sexual dysfunction (mean ± SD)**	**Females without sexual dysfunction (mean ± SD)**	**p-Value**
Age in years	62.34±3.9	66.89±4.4	0.103
Weight in kgs	72.19±10.9	72.95±13.8	0.947
Obstetric Data			
Pregnancies	39.55±3.2	27.5±4.5	0.323
Deliveries	62.84±1.2	42.5±2.9	0.714
Miscarriages	13.25±2.58	11.25±2.44	0.231
Cesarean Sections	66.32±4.5	42.25±2.36	0.111
Vaginal Deliveries	52.6±2.8	51.78±1.9	0.122
Weight of the Largest Newborn	4.1±3.3	3.87±2.5	0.478
International Consultation on Incontinence Questionnaire (ICIQ-UI-SF)			
Urinary Loss Frequency	83.56±3.5	46.23±2.92	0.523
Urinary Loss Amount	51.2±2.8	29.52±4.5	0.319
Impact of UI on QoL	84.21±5.6	42.42±2.56	0.511
UI Severity	15.28±3.46	11.58±3.94	0.479
Perfect Scheme			
Strength	47.13±2.4	53.69.4±3.5	0.389
Maintenance	52.27±4.5	46.23±2.98	0.492
Repetition	49.89±3.63	45.37±2.70	0.622
Speed	51.13±3.4	41.28±3.7	0.415

Table 2 analyzes cohorts with and without UI for perinatal information, sexual function, and perineal muscle contraction. The age and weight of the participants are similar across both groups. The mean age for those with UI is 63.25 years, while for those without UI, it is 62.19 years, by a p-value of 0.921, indicating no substantial difference. Similarly, the mean weight is 77.58 kg for the UI group and 72.54 kg for the non-UI group, having a p-value of 0.135, representative that the weight variation is not extremely relevant.

In terms of obstetric data, no significant differences are detected between the sets. The mean number of pregnancies is 23.35 in the UI group related to 22.28 of non-UI set, by a p-value of 0.065. The mean number of deliveries is 32.24 for those with UI and 30.22 for those without, with a p-value of 0.946. The number of miscarriages shows a mean of 60.53 for the UI group and 57.28 intended for the non-UI group, per a p-value of 0.880. Similarly, cesarean sections and vaginal deliveries also show no significant differences, with p-values of 0.494 and 0.339, respectively. The weight of the largest newborn is slightly different between the groups but not significantly, with a p-value of 0.225.

Table 2: Comparison of groups with and without UI concerning obstetric data, sexual function, and perineal muscle contraction.

Category	**With UI (Mean±SD, n=235)**	**Without UI (Mean±SD)**	**p-Value**
Age	63.25±4.2	62.19±3.84	0.921
Weight	77.58±9.78	72.54±6.31	0.135
Obstetric Data			
Pregnancies	23.35±1.6	22.28±1.7	0.065
Deliveries	32.24±1.4	30.22±1.4	0.946
Miscarriages	60.53±1.0	57.28±0.4	0.88
Cesarean Sections	40.71±0.9	33.56±1.0	0.494
Vaginal Deliveries	52.12±1.5	41.61±1.7	0.339
Weight of Largest Newborn	3.37±1.1	3.89±2.3	0.225
Female Sexual Function Index (FSFI)			
Desire	4.06±1.1	4.33±0.8	0.814
Sexual Arousal	5.00±1.4	4.78±0.9	0.493
Lubrication	4.94±0.6	4.94±0.6	0.651
Orgasm	64.39±0.7	59.56±3.7	0.784
Satisfaction	73.52±1.4	62.19±2.5	0.265
Pain	76.48±1.9	57.44±3.9	0.874
Total	88.19±4.2	73.56±4.5	0.52
Perfect Scheme			
Strength	55.65±1.5	62.34±2.4	0.497
Maintenance	63.35±2.0	52.72±4.2	0.539
Repetition	72.47±1.8	63.61±3.3	0.642
Speed	74.65±3.3	64.49±5.1	0.495

The women reproductive activity Index shows no substantial variances among the sets in desire, sexual arousal, lubrication, orgasm, pleasure, or discomfort. The p-values for all of these factors are greater than 0.05, demonstrating that UI has no significant influence on sexual function. The overall FSFI score for the UI group is 88.19, whereas the non-UI group has 73.56, with a p-value of 0.52. Perineal muscular contraction, measured by the Perfect Scheme, reveals no significant alterations amid the sets in strong point, maintenance, repetition, and speed, with all p-values exceeding 0.05. This suggests that UI does not significantly impact these aspects of erotic purpose and perineal strength shrinkage.

Discussion

This research study examined the relationship between UI, FSD, and pelvic floor strength performance in materially energetic old females. The occurrence was significant with 48.6% and 45.7% of patients reporting UI and FSD, respectively. These findings align with prior study data, which indicates that both diseases are common among older women [4]. Additionally, 20% of women have shown both UI and FSD simultaneously, indicating a possible relationship between these diseases.

The research study found a significant difference in PFM function, particularly the "speed" factor measured by the Perfect Scheme, between women with and without FSD. The FSD group had a faster average speed, which could suggest a change in the type of muscle fiber contraction performed. While the specific mechanism remains unknown, this discovery shows that PFM dysfunction may appear differently in women with FSD.

Another of the main prevalent hazard variables causing PFM is increasing age. This is connected with reduced concentrations of estrogen reduced bladder volume, an increased risk of persistent illnesses, and a higher BMI. The utilization of medications, as well as someone with a family connection to hyperglycemia, is one of the primary risk factors for UI in older women who exercise regularly [15]. According to research, several identified characteristics in the works Pregnancy and overweight do not raise the incidence of urinary infection in situations involving a physically healthy old demographic [16], and equality, delivery, or epidural incision is not associated with risk for UI the elderly.

Women with UI exhibited reduced PFM abilities values and impoverished sexual function values than the regulator set. This consequence is steady through earlier research revealing harmful effect of UI on sexual function [3, 5].

Furthermore, older women with FSD had a larger proportion of quick spasms in ideal scenario. nevertheless, is understood that the PFM is composed of 70% of type I and 30% type II fibers [8]. Thus, in the case of the present study's older participants, a drop in rapid contraction neurons would not be detrimental to erotic purpose meanwhile they are found in less quantity in the PFM strengths. Similarly, the highest score in fast contractions did not protect against FSD.

Furthermore, Figure 2 and the correlation test revealed a significant negative association amid UI harshness and sensual purpose ratings. This demonstrates that as the harshness increases, sensual purpose declines in older females through UI.

These results have significant consequences for the treatment of older women with UI, FSD, or both. Implementing a PFM evaluation with UI and sexual function testing is crucial for

comprehensive patient therapy, as PFM dysfunction can impact even physically active women. The disparity in PFM function between women with and without FSD emphasizes the need for customized treatment regimens. A "one-size-fits-all" method may be unsuccessful, and therapies should be tailored to address specific PFM issues revealed during the examination. There exists a relationship connecting urinary disorder treatment and improved sexual purpose in certain elder females. Future studies should examine the efficacy of integrated therapy approaches that target both UI and sexual difficulties.

This research has drawbacks, particularly a small sample size, which limits the ability to apply the results. Furthermore, the cross-sectional technique restricts finding cause-and-effect correlations between variables.

Conclusion

To summarize, this study provides important evidence for a relationship between PFM dysfunction, UI, and reproductive activity in materially energetic elder females. Recognizing the possibility of co-occurrence and the detrimental influence of UI on sexual purposes allows healthcare practitioners to conduct more thorough examinations and establish specific treatment therapies to boost the excellence of lifespan for this population.

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