

Assessment of Pelvic Floor Muscle Dysfunction and its Association with Quality of Care in Pregnant Women

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ABSTRACT

Objective: To evaluate the knowledge about pelvic floor muscle dysfunction, prolapse and incontinence, and the quality of antenatal care among pregnant women.

Study Design: Descriptive correlational study

Place and Duration of Study: This study was conducted at the Rural Health Center Awan Dhaya Wala, Lahore from 15th December 2025 from 30th April 2026.

Methods: Three hundred and forty five pregnant women who accessed antenatal services were recruited by convenience sampling for 5 months following ethical approval. The use of validated and reliable instruments was employed in the collection of data.

Results: 91.0% having moderate pelvic floor muscle dysfunction, 5.8% mild and 3.2% severe distress. The most prominent domain was bladder. Lack of knowledge about prolapse and urinary incontinence was observed in 87.5% of the respondents, while 77.7% indicated poor quality of antenatal care. Pelvic floor muscle dysfunction was significantly related to age, education, occupation, duration of marriage, body mass index, parity, gestational age and mode of previous delivery (all $p < 0.05$). There was no significant association found with smoking, episiotomy, family history of pelvic floor dysfunction or previous pelvic floor problems.

Conclusion: Pelvic floor muscle dysfunction is very common during pregnancy, and is associated with moderate distress and marked impact on quality of life for most women. In conclusion, the deficiencies in knowledge and suboptimal care from ante-natal services, point to a high priority need for specific education, better maternal services and early screening to improve maternal outcomes.

Key Words: Pelvic floor muscle dysfunction, Urinary incontinence, Pelvic organ prolapsed, Antenatal care quality

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INTRODUCTION

The pelvic floor is a multi-layered structure of muscles, ligaments and connective tissues that support the pelvic organs and are important for urinary, bowel and sexual function.¹ Pelvic floor disorders (PFDs) are a group of disorders that include urinary incontinence, faecal incontinence, pelvic organ prolapse, pelvic pain and sexual dysfunction. These are prevalent among women and their occurrence rises significantly with age.² Epidemiological studies have shown that the prevalence of at least one PFD increases to 47.7% for women older than 80 years compared with 9.7% for those between 20 and 39 years.³

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In addition to their physical effects, PFDs can have significant psychological, social and emotional impacts, which in turn can substantially compromise the quality of life and lead to higher health care use and economic cost.⁴ The physiological, anatomical, and mechanical alterations during pregnancy and childbirth are known risk factors for the onset of pelvic floor dysfunction.⁵ The physical changes of the growing uterus, raised intra-abdominal pressure, connective tissue remodeling and trauma resulting from vaginal delivery can all negatively affect the function of the pelvic floor's support structures. As a result, PFDs are commonly reported during pregnancy with studies revealing 15.4-24.2% of pregnant women have bothersome LUTS at 36 weeks of gestation and about 10-15% of pregnant women report symptoms 1 year postpartum.⁶ These results emphasize the importance of early detection, prevention and treatment for pelvic floor dysfunction during pregnancy.

Despite their high prevalence, awareness and screening for PFDs remain limited among women and healthcare providers.⁷ Many affected women do not seek medical attention, resulting in delayed diagnosis and treatment.⁸ Pelvic floor muscle dysfunction (PFMD as frontline maternal healthcare providers, nurses are well

positioned to deliver PFMD education and support. Therefore, investigating the effectiveness of nurse-led PFMD is essential for improving maternal health outcomes, preventing pelvic floor dysfunction, and enhancing women's quality of life.^{9,10}

METHODS

This descriptive correlational study was conducted at the Rural Health Center, Awan Dhaya Wala, Lahore from 15th December 2025 to 30th April 2026 after obtaining ethical approval from the Institutional Review Board of The University of Lahore vide letter No. UOL/IREB/25/15/04/53 dated 11th December 2025. A total of 345 pregnant women receiving antenatal care at the study setting were recruited through convenience sampling. Pregnant women aged 20-35 years, with a body mass index not exceeding 30 kg/m², multigravida with singleton pregnancy and without musculoskeletal deformities or major medical illnesses were included. Women with gestational diabetes, pre-eclampsia, cardiovascular, neurological, neuromuscular, respiratory, or psychological disorders, as well as those with multiple pregnancies, spinal deformities, or pelvic deformities were excluded. The structured demographic questionnaire as well as validated questionnaires to assess PFMD, knowledge about pelvic floor disorders and the quality of antenatal care were used for data collection was used. Pelvic floor dysfunction was assessed using the Pelvic Floor Distress Inventory (PFDI), a 43-item questionnaire that contains 4 domains: urinary distress, pelvic organ prolapse distress, colorectal/anal distress, and sexual dysfunction.¹¹ To determine the knowledge and awareness of pelvic floor disorders, the Prolapse and Incontinence Knowledge Questionnaire (PIKQ) was used composed of 24 items on various topics related to urinary incontinence and pelvic organ prolapsed.¹⁰ The Quality of Prenatal Care Questionnaire (QPCQ)¹² was used to measure the quality of the antenatal care provided, with this being a 46 item questionnaire, assessing multiple dimensions of antenatal care such as information sharing, anticipatory guidance, sufficient consultation time, approachability, availability, support and respect. After the hospital administration's approval, pregnant women attending the Antenatal Clinic were selected. Participants were self administered with the questionnaires following written informed consent. The data were entered and analyzed through SPSS-25. To test for normality of continuous variables, the Kolmogorov-Smirnov test was used and the data were found to be not normally distributed. Non-parametric tests were used to investigate the association of pelvic floor dysfunction with demographic and obstetric characteristics and Spearman's rank correlation coefficient was also used to determine the relationship of variables. Significant difference was taken as $p \leq 0.05$.

RESULTS

Most participants were between 24-27 years and 28-31 years (36.2%), while only 9.6% were between 32-35 years. Nearly one-third of the participants had secondary level education 30.7%, followed by higher secondary education 22.3%, whereas 13.0% had no formal education. Majority were employed 44.3% while 32.8% housewives and 22.9% self-employed. More than one-third of the participants had been married for 2-5 years (35.4%), followed by 6-10 years (29.6%). Most participants were non-smokers (96.5%). 31.9% were overweight, 25.5% normal weight, 21.7% obese and 20.9% underweight (Table 1).

Most participants had moderate pelvic floor pain (91.0%). Most women had poor knowledge of prolapse and urinary incontinence (87.5%) and the quality of antenatal care provided was mostly poor (77.7%). A very small minority reported that they suffered severe pelvic floor distress (3.2%), had good knowledge (2.3%) or received good antenatal care (4.1%) [Fig. 1].

Table No. 1: Distribution of demographic variables (n=345)

Variable	No.	%
Age (years)		
20-23	62	18.0
24-27	125	36.2
28-31	125	36.2
32-35	33	9.6
Education Level		
No formal Education	45	13.0
Primary Level	71	20.6
Secondary Level	106	30.7
Higher Secondary	77	22.3
Graduate and Above	46	13.3
Occupation		
House wife	113	32.8
Employed	153	44.3
Self Employed	79	22.9
Marital Duration		
<2 Years	72	20.9
2-5 Years	122	35.4
6-10 Years	102	29.6
>10 Years	49	14.2
Smoker		
Yes	12	3.5
No	333	96.5
Body mass index (kg/m²)		
Underweight	72	20.9
Normal	88	25.5
Overweight	110	31.9
Obese	75	21.7

There were significant associations between PFMD and demographic and obstetric factors. Women aged 24-31 years, higher level of education, women who were

employed or self-employed, women with overweight, parity ≥ 3 , advanced gestational age, longer marital duration, and a history of cesarean section had higher levels of distress. However, smoking status, history of episiotomy, family history of pelvic floor dysfunction and previous pelvic floor problems before pregnancy did not significantly correlate with PFMD (Table 2).

The severity of the symptoms was not associated with the awareness level of the participants. There was a

weak positive correlation between pelvic floor muscle dysfunction and quality of antenatal care ($r = 0.194$), indicating a low level of association between perceived quality of antenatal care and symptom burden. In addition, there was no correlation between knowledge about prolapse and quality of antenatal care ($r = -0.019$), indicating continued lack of knowledge even when antenatal care is accessed (Table 3).

Table No. 2: Association of demographic and obstetric characteristics with pelvic floor muscle dysfunction

Variable	Mild	Moderate	Severe	p-value
Age (years)				
20–23	8 (40%)	54 (17.2%)	-	0.001
24–27	10 (50%)	109 (34.7%)	6 (54.5%)	
28–31	2 (10%)	118 (37.6%)	5 (45.5%)	
32–35	-	33 (10.5%)	-	
Education Status				
No formal education	5 (25%)	40 (12.7%)	-	0.001
Primary	2 (10%)	69 (22%)	-	
Secondary	7 (35%)	98 (31.2%)	1 (9.1%)	
Higher secondary	6 (30%)	65 (20.7%)	6 (54.5%)	
Graduate or above	-	42 (13.4%)	4 (36.4%)	
Occupation				
Housewife	7 (35%)	106 (33.8%)	-	0.003
Employed	12 (60%)	136 (43.3%)	5 (45.5%)	
Self-employed	1 (5%)	72 (22.9%)	6 (54.5%)	
Body mass index (kg/m²)				
Underweight	7 (35%)	64 (20.4%)	1 (9.1%)	0.001
Normal	10 (50%)	76 (24.2%)	2 (18.2%)	
Overweight	2 (10%)	100 (31.8%)	8 (72.7%)	
Obese	1 (5%)	74 (23.6%)	-	
Parity				
0	4 (20%)	79 (25.2%)	-	<0.001
1	12 (60%)	89 (28.3%)	3 (27.3%)	
2	4 (20%)	113 (36%)	2 (18.2%)	
≥3	-	33 (10.5%)	6 (54.5%)	
Gestational Age				
1st trimester	13 (65%)	73 (23.2%)	5 (45.5%)	<0.001
2nd trimester	7 (35%)	136 (43.3%)	-	
3rd trimester	-	105 (33.4%)	6 (54.5%)	

Table No. 3: Relationship between pelvic floor muscle dysfunction, knowledge of prolapse/incontinence and quality of antenatal care

Variables	Correlation Coefficient (r)	p-value
Pelvic floor distress vs. prolapse & incontinence knowledge	-0.028	>0.05
Pelvic floor distress vs. quality of antenatal care	0.194	<0.05
Quality of antenatal care vs. prolapse & incontinence knowledge	-0.019	>0.05

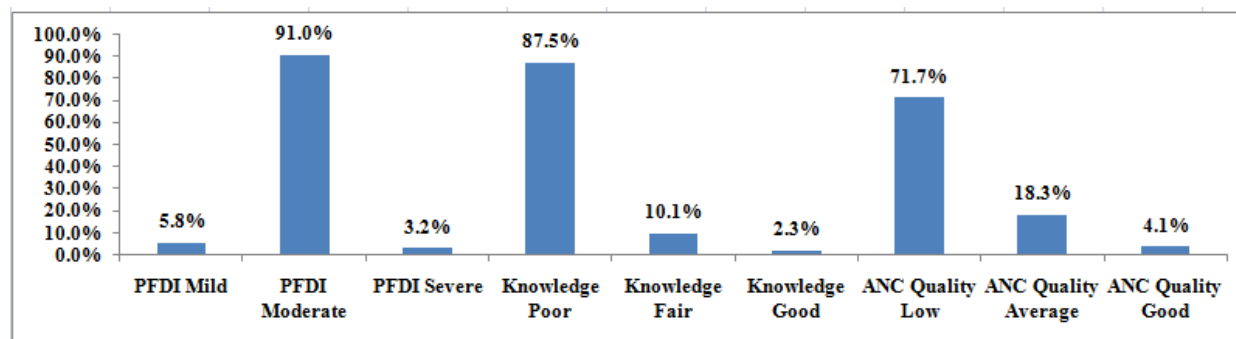


Figure No. 1: Distribution of pelvic floor muscle distress, prolapse and incontinence knowledge, and quality of antenatal care among pregnant women

DISCUSSION

The present study demonstrated a high burden of pelvic floor muscle dysfunction, poor knowledge regarding prolapse and urinary incontinence, and suboptimal antenatal care among pregnant women. The high prevalence of urinary symptoms, including frequency, urgency, nocturia, and stress incontinence, is consistent with previous studies identifying urinary incontinence as the most common manifestation of PFMD during pregnancy^{13,14} and aligns with global evidence highlighting bladder symptoms as the leading contributor to pelvic floor distress⁵, although variation by gestational age has been reported.⁷ Similarly, bowel dysfunction and prolapse-related symptoms observed in this study are supported by literature linking pregnancy-related hormonal and mechanical changes to pelvic floor strain and weakening^{15,16}, though differences in severity compared to some international studies may reflect population and obstetric variations.¹³ The sexual dysfunction results are also consistent with earlier reports that reported a high association between pelvic floor disorders and compromised sexual health and quality of life.¹⁷ An important finding was that there was a very low level of knowledge about pelvic floor disorders, which is in line with other studies from Pakistan¹⁸ and other low and middle income countries which showed low awareness and misconception.¹⁹ The study also found that the quality of the antenatal care provided was generally poor in all domains, especially regarding information sharing, anticipatory guidance, consultation time, availability, and patient support. Restricted communication, counseling and the integration of maternal education in the standard ANC care as reported in the previous study²⁰ are consistent with the findings from this study. Although provider approachability was relatively better, overall care remained suboptimal, reflecting system-level constraints such as high patient load and limited continuity of care.²¹

Correlation analysis showed no significant relationship between knowledge and pelvic floor muscle distress, suggesting that knowledge alone may not influence symptom severity, which is consistent with studies

reporting that low awareness does not necessarily translate into behavioral change in the absence of structured education.^{22,23} A weak positive association between antenatal care quality and symptom burden may indicate increased healthcare contact among symptomatic women or insufficient effectiveness of routine antenatal services in preventing PFMD.^{18,19,23} Furthermore, the lack of association between antenatal care quality and knowledge highlights persistent gaps in patient education during routine visits, where pelvic floor health is often overlooked in favor of general maternal and fetal care¹⁷. Overall, the findings emphasize the need for structured, patient-centered antenatal education and targeted interventions to improve pelvic floor health awareness and outcomes.

CONCLUSION

Pelvic floor muscle dysfunction was highly prevalent among pregnant women, with most experiencing moderate distress. Bladder symptoms were the most common, followed by sexual dysfunction and prolapse symptoms, significantly affecting quality of life. Several factors such as age, BMI, parity, gestational age, and marital duration were associated with increased severity, while others showed no significant association. Knowledge levels regarding pelvic floor disorders were extremely low, and antenatal care quality was generally poor. No significant relationship was found between knowledge and distress, while only a weak association was observed with antenatal care quality. Overall, the study highlights a high burden of PFMD along with poor awareness and inadequate antenatal care, emphasizing the need for education, improved services, and early screening.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Sadia Yasmin, Madiha Mukhtar
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Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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