

Pelvic Floor Dysfunction After Vaginal Delivery

Khushboo Jawed¹, Gulfareen Haider², Shehla Channa³, Anila Mujadid⁴, Sidra Binte Saleem⁵, Majida Memon⁶

¹WMO, MS Obs & Gynae, Isra University Hospital Hyderabad

²Professor of Obs & Gynae, Isra University Hospital Hyderabad

³Associate Professor of Obs & Gynae, Liaquat University Hospital, Hyderabad

⁴Assistant Professor, Obs & Gynae, LUMHS Thatta

⁵ Assistant Professor, Physiology department, Indus Medical College, TMK

⁶Senior Demonstrator SRMC Tando Adam (M. Phil Physiology LUMHS)

Correspondence: Dr. Khushboo Jawed

WMO, (MS Gynae and OBS, Isra University Hospital Hyderabad)

Email: khushboo.samo@gmail.com

Abstract

Objective: To evaluate the frequency of Pelvic floor disorders (PFD) after vaginal deliveries and to compare their frequency in different forms of labor.

Methodology: This cross-sectional study was conducted at the department of gynecology and obstetrics, Isra University Hospital, from January 2021 to July 2021, on 99 women aged 16 to 45 years who had given birth through vaginal delivery or assisted vaginal delivery (forceps or episiotomy) within the last six months, regardless of parity or booking status. A structured checklist or questionnaire, the Pelvic Floor Dysfunction Index-20 (PFDI-20), was used to assess symptoms experienced by the patients over the previous three months. Additionally, socio-demographic details, current and past obstetric history, and clinical characteristics were evaluated. The data was analyzed using SPSS version 21.

Results: Overall mean age of women was 32.2 +6.03 years. Most common types of PFD were urinary incontinence (UI), and pelvic organ prolapse (POP) affecting 48.5% and 25.3% of the women respectively, followed mixed PFD (combination of symptoms) 7.1%, fecal incontinence FI 5.1%, and others were 14.1%. The mean PFDI-20 scores were significantly higher among women aged more than 30, parity above two, birth weight over 3.5 kg, prolonged or obstructed 2nd stage of labor, and assisted vaginal deliveries $p=0.001$.

Conclusion: The urinary incontinence and POP were observed to be the most prevalent pelvic dysfunctions followed by fecal incontinence. Maternal age and new-born birth weight, parity, the second stage of labor, and mode of delivery were identified as factors for PFD.

Keywords: Vaginal delivery, PFD, Urinary Incontinence, PO, Fecal Incontinence, Delayed 2nd stage labor.

Cite this article as: Jawed K, Haider G, Channa S, Mujadid A, Saleem SB, Memon M. Pelvic Floor Dysfunction After Vaginal Delivery. *J Soc Obstet Gynaecol Pak.* 2025; 15(4):278-282. DOI: 0.71104/jsogp.v15i4.982

Introduction

Pelvic floor dysfunction or Pelvic floor disorders (PFDs), such as urinary incontinence (UI), anal incontinence (AI), chronic pelvic pain, etc. are some of the most prevalent gynecological disorders among women of reproductive ages or those in their menopausal or post-menopausal stages.¹ These are a group of disorders that can potentially disable, embarrass, and often cause pain to the affected individual, greatly affecting a person's overall quality of life. Although both men and women can suffer from PFDs, women are at an increased risk due to the independence of their anatomical features.² The pelvis in females is comparatively shallower and broader than

males, thus requiring additional support and stability by means of ligaments and muscles. Women are also at an increased risk of sustaining damage to these muscles and ligaments as a consequence of pregnancy and childbirth.²

In countries of low-income socioeconomic status or middle-income socioeconomic status, a complication related to pregnancy and childbirth continue to pose as a prevalent cause of maternal mortality.³ Even in well-developed countries, such as the United States of America (USA), these account for a considerable share of maternal morbidities and mortalities. The incidence rates of PFDs such as pelvic organ prolapse and

Authorship Contribution:^{1,2}Substantial contributions to the conception or design of the work; or the acquisition, ^{4,6}Active participation in active methodology, ^{2,3}analysis, or interpretation of data for the work, ⁵Drafting the work or revising it critically for important intellectual content

Funding Source: none

Conflict of Interest: none

Received: June 28, 2025

Revised: Sept 14, 2025

Accepted: Oct 20, 2025

urinary incontinence have been reported to be more than 150,000 and 100,000 respectively.⁴

An overall better understanding of the various facets of childbirth that contribute significantly to the development of PFDs and probing into how different obstetric care techniques can be utilized to minimize their overall incidence has been an area of exceeding interest.⁵ However, a major hurdle in the research on the association of childbirth and PFDs is the relatively long latent period of such disorders.⁶ Although vaginal delivery (VD) is considered not only the conventional but also the natural form of childbirth, it often goes hand in hand with several short-term as well as long-term complications.⁷ Other maternal as well as fetal complications may also be related to VD, the cost of which can be devastatingly upsetting on not only the mother and the baby, but there can also be medico-legal implications on the obstetrician and the healthcare institution.⁷

Keeping in mind the association of different childbirth methods with the development of PFDs, cesarean section has been often suggested as a possible strategy of prevention.⁸ In support of this view, some studies have suggested that indeed the bothersome symptoms associated with urinary incontinence (UI) are reduced significantly in women who undergo cesarean section as contrasting to the conventional vaginal method of delivery.⁷ Many women are hesitating to talk regarding pelvic floor disorders due to the social stigma and limited access to appropriate healthcare facilities. Such conditions are often underreported, partially due to the high treatment cost and the common misconception that incontinence is simply a normal aspect of aging rather than a condition that can be managed.⁹ Approximately 11% to 35.5% of women around the world had PFD.^{9,10}

However, by the rising number of childbirth related complications, specifically PFDs, the healthcare system faces new challenges in ensuring early diagnosis and proper treatment to reduce long term issues. To better understand whether vaginal birth has a direct or indirect influence on the development of PFDs, this study was conducted to assess pelvic floor disorders following vaginal deliveries. The study explores which types of PFDs are most commonly linked to vaginal deliveries, facilitating to identify the high-risk women timely to decrease the physical, emotional, and the financial impact of these disorders.

Methodology

This cross-sectional case series was carried out at department of Obstetrics and Gynecology ISRA Hospital Hyderabad. Study duration was one-year January 2021 to December 2021. All the pregnant women aged 18 to 40 years having gestational age ≥ 37 weeks, presented with pelvic floor dysfunction who delivered by (spontaneous or assisted vaginal deliveries) within the past 3 to 6 months of either parity were included. Women with history of previous miscarriages, myomectomy, abruption- placenta, dilatation and curettage, women with neurological disorders affecting pelvic floor function, women with sever comorbidities and women who were not willing to take a part in study were excluded. All above disorders were evaluated based on evidence of previous health records or diagnosed slips provided by relevant consultant gynecologists and obstetricians or specific investigations (ultrasound and MRI scan) related to the above-mentioned disorders. Before the collection of data, the informed consent was taken in understandable language from all the participants. To evaluate postpartum PFD symptoms, the PFDI-20 questionnaire was used. PFDI-20 reflects the symptoms experienced by the patients over the last three to six months. The questionnaire consists of 20 questions consisting of questions from the following 3 different scales: six questions of the Urinary Distress Inventory (UDI-6), six questions of the Pelvic Organ Prolapse Distress Inventory (POPDI-6), and eight questions of the colorectal-Anal Distress Inventory (CADI-8). Scores on each scale can vary from 0 to 100. Each question has different options with the score. The scores for all 3 scales were added together to achieve a final score on the PFDI-20, varying from 0-300 points. The higher the score of a patient, the greater the perceived impact that PFD has on the life of the patients. In addition, data were collected from all the medical records of participating patients. Data included maternal age, parity, and demographic characteristic and clinical characteristics included mode of delivery (spontaneous vaginal delivery or assisted vaginal delivery), neonatal birth weight, stage of labor, and spontaneous perineal tears were documented. The data of all patients were entered and analyzed in SPSS version 26.

Results

Overall mean age of women was 32.2 +6.03 years. Out of all 46.5% patients were overweight, 34.3% had

normal BMI, 18.2% were obese, and one woman had underweight. Majority of women were primiparous (47.5%, followed by parity 21.2%, 14.1%, 11.1%, and 6.1%. According to MOD, 67.7% had spontaneous vaginal delivery, 24.2% vacuum assisted, and 8.1% were forceps assisted deliveries. the prolonged 2nd stage labor occurred in 18.2% of patients. The episiotomy was performed in 62.6%, whereas 37.4% did not have episiotomy. Perineal tears were observed as first-degree in 33.3%, second-degree in 13.1%, third-degree in 3%, and 50.5% had no perineal tear. Majority of babies had normal birth weight (88.9%), with low birth weight in 9.1% and macrosomia was noted in 2% of the patients. Table I.

Variables	N	%	
BMI	Normal	34	34.3
	Obese	18	18.2
	Overweight	46	46.5
	Underweight	01	01.0
Parity	1	47	47.5
	2	21	21.2
	3	14	14.1
	4	11	11.1
	5	06	06.1
MOD	Forceps	08	08.1
	Spontaneous	67	67.7
	Vacuum	24	24.2
Prolonged 2nd stage labor	No	81	81.8
	Yes	18	18.2
Episiotomy	No	37	37.4
	Yes	62	62.6
Perineal tear	1st degree	33	33.3
	2nd degree	13	13.1
	3rd degree	03	03.0
	None	50	50.5
Birth weight	High BW	02	02.0
	Low BW	09	09.1
	Normal BW	88	88.9

In this study the most common type of PFD was urinary incontinence (UI), affecting 48.5% of women, followed by POP was noted in 25.3%, mixed PFD (combination of symptoms) occurred in 7.1%, and FI was in 5.1% of patients, while other types of PFD were 14.1%. Figure 1.

According to the comparison of mean PFDI-20 scores based on demographic and obstetric factors, several variables were significantly associated with higher scores. These included maternal age <30 years (p=0.00), parity >2 (p=0.00), birth weight >3.5 kg (p=0.01), obstructed or prolonged second stage of labor (p=0.00), and assisted vaginal delivery (episiotomy and forceps) (p=0.00). Table II.

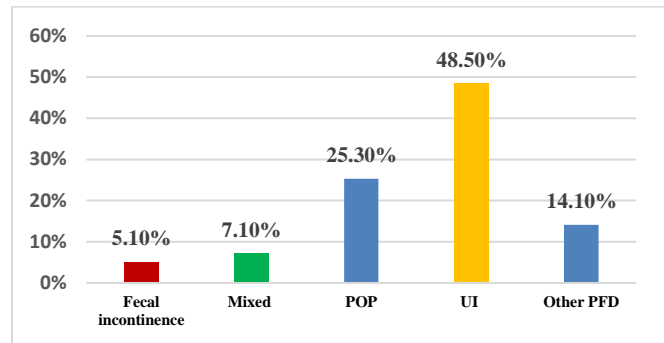


Figure 1. Different types of PFD. (n=99)

Table II: Comparative analysis of mean PFDI-20 score and associated factors of PFD.

Factors	Mean PFDI-20 score	P value
MATERNAL AGE		
< 30 years	5.9±10.1	0.00*
≥ 30 years	9.7±9.3	
PARITY		
≤ 2 births	5.5±9.1	0.00*
> 2 births	8.7±10.7	
BIRTH WEIGHT		
≤ 3.5 Kg	6.5±9.7	0.01*
> 3.5 Kg	12.3±10.9	
SECOND STAGE OF LABOR		
Normal	7.1 ± 10.0	0.00*
Obstructed/ Delayed	12.5 ± 11.2	
DELIVERY MODE		
Spontaneous vaginal deliveries	6.4 ± 9.2	0.00*
Assisted vaginal deliveries	11.7 ± 9.8	

Discussion

The pelvic floor dysfunction is a condition where the pelvic floor support structures become weakened or impaired, resulting in changed positions and functions of the pelvic organs and causing prolonged effects among women. In the present study 99 women were assessed for PFD following the vaginal deliveries with an overall mean age of 32.2±6.03 years and this average was almost similar to the studies by Mahishale A et al¹¹ and Huy Quoc NV et al¹² where who reported mean ages of as 29.08± 5.85 years and 30.0 ± 4.5 years respectively among women assessed for pelvic floor disorders. In this study according to the frequency of pelvis floor disorders the urinary incontinence and pelvic organ prolapse were the most common pelvic floor disorders 48.5% and 25.3% respectively, followed by multiple complaints 7.1%, fecal incontinence problems were 5.1% and 14.1% women had other PFDs. This prevalence pattern was approximately content with study by Mahishale A et al¹¹ where prevalence of PFDs indicated 63.6%, affecting 54.11% of bladder functions, 26.8% of bowel components,

prolapse symptoms 2.21%, and on sexual activity 22% among postpartum women. On the other hand, Huy Quoc NV et al¹² reported that among postpartum women the most common complaint was pain during sitting was 30.4%, followed by UI 11.4%, 10.8% urinary retention and 8.9% flatus incontinence. In aligns to this study Peinado-Molina RA et al¹³ also reported that the UI was the most common PFD among 55.8% of the women, while 10.4% women had FI, uterine prolapse symptoms were in 14.0% women and 18.7% women had complained of pelvic pain. In the study by Arshad N et al¹⁴ reported that according to the pattern of PFDs, pelvic pain was most common among 80% of women, 79% women complained urinary leakage and 52% of the women had bowel leakage in 52%, while gait abnormalities were observed in 42% of the women. Our findings were also supported by a systemic review by Barca JA et al¹⁵, where it was concluded that the vaginal birth has a clear association with pelvic floor disorders development, specifically urinary incontinence, POP, and AI and suggested the need of special attention to the raised risk of POP after vaginal deliveries, and postpartum monitoring to ensure early diagnosis and appropriate management.

Additionally, in this study raised BMI, multiparity, delayed 2nd stage of labor, and assisted vaginal deliveries via episiotomy or forceps found independent predictors of PFD development. The raised BMI increases the intra-abdominal pressure and chronic strain on pelvic support, rising the risk of POP and UI. Moreover, repeated vaginal deliveries incrementally weaken connective tissue and the musculature of pelvis, clarifying the dose response relations. As, assisted vaginal deliveries showed a strong association with PFD, likely because they place additional stress on the pelvic structures, increasing the risk of levator ani injury, anal sphincter tears, and severe perineal trauma injuries that can lead to UI, POP, and FI. However, the role of delayed 2nd stage of labor in PFD is complex. The Similar pattern have been observed by Abrar S et al¹⁶ where women with UI were more likely to be older, with advanced gestational age, with raised higher BMI, and to have undergone instrumental deliveries. our findings align with previous study by Handa VL et al¹⁷ where they reported that the forceps deliveries significantly raised the risk of PFD specifically overactive bladder and POP, while women with multiple spontaneous perineal lacerations were significantly more likely to have prolapse reaching or exceeding the hymenal levels. Supporting to our findings Yang F et

al¹⁸ stated that their logistic regression analysis identified that being aged 35 years or older, vaginal delivery, BMI of ≥ 25 kg/m², the perineal tears, delayed 2nd stage of labor and macrosomic infant were the significant risk factors for POP and SUI development.

In aligning with our findings, few other studies also have found comparable associations between these risk factors and the PFD development. There were few inconsistencies observed in the reported findings across studies may be due to differences in study types, variations in the sample size of the studies, different characteristics of the populations of the studies and the postpartum assessment timing. Furthermore, due to few limitations of this study, further large-scale prospective cohorts in South Asia with standardized definitions of prolonged 2nd stage, more detailed operative delivery information, and routine screening for OASIS are recommended.

Conclusion

This study revealed that the PFD was a common consequence of vaginal deliveries, with UI and POP being the most prevalent disorders. The elevated BMI, multiparity, prolonged 2nd stage of labor, and assisted vaginal deliveries were identified as significant risk factors. Overall, the findings underscore the importance of postpartum screening for PFD, particularly in women with these risk factors, and highlight the need for early interventions to prevent long-term morbidities.

References

1. Zhooldideh P, Ghaderi F, Salahzadeh Z. Are there any relations between posture and pelvic floor disorders? A literature review. *Crescent J Med Biol Sci.* 2017;4:153-9.
2. Hwang SK, Bennis SA, Scott KM, Bonder J. Pelvic floor disorders. In: *Braddom's Physical Medicine and Rehabilitation.* 2021:774-88.e5. <https://doi.org/10.1016/B978-0-323-62539-5.00038-2>
3. Lan C-W, Tavrow P. Composite measures of women's empowerment and their association with maternal mortality in low-income countries. *BMC Pregnancy Childbirth.* 2017;17(2):1-11. <https://doi.org/10.1186/s12884-017-1492-4>
4. Barca JA, Bravo C, Pintado-Recarte MP, Asúnsolo Á, Cueto-Hernández I, Ruiz-Labarta J, et al. Pelvic floor morbidity following vaginal delivery versus cesarean delivery: systematic review and meta-analysis. *J Clin Med.* 2021;10(8):1652. <https://doi.org/10.3390/jcm10081652>
5. Dietz HP. Pelvic floor dysfunction: role of imaging in diagnosis and management. In: *Breast & Gynecological Diseases.* Springer; 2021. p. 405-39. https://doi.org/10.1007/978-3-030-69476-0_13

6. Dietz HP, Franco AV, Shek KL, Kirby A. Avulsion injury and levator hiatal ballooning: two independent risk factors for prolapse? An observational study. *Acta Obstet Gynecol Scand.* 2012;91(2):211-4. <https://doi.org/10.1111/j.1600-0412.2011.01315.x>
7. Turner CE, Young JM, Solomon MJ, Ludlow J, Bennes C. Incidence and etiology of pelvic floor dysfunction and mode of delivery: an overview. *Dis Colon Rectum.* 2009;52(6):1186-95. <https://doi.org/10.1007/DCR.0b013e31819f283f>
8. DeLancey JO, Morgan DM, Fenner DE, Kearney R, Guire K, Miller JM, et al. Comparison of levator ani muscle defects and function in women with and without pelvic organ prolapse. *Obstet Gynecol.* 2007;109(2):295-302. <https://doi.org/10.1097/01.AOG.0000250901.57095.ba>
9. Mittal A, Saini A, Panwar VK, Chezhian S, Bahurupi Y, Gehlot M. Female pelvic floor disorders in Northern India: uncommon or underreported? *Cureus.* 2024;16(11):3-9. <https://doi.org/10.7759/cureus.74203>
10. Islam RM, Bell RJ, Billah B, Hossain MB, Davis SR. The prevalence of symptomatic pelvic floor disorders in women in Bangladesh. *Climacteric.* 2016;19(6):558-64. <https://doi.org/10.1080/13697137.2016.1240771>
11. Mahishale A, Parikh Z. Knowledge and awareness of pelvic floor disorders and rehabilitation in postpartum women: an observational study. *J Health Allied Sci NU.* 2024. <https://doi.org/10.1055/s-0044-1788988>
12. Huy Quoc NV, Phuc An LS, Phuong LS, et al. Pelvic floor and sexual dysfunction after vaginal birth with episiotomy in Vietnamese women. *Sex Med.* 2019;7:514-21. <https://doi.org/10.1016/j.esxm.2019.09.002>
13. Peinado-Molina RA, Hernández-Martínez A, Martínez-Vázquez S, Rodríguez-Almagro J, Martínez-Galiano JM. Pelvic floor dysfunction: prevalence and associated factors. *BMC Public Health.* 2023;23:2005. <https://doi.org/10.1186/s12889-023-16901-3>
14. Arshad N, Shabbir M, Kant B, Tariq M, Naeem M, Hassan A, Pirzada R. Frequency of pelvic floor dysfunctions after normal vaginal delivery. *J Soc Obstet Gynaecol Pak.* 2023;13(1):13-7.
15. Barca JA, Bravo C, Pintado-Recarte MP, Asúnsolo Á, Cueto-Hernández I, Ruiz-Labarta J, et al. Pelvic floor morbidity following vaginal vs cesarean delivery: systematic review and meta-analysis. *J Clin Med.* 2021;10(8):1652. <https://doi.org/10.3390/jcm10081652>
16. Abrar S, Mohsin R, Samad A. Female urinary incontinence: frequency, risk factors, and impact on quality of life of pregnant Pakistani women. *Pak J Med Sci.* 2023;39(3):667-72. <https://doi.org/10.12669/pjms.39.3.6313>
17. Handa VL, Blomquist JL, McDermott KC, Friedman S, Muñoz A. Pelvic floor disorders after vaginal birth: effect of episiotomy, perineal laceration, and operative birth. *Obstet Gynecol.* 2012;119(2):233-9. <https://doi.org/10.1097/AOG.0b013e318240df4f>
18. Yang F, Liao H. Influence of obstetric factors on pelvic floor dysfunction in early postpartum women. *Int J Gen Med.* 2022;3353-61. <https://doi.org/10.2147/IJGM.S355913>
19. Li Q, Niu X, Chen Y, Luo C, Zhang Y, Meng J, Wei D. Risk factors and severity indicators of female pelvic organ prolapse: retrospective study with large sample size. *Clin Exp Obstet Gynecol.* 2024;51(12):280. <https://doi.org/10.31083/j.ceog5112280>
20. Urbankova I, Grohregin K, Hanacek J, Krcmar M, Feyereisl J, Deprest J, Krofta L. Effect of first vaginal birth on pelvic floor anatomy and dysfunction. *Int Urogynecol J.* 2019;30(10):1689-96. <https://doi.org/10.1007/s00192-019-04044-2>
21. Chang SR, Lin WA, Chang TC, Lin HH, Lee CN, Lin MI. Risk factors for stress and urge urinary incontinence during pregnancy and the first postpartum year: a prospective study. *Int Urogynecol J.* 2021;32(9):2455-64. <https://doi.org/10.1007/s00192-021-04788-w>