

Frequency of Pelvic Floor Dysfunctions after Normal Vaginal Delivery

Naveed Arshad¹, Maryam Shabbir², Bushra Kant³, Maria Tariq⁴, Maryam Naeem⁵, Anoushey Hassan⁶, Rameen Pirzada⁷

Assistant Professor¹, Associate Professor², Professor³, Assistant Professor⁴, Lecturer⁵, Medical Student^{6,7}
^{1,3,4,6,7} Islamabad Medical and Dental College, Islamabad
^{2,5} Avicenna Medical College, Lahore

Correspondence: Dr. Naveed Arshad
 Assistant Professor, Department of Rehabilitation Sciences,
 Islamabad Medical and Dental College, Islamabad
 Email: oliajann@gmail.com

Abstract

Objective: To determine the frequency of pelvic floor dysfunctions after normal vaginal delivery.

Methodology: A study was conducted in obstetrics and gynecology department of Akbar Khan Teaching Hospital (ANTH), Islamabad Pakistan between February and August 2022 demonstrating observational cross-sectional study design. The data was collected from 285 females using non probability convenience sampling technique. Multipara females having child birth (≥ 2) history of normal vaginal delivery either undergone episiotomy or not were included in this study. Self-structured questionnaire was used for data collection, which had been quality of life (QoL), parity status (≥ 2), urinary leakage, bowel leakage, pain in pelvic area, and gait abnormality. All the data were analyzed in SPSS v 23.

Results: The mean patient age was 38.15 ± 7.85 years. In context of pelvic floor dysfunctions, pain in pelvic area 80%, urinary leakage 79% and bowel leakage 52% were observed. The secondary dysfunctions i.e., gait abnormality 42% was observed. The frequency of symptomatic pelvic floor dysfunctions in female's undergone normal vaginal delivery was 65% in interviewed patients. The post stratification analysis of quality-of-life questionnaire with pelvic floor dysfunctions. A significant association ($p \leq 0.05$) was observed between quality-of-life and pelvic floor dysfunctions after normal vaginal delivery.

Conclusion: This study concluded that the pelvic floor dysfunctions are more common in obese multipara females & multiple vaginal births. Obesity and multiple births are the major contributor factors to pelvic floor dysfunction.

Keywords: Pelvic organ prolapse; Pelvic floor dysfunction; Vaginal birth.

Cite this article as: 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):13-17.

Introduction

Pelvic floor dysfunction (PFD) is an umbrella term which encircle the disorders related to pelvic floor anatomy and physiology such as pelvic pain, fecal and urinary incontinence, vaginismus, hypertonus, and pelvic organ prolapse. These impairments transpire due to muscle weakness or tightness. Moreover, any disfigurement of the lower back, coccyx, hip joint and sacroiliac joint also contribute to pelvic floor dysfunction.^{1,2} The PFD involves wide range of symptoms such as gross organ protrusion, incontinence, pelvic pain, pressure, dyspareunia, and incomplete defecation.^{3,4}

It is reported that PFD is more common in females as compared to males. The prevalence of PFD in women climbed up from 50% to 83% in the past 3 years.³ The leaden frequency rate of the pelvic floor dysfunction was 25%, with 9.4% of fecal incontinence among females, 2.9% of prolapse and 17.1% of urinary incontinence (UI) ranging from moderate to severe category.⁵ A literature demonstrated that no significant differences were indicated regarding the change in frequency of PFD among females from 2005 to 2010 tie period.⁶ It is established that obesity, hysterectomy and greater parity are strongly correlated with pelvic floor disorder.⁷ The

Authorship Contribution: ¹Concept/research design and did data collection, responsibility and is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved, ²statistical analysis and manuscript writing, ³ critical revision of the manuscript for important intellectual content.⁴⁻⁷edit of manuscript and project management,

Funding Source: none
 Conflict of Interest: none

Received: Sept 30, 2022
 Accepted: Feb 19, 2023

aging women are more prone to develop PFD as compared to young female. The stress urinary incontinence (SUI) and pelvic organ prolapse (POP) are strongly associated with vaginal child birth and parity. The etiology behind this correlation may attribute to connective tissue remodeling, neurovascular injury and injury to muscle.⁸

A study was conducted incorporating prospective cohort study on females who gave birth through vaginal delivery. Some females were also diagnosed with diastasis recti. The readings obtained during assessment period demonstrated that no significant difference was obtained in frequency of urinary incontinence between women with or without diastasis recti. After 6 weeks of post-partum, it was established that 4.1% of women with diastasis and 15.9% of women without diastasis recti have pelvic organ prolapse. The results of the study concluded that women with diastasis recti were implausible to have urinary incontinence, POP, and weaker pelvic floor muscle.⁹ A study was demonstrated which objectifies to identify the frequency of urinary incontinence in postpartum women with or without lateral or medio-lateral episiotomy. The study conducted that function of pelvic floor muscle is not affected by approach of episiotomy.¹⁰

This research is addressed the development of symptoms due to pelvic floor muscles weakness or injury. This study demonstrated the objective to find out prevalence of pelvic floor dysfunctions after normal vaginal delivery (either with or without episiotomy). This study submitted potential association of social embarrassment associated with symptoms of pelvic floor dysfunction. Further this study showed which type of dysfunction is more common in multipara females after multiple births through normal vaginal delivery.

Methodology

A study was conducted in obstetrics and gynecology department of Akbar Khan Teaching Hospital (ANTH), Islamabad Pakistan between February and August 2022 assimilating an observational cross-sectional study design. After approval of Institutional Review Board (IRB) vide letter number (12/IMDC/IRB-2022, Dated: 18/02/2022) and informed written consent, a sample of 285 multipara females with diagnosed symptomatic cases of pelvic floor dysfunctions were selected on volunteer basis to participate in this study. WHO sample size calculator was incorporated to calculate the sample size, whereas CI-95%, precision rate 25% and alpha error was 5%.¹¹ The study population was multipara

females who gave child birth (≥ 2) through normal vaginal delivery with age range 21 to 40 years either undergone episiotomy or not were included in this study. Caesarean section birth history, benign or malignant tumor in or around pelvis, adnexal cyst, diabetic, hypertensive & females having history of hyperthyroidism was excluded in this study. Non-probability convenience sampling was used to pick the patients as the sample was met by the source of inclusion criteria.

Data had been collected through self-structured questionnaire which had been socioeconomic status, quality of life (QoL), parity status (≥ 2), urinary leakage, bowel leakage, pain in pelvic area, gait abnormality and as well as demographic details included. We used close ended questionnaire regarding clinical presentation & symptoms. Total 18 questions were asked. 3 main questions were asked from every interviewed female. First was pain in pelvic area, second was about urinary incontinence or involuntary urinary leakage and third was about fecal leakage or incontinence. But regarding the pelvic organ prolapse questioning was difficult so those females diagnosed by gynecologist with pelvic organ prolapsed was included as "Yes" option other females was included for "No" option. The study was unbiased and there was no favoritism included. All investigations were carried out with Microsoft Excel 2017. Distributions of frequency and also percentages were utilized for expressive reasons. Data was analyzed using SPSS v 23. For categorical variables, frequency and percentages were measured and for continuous variables, mean and their standard deviations were measured. Effect modifier chi square test was used as post stratification and p value ≤ 0.05 was considered significant.

Results

This study recruited total of 285 patients. The patient's mean age was 38.15 ± 7.85 years. The body mass index (BMI) mean of the patients was 26.59 ± 4.24 kg/m². The demographic characteristics such as age, socioeconomic status and parity status of females was varying from 3 to 5 or more vaginal births were recorded (Table I).

Table II shows, the pelvic floor dysfunctions, the following percentages were observed; pain in pelvic area 80%, urinary incontinence 79% and bowel incontinence 52%. The secondary dysfunctions i.e., gait abnormality (42%) due to primary dysfunctions that are pain, urinary leakage, bowel leakage was also considered, but it was

not as frequent as others. Dislocation or fracture of pelvis and operative procedure were also measured 5% and 50% respectively. The overall frequency of symptomatic pelvic floor dysfunctions in female's undergone normal vaginal delivery 65% in interviewed patients was recorded.

Table I: Demographic characteristics (n=285)

Variables		N	%
Ages	21-30 years	126	44.2
	31-40 years	159	55.8
Socioeconomic status	Lower class	156	54.7
	Middle class	85	29.8
	Upper class	44	15.5
Parity status	3 children	103	36.1
	4 children	114	40.0
	5 or more children	68	23.9

Table II: Descriptive statistics of pelvic floor dysfunctions (n=285)

Variables		N	%
Pelvic floor dysfunctions	Yes	185	64.9
	No	100	35.1
Pain in pelvis	Yes	228	80.0
	No	57	20.0
Urinary incontinence	Yes	225	78.9
	No	60	21.1
Bowel incontinence	Yes	148	51.9
	No	137	48.1
Pelvic organ prolapses	Yes	86	30.2
	No	199	69.8
Gait abnormality	Yes	120	42.1
	No	165	57.9
Dislocation or fracture of pelvis	Yes	14	4.9
	No	271	95.1
Operative procedure	Yes	142	49.8
	No	143	50.2

Table III: Quality of life (QoL) in pelvic floor dysfunction patient (n=285)

SF-36, QoL questionnaire		N	%
General health	Affected	157	55.1
	Not affected	128	44.9
Functional capacity	Affected	176	61.8
	Not affected	109	38.2
Physical aspects limitation	Affected	137	48.1
	Not affected	148	51.9
Emotional limitation	Affected	134	47.0
	Not affected	151	53.0
Social limitation	Affected	171	60.0
	Not affected	114	40.0
Vitality	Affected	137	48.1
	Not affected	148	51.9
Mental health	Affected	165	57.9
	Not affected	120	42.1

Table III shows, the descriptive statistics of quality-of-life questionnaire in patients suffering from pelvic floor dysfunctions. Hence, the general health was affected by

55%. Table IV shows, the post stratification analysis of quality-of-life questionnaire with pelvic floor dysfunctions. A significant association was observed between pelvic floor dysfunction and quality of life ($p \leq 0.05$).

Table IV: Stratification of quality of life with pelvic floor dysfunction (n=285)

SF-36, QoL questionnaire		Pelvic floor dysfunction		Total	X ² value	p value
		Yes	No			
General health	Affected	157	0	157	188.96	.0001
	Not affected	28	100	128		
Total		185	100	285		
Functional capacity	Affected	176	0	176	248.75	.0001
	Not affected	9	100	109		
Total		185	100	285		
Physical aspects limitation	Affected	137	0	137	142.60	.0001
	Not affected	48	100	148		
Total		185	100	285		
Emotional limitation	Affected	134	0	134	136.71	.0001
	Not affected	51	100	151		
Total		185	100	285		
Social limitation	Affected	171	0	171	231.08	.0001
	Not affected	14	100	114		
Total		185	100	285		
Vitality	Affected	137	0	137	142.60	.0001
	Not affected	48	100	148		
Total		185	100	285		
Mental health	Affected	165	0	165	211.82	.0001
	Not affected	20	100	120		
Total		185	100	285		

Discussion

Findings of our research demonstrated that among pelvic floor dysfunctions the most frequent complaint is history of chronic pelvic pain (80%) and then is the urinary incontinence (79%), after it the fecal incontinence (52%) & least common complaint is the pelvic organ prolapsed (30%). However, more than half (55%) patients said their general health was affected in pelvic floor dysfunction. The post stratification analysis of quality-of-life questionnaire with pelvic floor dysfunctions. A significant association was observed between quality-of-life and pelvic floor dysfunctions ($p \leq 0.05$).

According to study conducted in Brazil to report the frequency of pelvic floor dysfunction and its correlation with quality of life (QoL) of unreported bowel symptoms

in multipara women. The interview was conducted which indicated that anal incontinence (AI) and defecatory problems were reported in 54.6% of patients. Whereas AI, fecal urgency, and constipation were reported to be 41.1%, 34.0% and 67.0% respectively. The women suffering from urinary incontinence, reported that 23.21% had additional AI. Moreover, worst scoring of QoL and double incontinence (DI) was reported among women.¹² Another study was conducted in Bangladesh, aimed to demonstrate the frequency and risk factors associated with pelvic floor dysfunction (PFDs) among multipara women. The findings indicated that frequency of urinary incontinence was 23.7%, fecal incontinence (FI) 5.3%, POP 16.2%, and having at least one PFD 35.3%. Women aged 40-49 years are more likely to suffer from PFD. From the statistical results of the study, it was concluded that 1/3rd of Bangladeshi women aged 30-59 suffer from one symptomatic PFD.¹³

A study was conducted in Australia with an objective to demonstrate the prevalence of urinary incontinence (UI) and other symptoms associated with PFD in women suffering from with or without lumbopelvic pain (LPP) and its correlation with symptoms of PFD and LPP. The results of the study concluded that 79% reported UI along with LPP as compared to 59.3% of UI was observed in control group. From study it was concluded that the clinicians should take into account the symptoms of PFD and UI in women suffering from LPP.¹⁴

A study was conducted for finding preventive strategies at time of delivery concluded that the frequency of UI increases by 50% in women who underwent vaginal delivery as compared to women who delivered via C-section. Regarding preventive strategies they found that the incorporation of stem cell therapy helps to enhance and increase the healing response which is advantageous. Although it revolves around the future aspect, the enhancement of its experimental efficacy is so promising.¹⁵ Groenendijk et al concluded that a weak association exists between functional and anatomical abnormalities of the pelvic floor.¹⁶ Saks et al concluded that a correlation exists between obstructive bowel disease and the site of prolapse but not with the severity of prolapse.¹⁷ Blomquist et al found that the 15 years combined prevalence's of pelvic floor dysfunction are as follows: POP and AI has prevalence of 30.0% and 30.6% respectively whereas for UI is 34.3% and overactive bladder is 21.8%.¹⁸

It was recommended to females suffering from pelvic floor dysfunctions to take proper care of personal hygiene and should consult or report symptoms or complaints at an early level rather than making the condition chronic in which case result of treatment will not be appreciable and quality of life is compromised.

Conclusion

It is being concluded that pelvic floor dysfunctions are more common in multipara females & multiple births. Pelvic floor dysfunctions are directly related to trauma imparted to pelvic floor muscles & anal canal during birth. Moreover, multiple births increase the risk of this traumatic injury.

References

1. Grimes WR, Stratton M. Pelvic floor dysfunction. 2020. Europe PMC publisher.
2. Jokhio AH, Rizvi RM, MacArthur C. Prevalence of pelvic organ prolapse in women, associated factors and impact on quality of life in rural Pakistan: population-based study. *BMC Women's Health*. 2020;20(1):1-7. <https://doi.org/10.1186/s12905-020-00934-6>
3. Verbeek M, Hayward L. Pelvic floor dysfunction and its effect on quality of sexual life. *Sex Med Rev*. 2019;7(4):559-564. <https://doi.org/10.1016/j.sxmr.2019.05.007>
4. Noor R, Neelam H, Bashir MS. Mode of delivery and pelvic floor disorder. *Rawal Medical J*. 2017;42(4):503-506.
5. Wu JM, Vaughan CP, Goode PS, Redden DT, Burgio KL, Richter HE, et al. Prevalence and trends of symptomatic pelvic floor disorders in US women. *Obstet Gynecol*. 2014;123(1):141-148. <https://doi.org/10.1097/AOG.0000000000000057>
6. Gonzalez DC, Khorsandi S, Mathew M, Enemchukwu E, Syan R. A systematic review of racial/ethnic disparities in female pelvic floor disorders. *Urology*. 2021;163(5):8-15. <https://doi.org/10.1016/j.urology.2021.09.018>
7. Haddad JM, Fiorelli LR, Peterson TV. Types of Pelvic Floor Injury During Childbirth. In *Childbirth Trauma*. 2017 (pp. 101-109). Springer, London. https://doi.org/10.1007/978-1-4471-6711-2_7
8. Wheat JE, Khan M, Banaag A, Vaccaro C, Greer JA, Koehlmoos TP, et al. Prevalence of Pelvic Floor Disorders in United States Active-Duty Service Women Seeking Medical Care. *Female Pelvic Med Reconstr Surg*. 2022;28(6):195-200. <https://doi.org/10.1097/SPV.0000000000001183>
9. Bo K, Hilde G, Tennfjord MK, Sperstad JB, Engh ME. Pelvic floor muscle function, pelvic floor dysfunction and diastasis recti abdominis: Prospective cohort study. *Neurourol Urodyn*. 2017;36(3):716-721. <https://doi.org/10.1002/nau.23005>
10. Hills NF, Graham RB, McLean L. Comparison of trunk muscle function between women with and without diastasis recti abdominis at 1 year postpartum. *Phys Ther*. 2018;98(10):891-901. <https://doi.org/10.1093/ptj/pzy083>
11. Al-Badr A, Saleem Z, Kaddour O, Almosaieed B, Dawood A, Al-Tannir M, et al. Prevalence of pelvic floor dysfunction: a Saudi

- national survey. *BMC Women's Health*. 2022;22(1):1-8. <https://doi.org/10.1186/s12905-022-01609-0>
12. Bezerra LR, Neto JA, Vasconcelos CT, Karbage SA, Lima AC, Frota IP, et al. Prevalence of unreported bowel symptoms in women with pelvic floor dysfunction and the impact on their quality of life. *Int Urogynecol J*. 2014;25(7):927-933. <https://doi.org/10.1007/s00192-013-2317-2>
 13. 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):558-564. <https://doi.org/10.1080/13697137.2016.1240771>
 14. McNamara A, Thompson J, Andrews A, Beales D, Jacques AJ, Briffa K. Pelvic floor dysfunction in women with chronic or recurrent lumbo-pelvic pain. *ANZCJ: Aust N Z Continence J*. 2016;22(4):91-92. <https://doi.org/10.1016/j.math.2016.05.062>
 15. Callewaert G, Albersen M, Janssen K, Damaser MS, Van Mieghem T, van der Vaart CH, et al. The impact of vaginal delivery on pelvic floor function-delivery as a time point for secondary prevention. *BJOG: Int J Obstet Gynaecol*. 2016;123(5):678-681. <https://doi.org/10.1111/1471-0528.13505>
 16. Groenendijk AG, Birnie E, Roovers JP, Bonsel GJ. Contribution of primary pelvic organ prolapse to micturition and defecation symptoms. *Obstet Gynecol Int*. 2012;2012(1):1-9. <https://doi.org/10.1155/2012/798035>
 17. Saks EK, Harvie HS, Asfaw TS, Arya LA. Clinical significance of obstructive defecatory symptoms in women with pelvic organ prolapse. *Int J Gynecol Obstet*. 2010;111(3):237-240. <https://doi.org/10.1016/j.ijgo.2010.06.025>
 18. Blomquist JL, Muñoz A, Carroll M, Handa VL. Association of delivery mode with pelvic floor disorders after childbirth. *JAMA*. 2018;320(23):2438-2447. <https://doi.org/10.1001/jama.2018.18315>