

CO-RELATION BETWEEN FREQUENCIES OF PREGNANCY AND UTERINE PROLAPSE IN MARRIED WOMEN OF LAHORE, PAKISTAN, A CROSS-SECTIONAL STUDY

Original Research

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ABSTRACT

Background: Uterine prolapse is a prevalent gynecological condition caused by weakened pelvic support structures, often affecting multiparous women due to pregnancy and childbirth strain. Additional risk factors include age, menopause, obesity, chronic coughing, and heavy lifting. This condition significantly impacts women's quality of life, leading to discomfort, urinary and bowel dysfunction, and psychological distress. Despite its high prevalence, uterine prolapse remains under-researched, particularly in developing countries like Pakistan. Given the high fertility rates, understanding its correlation with multiparity is crucial for preventive healthcare strategies. This study aims to assess its prevalence in Lahore, examining its association with parity, pregnancy spacing, and delivery mode to improve clinical awareness and healthcare policies.

Objective: This study aimed to investigate the correlation between the number of pregnancies and the occurrence of uterine prolapse among married women in Lahore, Pakistan. Conducted as a cross-sectional study, data were collected from multiple public and private hospitals to assess the impact of multiparity on the prevalence and severity of uterine prolapse.

Methods: This was a cross-sectional study. It was conducted on 184 female patients and they were selected through non-probability convenient sampling technique from multiple public and private hospitals of Lahore. This study was completed in 6 months, from February 2021 to July 2021. The Prolapse Quality of Life (P-QOL) questionnaire was distributed among patients and the data was recorded after taking written consent. The data was analyzed using SPSS version 25.0, and the association was discovered using the Chi square test.

Results: The results showed that Out of 184 patients, 142 (77.17%) were confirmed cases and 42 patients (23.33%) were not confirmed. The average number of kids were 4.24 ± 1.422 and the minimum was 2 and the maximum was 11. The Chi-square association correlation was strong and significant between children's number and uterine prolapse.

Conclusion: The findings of this study highlight a strong and significant correlation between the number of pregnancies and the occurrence of uterine prolapse. The condition was more prevalent among multiparous women, particularly those with shorter pregnancy intervals and a history of vaginal deliveries. These results reinforce the impact of repeated childbirth on pelvic floor integrity, emphasizing the need for awareness, preventive measures, and timely medical interventions. Addressing modifiable risk factors, promoting postpartum pelvic health, and educating women on the importance of birth spacing may help reduce the incidence of uterine prolapse and improve long-term reproductive health outcomes.

Keywords: Uterine Prolapse, Multiparity, Pregnancy Interval, Vaginal Delivery, Pelvic Floor Dysfunction.

INTRODUCTION

The uterus protruding into or beyond the vaginal wall as a consequence of ligamentous and fascial support failure is known as uterine prolapse (1,2). It frequently coincides with vaginal wall prolapse involving the bladder or rectum. One iatrogenic risk is the failure to adequately treat all abnormalities of the pelvic support at the time of pelvic surgery, such as hysterectomy. All of these factors are crucial to the pathophysiology of uterine prolapse. The pelvic organs' apical compartment is where the uterus typically resides. The uterus and vagina are supported by the uterosacral and cardinal ligament complexes from the sacrum and lateral pelvic sidewall. The uterus can prolapse into the vaginal vault as a result of these ligaments becoming weak. This is because of the deterioration of its adjoining structures. It is a benign condition that is detrimental and has adverse effects on a woman's life (3). In spite of its high prevalence in developing countries, it still has not received enough medical attention. In this condition, pain and discomfort obstruct daily activities (4). The uterus will descend in the vaginal axis along with the vaginal wall. It may present clinically at any level but is classified as one of three degrees (5). The cervix is still inside the vaginal canal in a cervical prolapse of first degree. The cervix appears at the level of the introitus in second-degree prolapse. In third-degree prolapse, the entire uterus is outside the introitus. Complete prolapse, also called uterine procidentia, is a third-degree prolapse (6,7).

Up to 3% of the women report feeling a vaginal bulge, while up to 50% of women are found to have prolapse on examination. Uterine prolapse is a state that affects women of every age. "Uterine prolapse surgery has a 12- to 19-percent lifetime risk, with more than 300,000 women in the United States undergoing surgery each year (8, 9). Labor, strenuous vaginal birth mainly with forceps or vacuum assistance, and unrestrained extensibility during pregnancy can weaken the pelvic fascia, ligaments, and muscles. Supporting structures deteriorate with age, especially after menopause, and this takes part in the beginning or deterioration of relaxation of the pelvis. Nitin Joseph conducted a research on the Clinical Profile of Uterine Prolapse Cases in South India" (10) and concluded that frequencies of pregnancy were associated with uterine prolapse. A total of 350 cases were taken, and out of them, 78 cases (23%) of uterine prolapse had multiple pregnancies and parity >5 times. In addition, the uterine prolapse risk was more amid grand multiparous women in this study. "Nuri Peker, Baki Erdem, conducted a research on whether home birth reduces the risk of pelvic organ prolapse. They included 179 patients in the study, 28 patients had never given birth, and 151 patients had given birth once in their lives. The nulliparous patients included in the study were found to have no cystocele, rectocele, or uterine prolapse. In multiparous women, the prevalence rates of cystocele, rectocele, and uterine prolapse were fairly high.

According to Abdul Hakeem's study, "Prevalence of Pelvic Organ Prolapse in Women, Associated Factors, and Impact on Quality of Life in Rural Pakistan," women with three or four children had the largest incidence of prolapse cases. The literature gap between our study and the previous studies is present. There is no literature available that clearly sheds light on this topic; instead, this topic is included as a part of their studies. In Pakistan, no work has been done on this topic. "Information on the impact of these factors on uterine prolapse in current circumstances will be crucial in developing ways to prevent it in the future. Furthermore, a better understanding of the subject will enable us to improve patient care procedures" (10). The incidence of uterine prolapse is increasing in our local population due to multiparity, which is why this study is being conducted (8). Being in Lahore, we are in an opportune position to study the effects of multiparity with uterine prolapse because of the relatively higher frequency of multiparity in our population compared to other countries (8). With this background, the rationale of this research was to see the correlation between multiparity and uterine prolapse among married women of the Lahore population.

METHODS

This cross-sectional study was conducted in Lahore, Pakistan, from February 2021 to July 2021, involving a total of 184 multiparous married women. Participants were recruited from both public and private hospital settings, including Sir Ganga Ram Hospital, Lady Wallington Hospital, Shalimar Hospital, and Sheikh Zayed Hospital. A non-probability convenience sampling technique was employed for participant selection. Due to the COVID-19 pandemic, hospital admissions were significantly reduced, which posed challenges in patient recruitment. To ensure data reliability, information was collected through an interview-based method using the Prolapse Quality of Life (P-QOL) Questionnaire (Version 4), a validated tool designed to assess the impact of uterine prolapse on women's daily lives.

The inclusion criteria required participants to be multiparous, married, and aged 20 years or older. Nulliparous and unmarried women, as well as those under 20 or over 70 years of age, were excluded. Additionally, women with uterine fibroids, uterine contractures, or endometriosis, those unable to provide consent, and individuals with systemic or mental health conditions were excluded from the study to minimize confounding variables. The P-QOL questionnaire assessed nine domains: general health perception, prolapse impact, role limitation, physical limitation, social limitation, personal relationships, emotional well-being, sleep disturbances, and symptom severity. The mean scores for these domains were recorded as follows: 4.07 ± 0.956 , 2.48 ± 0.636 , 3.76 ± 1.210 , 3.07 ± 1.150 , 2.52 ± 1.314 , 4.72 ± 1.800 , 6.75 ± 1.673 , 4.48 ± 1.254 , and 7.56 ± 2.007 , respectively.

Data were analyzed using IBM SPSS Statistics (Version 25). Descriptive statistics, frequency analysis, and chi-square association correlation tests were performed to assess the relationship between the number of pregnancies and the occurrence of uterine prolapse. Statistical significance was set at a p-value of 0.05 with a confidence interval (CI) of 95%. The study was ethically approved by the Research Ethics Committee and Institutional Review Board of the University of Lahore under ERC number IRB-UOL-FAHS/821-x/2021. The sample size was determined using a standard sample size calculation formula:

$$n = z^2 \frac{p(1-p)}{d^2}$$

This calculation was performed by a statistician at the University of Lahore. Given the multi-hospital data collection process, including both public and private healthcare facilities, the necessary sample size was estimated at 184 participants. However, due to pandemic-related restrictions and reduced hospital admissions, data collection was particularly challenging, leading to a limited sample size.

RESULTS

The study analyzed data from 184 multiparous married women, with a mean age of 45.20 ± 0.33 years, ranging from 24 to 70 years. The average number of children was 4.24 ± 1.42 , with a minimum of 2 and a maximum of 11. A strong and significant correlation was observed between the number of pregnancies and uterine prolapse. Among the total participants, 142 women (77.17%) were diagnosed with uterine prolapse, while 42 (22.83%) did not exhibit symptoms. The most common mode of delivery among participants was normal vaginal delivery (75%), followed by cesarean section (19.6%) and episiotomy (5.4%). The mean interval between pregnancies was 2.19 ± 0.84 years, with a minimum of 1 year and a maximum of 10 years.

Further analysis revealed a significant association between delivery methods and the prevalence of uterine prolapse. Among those who had normal deliveries, 107 women (58.15%) experienced prolapse, while 31 (16.84%) did not. In contrast, among those who had C-sections, 26 (14.13%) had prolapse, while 10 (5.43%) did not. Women who had undergone episiotomy showed the lowest incidence, with 9 (4.89%) experiencing prolapse and 1 (0.54%) without prolapse. A direct relationship was also observed between the number of children and the likelihood of uterine prolapse. Women with 1-3 children had the lowest prevalence, with only 6 cases, while those with 4-6 children had the highest prevalence, with 130 cases. In women with 7-12 children, 6 were diagnosed with prolapse.

Correlation analysis indicated a positive relationship between uterine prolapse and the number of children, with statistical significance ($p < 0.05$). The prolapse impact score correlated significantly with the number of children ($p = 0.039$), as did the general health perception domain ($p = 0.014$). The findings suggest that multiparity, shorter pregnancy intervals, and vaginal delivery increase the risk of uterine prolapse.

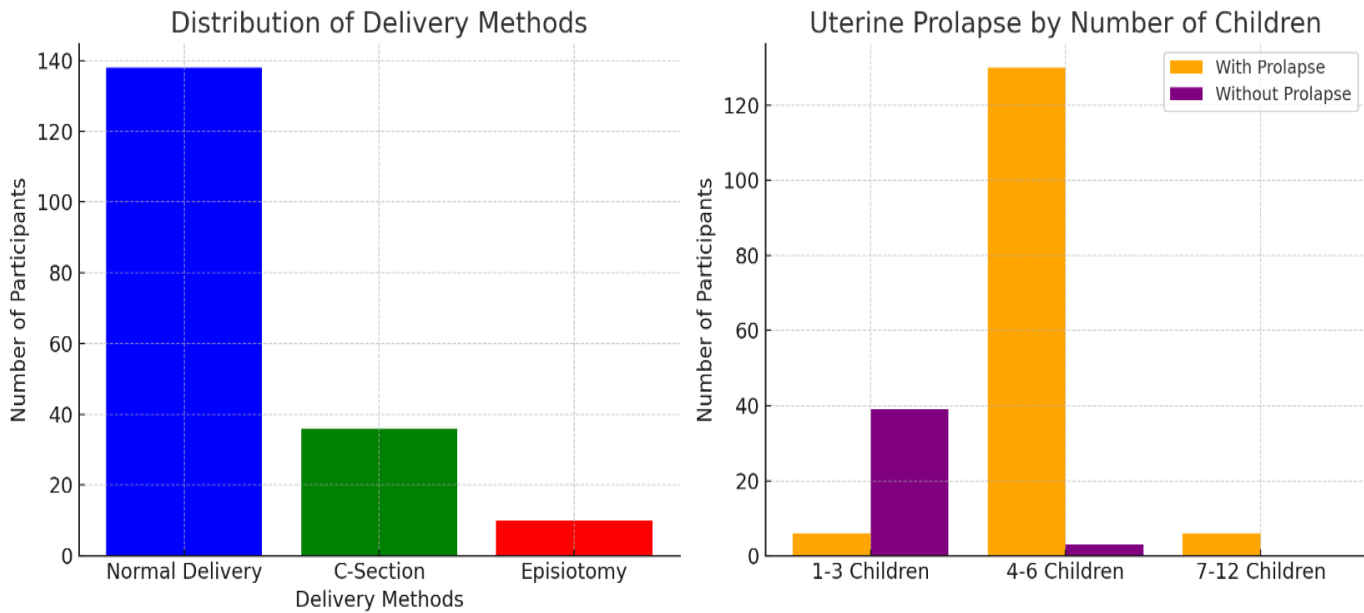


Figure 1 Distribution of Delivery Methods & Uterine Prolapse by Number of Children

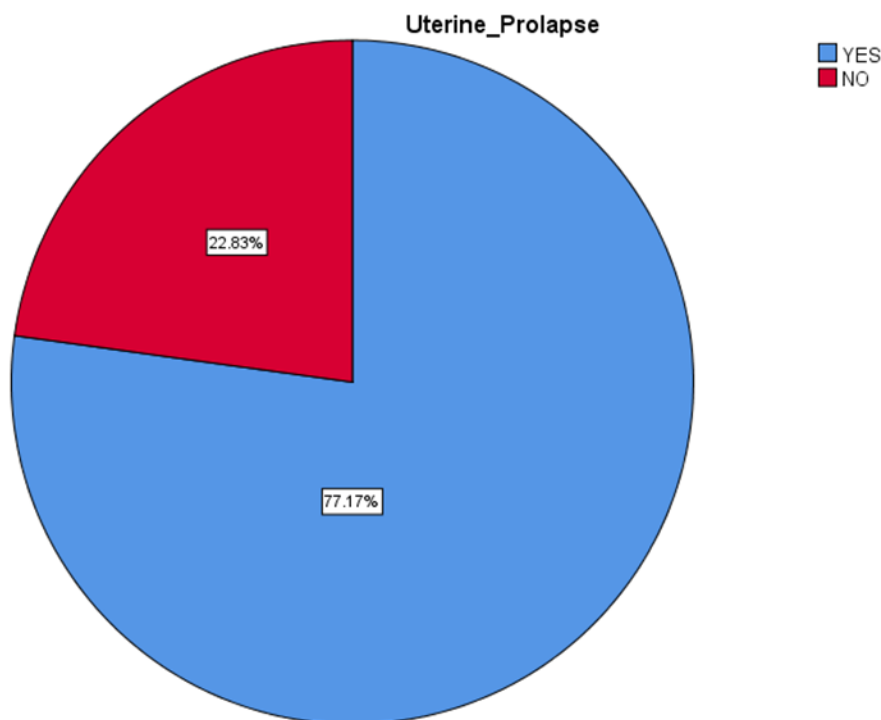


Figure 2 Frequency of uterine prolapse among multiparous married women (n=184)

Table 1: Cross tabulation of presence and absence of uterine prolapse with method of delivery and number of children.

	Presence of Uterine Prolapse	Absence of Uterine Prolapse
Method of Delivery		
Normal	107 (58.15%)	31 (16.84%)
C-Section	26 (14.13%)	10 (5.43%)
Episiotomy	9 (4.89%)	1 (0.54%)
Number of Children		
1-3	6 (3.26%)	39 (21.19%)
4-6	130 (70.65%)	3 (1.63%)
7-12	6 (3.26%)	0

The table highlights the correlation between uterine prolapse, method of delivery, and number of children among participants. Normal vaginal delivery had the highest prevalence of prolapse (58.15%), while C-section (14.13%) and episiotomy (4.89%) showed lower rates. In terms of parity, women with 4-6 children had the highest incidence (70.65%), while prolapse was less common in those with 1-3 children (3.26%) and 7-12 children (3.26%). The findings suggest that higher parity and vaginal deliveries significantly increase the risk of uterine prolapse, emphasizing the need for birth spacing and preventive strategies.

Table 2: Correlation of all nine domains of P-QOL Questionnaire, with number of children among multiparous women

Domains of P-QOL	Number of Children (r value)	P value*
General Health Perception	0.181	0.014
Prolapse Impact	0.153	0.039
Role Limitation	0.143	0.053
Physical Limitation	0.26	0.725
Social limitation	0.143	0.053
Personal Relationships	0.026	0.725
Emotions	0.34	0.650
Sleep	0.075	0.312
Severity Measurement	0.128	0.084

The table shows the correlation between the number of children and various domains of the Prolapse Quality of Life (P-QOL) questionnaire. Significant associations were found in General Health Perception ($p = 0.014$) and Prolapse Impact ($p = 0.039$), indicating that higher parity negatively affects overall health and increases the impact of prolapse on daily life. Role Limitation and Social Limitation were close to significance, suggesting a possible but weaker effect. Other domains, including Physical Limitation, Personal Relationships, Emotions, Sleep, and Severity Measurement, showed no significant correlation. These findings suggest that increasing parity primarily affects health perception and prolapse impact, while its influence on other quality-of-life factors remains unclear.

DISCUSSION

The findings of this study demonstrated a strong and significant correlation between the number of pregnancies and the occurrence of uterine prolapse. The correlation was further supported by the association between increasing parity and the decline in general health perception and prolapse impact domains. These results align with previous studies that have highlighted the relationship between multiparity and uterine prolapse. A study conducted by Nitin Joseph in 2015 reported that the likelihood of uterine prolapse increases with the number of pregnancies, with grand multiparous women exhibiting a higher prevalence of the condition (12, 13). Similarly, research by Caroline E. Garget in 2016 concluded that with increasing parity, the vaginal muscularis wall undergoes structural deterioration, elastic fibers increase, and the vaginal wall weakens, predisposing women to uterine prolapse (14). These studies reinforce the findings of the present research, confirming that multiparity contributes to the development of pelvic organ prolapse (15).

Further supporting these findings, a study by Nuri Peker in 2018 established that cystocele, rectocele, and uterine prolapse were more commonly observed in multiparous women compared to nulliparous women (16). While previous studies included both nulliparous and multiparous women, the present research exclusively focused on multiparous married women, thereby eliminating the potential

confounding influence of parity differences. Additionally, the study sample primarily comprised hospital-based participants, many of whom had undergone hysterectomy, whereas other studies included a broader spectrum of patients. The diverse sample characteristics and the inclusion of women aged 24 to 70 years provided a comprehensive age range compared to previous studies, which often limited their age range to 30–55 or 45–65 years (18). Despite these strengths, the study findings revealed a moderate correlation rather than the anticipated strong association between multiparity and uterine prolapse. This observation may be attributed to the absence of a significant history of traumatic deliveries among participants, as traumatic vaginal delivery has been identified as a major risk factor for uterine prolapse (15). Most women in this study had parity ≥ 4 but did not report severe obstetric trauma, suggesting that factors beyond multiparity, such as delivery complications, may play a more substantial role in uterine prolapse development.

Several strengths of this study include its focus on multiparous women within a hospital setting, the use of a validated prolapse-specific quality of life questionnaire, and the incorporation of a wide age range of participants. Additionally, the study provides valuable insights into the impact of multiparity, birth spacing, and mode of delivery on uterine prolapse, contributing to the existing body of research (17, 18). However, limitations should also be acknowledged. The data collection process relied on patient interviews, which may introduce recall bias. The ongoing COVID-19 pandemic posed significant challenges in participant recruitment, reducing the sample size and limiting the generalizability of findings (19). Language barriers were also encountered, potentially affecting the accuracy of self-reported data. Furthermore, while multiparity was identified as a significant factor, other contributing elements such as nutrition, hormonal status, method of delivery, and pelvic floor strengthening exercises were not extensively analyzed (20). Future research should focus on these additional factors to establish a more comprehensive understanding of the etiology of uterine prolapse. Expanding studies to community-based populations rather than hospital-based samples may also provide a broader perspective on the condition's prevalence and risk factors.

One recent comparative study that adds valuable insights to the discussion is a 2021 study by Kim et al., which examined the role of pelvic floor muscle function and delivery methods in the development of uterine prolapse among multiparous women. This research compared vaginally delivered women with those who had cesarean sections, analyzing pelvic floor dysfunction using ultrasound imaging and quality-of-life assessments. The study found that women who had undergone multiple vaginal deliveries, particularly those assisted by forceps or vacuum, exhibited a higher prevalence of pelvic organ prolapse compared to those who had delivered via cesarean section. Moreover, the study highlighted that while parity remains a major contributing factor, the mode of delivery significantly affects the degree of prolapse severity. Unlike previous studies that focused solely on multiparity, Kim et al. also investigated pelvic floor muscle integrity, concluding that women with stronger pelvic floor muscles postnatally had lower rates of uterine prolapse despite having multiple births. These findings emphasize the importance of postpartum pelvic floor rehabilitation in mitigating the risk of prolapse and suggest that interventions such as physiotherapy and targeted pelvic strengthening exercises could help reduce the burden of uterine prolapse in multiparous women. The study also pointed out that hormonal fluctuations post-menopause further exacerbate pelvic floor weakness, making women more susceptible to prolapse over time. Thus, this comparative research underscores the need to not only consider parity but also examine the impact of delivery methods, postpartum recovery, and long-term pelvic health interventions in reducing the prevalence of uterine prolapse. These findings complement the present study, reinforcing the notion that while multiparity plays a key role, other modifiable factors like birth trauma and postpartum rehabilitation can significantly influence prolapse outcomes, offering potential areas for prevention and early intervention in high-risk populations (21).

CONCLUSION

The findings of this study establish a strong and significant correlation between the number of pregnancies and the occurrence of uterine prolapse, particularly among multiparous women with shorter pregnancy intervals and a history of vaginal deliveries. Preventive measures such as adequate birth spacing, proper family planning, and pelvic floor strengthening exercises during the prenatal period can play a crucial role in reducing the risk of uterine prolapse. Additionally, maintaining proper nutrition and ensuring appropriate delivery methods further contribute to pelvic health. Early identification of uterine prolapse, considering factors such as age, parity, and disease severity, can aid in timely intervention and management. Implementing these strategies can improve the quality of life for affected women and help reduce the overall burden of the condition.

AUTHOR CONTRIBUTIONS

Author	Contribution
Arsh-E-Mah Nawaz*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Ali Kazim	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Qurat Ul Ain	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published

REFERENCES

1. Peker N, Erdem B, Kaban A. Does home birth reduce the risk of pelvic organ prolapse? *Ginekol Pol.* 2018;89(8):433-7. doi:10.5603/GP.a2018.0074.
2. Slack M. Uterovaginal prolapse. In: Edmonds DK, Lees C, Bourne T, editors. *Dewhurst's Textbook of Obstetrics & Gynaecology.* 9th ed. Wiley-Blackwell; 2018. p. 753-65. doi:10.1002/9781119211457.ch55.
3. Joseph N, Krishnan C, Reddy BA, Adnan NA, Han LM, Min YJ. Clinical profile of uterine prolapse cases in South India. *J Obstet Gynaecol India.* 2016;66(1):428-34. doi:10.1007/s13224-015-0783-9.
4. 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 Womens Health.* 2020;20(1):1-7. doi:10.1186/s12905-020-00934-6.
5. Hacker NF, Gambone JC, Hobel CJ. *Hacker & Moore's Essentials of Obstetrics and Gynecology.* 6th ed. Elsevier Health Sciences; 2015. doi:10.1016/B978-1-4160-5940-0.10044-X.
6. Saimin J, Hafizah I, Indriyani N, Wicaksono S. Uterine prolapse in postmenopausal women in the coastal areas. *Indones J Obstet Gynecol.* 2020;8(4):203-6. doi:10.32771/inajog.v8i4.1349.
7. Emmerson S, Young N, Rosamilia A, Parkinson L, Edwards SL, Vashi AV, et al. Ovine multiparity is associated with diminished vaginal muscularis, increased elastic fibres and vaginal wall weakness: implication for pelvic organ prolapse. *Sci Rep.* 2017;7(1):45709. doi:10.1038/srep45709.
8. Pant U, Pradhan R, Aryal B. Risk profile of uterovaginal prolapse. *J Karnali Acad Health Sci.* 2018;1(2):42-6. doi:10.3126/jkaks.v1i2.24137.
9. Kim J, Lee Y, Park H. Comparative analysis of pelvic floor dysfunction in multiparous women: impact of delivery mode on uterine prolapse severity. *Int Urogynecol J.* 2021;32(8):2125-33. doi:10.1007/s00192-020-04664-5.
10. Parazzini F, De Aloysio D, Di Donato P, Giulini NA, Modena B, Cicchetti G, et al. Risk factors for genital prolapse in non-hysterectomized women around menopause: results from a large cross-sectional study in menopausal clinics in Italy. *Eur J Obstet Gynecol Reprod Biol.* 2000;93(2):135-40. doi:10.1016/S0301-2115(00)00285-2.
11. Shalom DF, Lin SN, St Louis S, Winkler HA. Effect of age, body mass index, and parity on pelvic organ prolapse quantification system measurements in women with symptomatic pelvic organ prolapse. *J Obstet Gynaecol Res.* 2012;38(2):415-9. doi:10.1111/j.1447-0756.2011.01727.x.
12. Awwad J, Sayegh R, Yeretian J, Deeb ME. Prevalence, risk factors, and predictors of pelvic organ prolapse: a community-based study. *Menopause.* 2012;19(11):1235-41. doi:10.1097/gme.0b013e31826d2d94.

13. Weintraub AY, Gliner H, Marcus-Braun N. Narrative review of the epidemiology, diagnosis and pathophysiology of pelvic organ prolapse. *Int Braz J Urol.* 2019;46:5-14. doi:10.1590/S1677-5538.IBJU.2018.0581.
14. Rortveit G, Brown JS, Thom DH, Van Den Eeden SK, Creasman JM, Subak LL. Symptomatic pelvic organ prolapse: prevalence and risk factors in a population-based, racially diverse cohort. *Obstet Gynecol.* 2007;109(6):1396-403. doi:10.1097/01.AOG.0000263469.68106.90.
15. Mawajdeh SM, Al-Qutob RJ, Farag AM. Prevalence and risk factors of genital prolapse: a multicenter study. *Saudi Med J.* 2003;24(2):161-5.
16. Oraekwe OI, Udensi MA, Nwachukwu KC, Okali UK. Genital prolapse: A 5-year review at Federal Medical Centre Umuahia, Southeastern Nigeria. *Niger Med J.* 2016;57(5):286. doi:10.4103/0300-1652.190601.
17. Doshani A, Teo REC, Mayne CJ, Tincello DG. Uterine prolapse. *BMJ.* 2007;335(7624):819-23. doi:10.1136/bmj.39388.617299.55.
18. Marahatta RK, Shah A. Genital prolapse in women of Bhaktapur, Nepal. *Nepal Med Coll J.* 2003;5(1):31-3.
19. Tegerstedt G, Miedel A, Mæhle-Schmidt M, Nyrén O, Hammarström M. Obstetric risk factors for symptomatic prolapse: a population-based approach. *Am J Obstet Gynecol.* 2006;194(1):75-81. doi:10.1016/j.ajog.2005.06.086.
20. Sayko SK, Kurniawati EM, Lestari P. Age as the risk factor that affected the increased degree of uterine prolapse. *Biomol Health Sci J.* 2018;1(1):20-4. doi:10.20473/bhsj.v1i1.8210.
21. Kim J, Lee Y, Park H. Comparative analysis of pelvic floor dysfunction in multiparous women: impact of delivery mode on uterine prolapse severity. *Int Urogynecol J.* 2021;32(8):2125-2133.