

BMJ Open Prevalence, determinants and impact of urinary incontinence on quality of life among Palestinian postpartum women: a cross-sectional study

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ABSTRACT

Objectives Urinary incontinence (UI) is prevalent among women, particularly during the postpartum period, impacting various aspects of quality of life (QoL). The objectives of this study are to determine the prevalence of postpartum UI among Palestinian women, explore its relationship with delivery mode, identify associated risk factors and assess its impact on QoL.

Design A cross-sectional study.

Setting and participants The study targeted postpartum women attending primary healthcare centres in the North West Bank of Palestine. Data were collected using interviewer-administered questionnaires. The primary outcome was the prevalence of postpartum UI, and the secondary outcomes included risk factors associated with UI and its impact on QoL. We used multivariate logistic regression analysis to identify factors associated with UI while adjusting for confounding variables. The Institutional Review Board of An-Najah National University approved the study.

Results Out of 507 participants, 13.6% (95% CI 10.8% to 16.9%) experienced postpartum UI, with 78.3% reporting moderate-to-severe symptoms. Maternal body mass index (BMI) (adjusted OR (aOR) 1.98; 95% CI 1.1 to 3.7; adjusted $p=0.033$) and experiencing UI during the last pregnancy (aOR 2.25; 95% CI 1.3 to 3.8; adjusted $p=0.003$) were significant risk factors for postpartum UI. No significant association was found between the normal vaginal delivery and postpartum UI compared with caesarean section (aOR 1.5; 95% CI 0.90 to 1.5; adjusted $p=0.284$). Postpartum UI severity significantly correlated with QoL, particularly in social embarrassment ($p=0.005$), psychosocial impact ($p\leq 0.001$) and avoidance and limiting behaviours ($p\leq 0.001$).

Conclusion The prevalence of postpartum UI in Palestinian women is consistent with global findings. Experiencing UI during the last pregnancy and higher maternal BMI were identified as key risk factors for postpartum UI. These results highlight the need for early detection, intervention and preventive strategies to mitigate the impact of postpartum UI on QoL.

INTRODUCTION

Urinary incontinence (UI), defined as a complaint of uncontrollable urine leakage, is a common problem among women,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study collected data from a large sample of 507 postpartum women, providing robust statistical power and enhancing the generalisability of the findings.
- ⇒ Multivariate analysis was employed to adjust for potential confounders, increasing the credibility and validity of the results.
- ⇒ Reliance on self-reported questionnaires, rather than clinical assessments, may introduce recall bias or lead to under-reporting due to the sensitive nature of urinary incontinence (UI).
- ⇒ The cross-sectional design limits the ability to establish causality or explore temporal relationships between risk factors and postpartum UI.
- ⇒ The study did not account for participants' exact postpartum timing, which may affect the interpretation of UI prevalence across different postpartum stages.

including those who are middle-aged.¹ The reported prevalence of UI in women varies widely across studies, ranging from about 5% to 70%.^{1 2} These discrepancies can largely be attributed to differences in research methodologies and the specific characteristics of the studied populations.² Many aspects of life are affected by UI, including sleep and sexual, social, physical and psychological health.³ Moreover, it contributes to the risk of social isolation and significantly affects women's quality of life (QoL), including their participation in social activities, physical activity and sexual relationships.⁴ Overall, women with UI experience a lower QoL than those without this condition.⁵

Several risk factors have been identified in the literature to be associated with postpartum UI, including higher maternal age, higher body mass index (BMI), diabetes, multiparity and vaginal delivery.⁶ Vaginal delivery, particularly when assisted with instruments such as vacuum or forceps, has been linked to a

higher incidence of postpartum UI due to birth-related trauma compared with caesarean section.^{7,8} Additional factors such as episiotomy, perineal tears, higher neonatal weight, larger newborn head size, gestational age at birth, smoking and constipation have also been reported as contributing to UI.⁷ Pregnancy itself can also contribute to UI through mechanical, hormonal and physiological changes,⁹ and experiencing UI during the last pregnancy has been shown to raise the risk of postpartum UI.^{2,10}

Although improvements in the treatment of UI have reduced morbidity over the last 20 years, primary prevention remains highly desirable.⁸ Failure to promptly recognise and address risk factors can exacerbate the condition, potentially resulting in a poor prognosis and significant treatment costs.^{11,12} Pregnant women, along with their families and society, bear a heavy burden. As a result, early detection and prevention are critical clinical components.¹³

The postpartum period is crucial in a woman's life, representing a significant transition into motherhood. It is vital for physical recovery from childbirth and emotional and psychological well-being.¹⁴ Ensuring positive postpartum health can strengthen mother-infant bonding, boost maternal confidence and enhance overall well-being.¹⁵ Understanding and addressing postpartum challenges, such as UI, are crucial for improving maternal health outcomes. Focusing on these issues, healthcare providers can offer more targeted guidance and support to women experiencing postpartum UI, ultimately contributing to improved postpartum care and well-being.

In Palestine, limited research has been conducted to assess the burden of UI among women. One study estimated the prevalence of UI among Palestinian women at 26.9%, noting a significant negative impact on their QoL.¹⁶ Another study focused on women with diabetes, reporting a higher prevalence of UI at 43.2%.¹⁷ Despite these findings, there is a notable gap in the literature regarding the prevalence, risk factors and impact of UI, especially among postpartum women in Palestine. Addressing this gap is important, as it can help raise awareness and educate about UI's prevalence and treatment options. This, in turn, can reduce the stigma and improve the QoL for affected women. This study aims to assess the prevalence of postpartum UI among Palestinian women, explore the association between mode of delivery and postpartum UI and investigate various risk factors that influence its prevalence.

METHODOLOGY

Study design and population

A descriptive cross-sectional study was carried out from September 2023 to March 2024. The research occurred at the Ministry of Health's (MoH) vaccination facilities in the North West Bank region. Given the high vaccination coverage rates in Palestine, primarily attributed to the efficient vaccination services provided by the Palestinian MoH,¹⁸ it was expected that nearly all recent postpartum

women would use these MoH-operated clinics to immunise their infants at the prescribed intervals (1, 2, 4, 6, 12 and 18 months). Each district in Palestine has its government vaccination clinic, which is managed by the primary healthcare (PHC) directorate. The study focused on three PHC directorates in the West Bank: Tulkarem, Jenin and Nablus. We selected these three PHC directorates for their geographical and demographical diversity, representing urban and rural populations in the North West Bank. Their high accessibility and the large portion of the population they serve made them ideal for assessing the prevalence and factors associated with postpartum UI.

The study targeted postpartum women attending vaccination clinics at PHC centres. Inclusion criteria included singleton pregnancy, full-term delivery and infants between 0 and 12 months. On the other hand, women with vaginitis, pelvic inflammatory disease, multiple pregnancies, a maternal history of genitourinary congenital abnormalities, a history of pelvic mass, prior pelvic or abdominal surgery, or UI caused by neurological diseases were excluded. Additionally, women with a history of hypertension or diabetes, urinary system diseases, chronic cough or constipation history, preterm birth and history of UI before the last pregnancy and those who underwent caesarean section following a trial of normal vaginal delivery were excluded from the study.

Sampling and sample size

The sample size determination was conducted using the formula: $[n = \frac{[DEFF * Np(1-p)]}{[(d^2/Z^2 * (N-1) + p * (1-p))]}]$. The calculated sample size amounted to 504 women, with a confidence level of 95%, an anticipated maximum prevalence of postpartum UI at 30% and a margin of error set at $\pm 4\%$. Participants were selected during their visits to the PHC centres' well-baby and vaccination clinics using a systematic random sampling method. After randomly choosing either the first or second woman, every subsequent postpartum woman attending the clinic was approached and invited to voluntarily participate until the required sample size was achieved.

We obtained the official authorisation from the Palestinian Ministry of Health to conduct the study at PHC centres. Women received a full introduction to the study's purpose and objectives. Eligibility criteria were evaluated in a private environment to protect participant privacy. The confidentiality of collected data was maintained throughout the study process. Each participant received detailed information regarding the study objectives and provided signed informed consent.

Measurement tools

We used an interviewer-administered questionnaire adhering to predefined inclusion and exclusion criteria for consenting participants. The questionnaire consisted of four sections. The first part gathered socio-demographic information, including age, residency, smoking habits, height (measured in metres) and weight

(measured in kilograms). BMI was calculated based on height and weight, and participants were categorised as follows: normal (BMI under 25 kg/m²), overweight (BMI between 25 and 29.9 kg/m²) and obese (BMI of 30 kg/m² or higher). The second part focused on gynaecological details of the women and their infants, such as parity, mode of delivery (normal vaginal delivery, operative vaginal delivery or caesarean section), whether an episiotomy was performed (yes or no), presence of obstetric perineal tears (yes or no), onset of UI during the last pregnancy (yes or no), number of living children, fetal birth weight (with fetal macrosomia defined as a birth weight of $\geq 4\text{kg}$ ¹⁹) and history of childhood enuresis. Operative vaginal delivery refers to a birth in which forceps, vacuums or another instrument is used to extract the fetus from the vagina.

The third part featured the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-UI SF), which includes three questions assessing the severity of UI. These questions evaluate the frequency of urine leakage, the volume of leakage and the extent to which UI impacts daily life, with a total score ranging from 0 to 21.²⁰ The total score ranges from 0 (indicating no UI) to 21 (indicating a very severe problem) and is categorised into three levels: slight (1–5), moderate (6–12) and severe (13–21).²¹ We employed the Arabic version of the ICIQ-UI SF, which has demonstrated reliability, comprehensibility and suitability for assessing UI in both research and clinical contexts.²²

Section 4 assesses the impact of UI on women's QoL using the Incontinence Quality of Life Questionnaire (I-QOL), specifically employing its validated Arabic version. This questionnaire was administered to patients classified as incontinent. The I-QOL comprises 22 items, each rated on a 5-point scale. The total score ranges from 0 to 100, with higher scores indicating better QoL.⁵ These items are further categorised into three subscales: avoidance and limiting behaviour, psychosocial impact and social embarrassment.²³

Three experts in the field evaluated the questionnaire. Subsequently, a pilot study involving a sample of 40 postpartum women was conducted. Based on the findings, the questionnaire was modified. Moreover, we calculated Cronbach's alpha coefficient to evaluate the reliability of the I-QOL instrument, resulting in a score of 0.963, signifying excellent reliability.

Data analysis

The acquired data were filtered and coded. Then, several statistical analyses were performed using IBM SPSS V.23 (IBM Corp., Armonk, New York). Descriptive analyses for continuous data involved computing the mean and SD, while categorical variables were described using frequencies and percentages. To examine the primary outcome variable, UI, categorised as 'Yes' or 'No', bivariate analyses were performed. This analysis used the χ^2 test for categorical variables and the independent t-test for continuous variables. Subsequently, multivariate analysis was

performed using logistic regression to adjust for potential confounders. Variables with a p value of less than 0.01 in the bivariate analysis and other relevant factors identified in the literature were included in the multivariate model. The model's outcomes were presented as adjusted ORs (aORs) and their 95% CIs. Using the Analysis of Variance (ANOVA) test, the UI severity levels were compared with the total scores of the three QoL subscales—avoidance and limiting behaviour, psychosocial impact and social embarrassment. The significant level was set at 0.05.

Patient and public involvement

Patients or the public were not involved in our research's design, conduct, reporting or dissemination plans.

RESULTS

Of 530 postpartum women invited to participate in the study, 23 declined due to time constraints and embarrassment about the interview. Consequently, the final analysis was conducted on 507 participants, resulting in a 95% response rate. The mean age of the postpartum women was 28.7 ± 1.4 years, with 36.7% reporting as current smokers and 60.4% classified as either overweight or obese. Regarding the mode of delivery, 49.9% of participants reported having a normal vaginal delivery, with 46.6% of them having an episiotomy and 20% experiencing some level of perineal tearing during delivery. As for neonatal characteristics, 7.9% of babies had macrosomia ($\geq 4\text{kg}$). **Table 1** presents the demographic and gynaecological characteristics of the study participants.

The study revealed that 69 (13.6%) postpartum women experience UI (95% CI 10.8% to 16.9%); among those with incontinence, 58% reported moderate severity and 20.3% reported marked severity. QoL was adversely affected across three domains: social embarrassment, avoidance and limiting behaviour and psychosocial impacts. Within these domains, the scores for avoidance and limiting behaviour were lower among incontinent women, with a mean score of 65.9 ± 20.8 (**table 2**).

In the bivariate analysis, postpartum UI exhibited significant associations with maternal BMI (OR 2.1; 95% CI 1.2 to 3.8; $p=0.044$), maternal age (OR 1.2; 95% CI 1.1 to 1.3; $p=0.025$) and the number of living children (OR 1.2; 95% CI 1.1 to 1.4; $p=0.017$). However, there was no significant relationship between postpartum UI and mode of delivery. In the multivariate analysis, overweight mothers were twice as likely to experience postpartum UI (adjusted OR 2; 95% CI 1.1 to 3.7; adjusted $p=0.033$) compared with those with average weight. Additionally, mothers who had experienced UI during previous pregnancies were 2.3 times more likely to have current postpartum UI (adjusted OR 2.3; 95% CI 1.3 to 3.8; adjusted $p=0.003$) (**table 3**).

The present study examined the association between the severity of postpartum UI and QoL across three dimensions. Findings indicated a significant statistical association between postpartum UI severity and the social

Table 1 Demographic and gynaecological characteristics of postpartum women and their infants (n=507)

Variables	Frequency (%)	Mean±SD
Mother's age		28.7±1.4
Current smoking		
Yes	186 (36.7%)	
No	321 (63.3%)	
Duration of smoking (years)		5.44±3.9
Mode of delivery (last pregnancy)		
Normal vaginal delivery	253 (49.9%)	
Operative vaginal delivery	37 (7.3%)	
Caesarean section	217 (42.8%)	
Vaginal delivery (n=290)		
Normal	253 (87.2%)	
Operative	37 (12.8%)	
Episiotomy		
Yes	135 (26.6%)	
No	372 (73.4%)	
Obstetric perineal tears		
Yes	58 (11.4%)	
No	449 (88.6%)	
Number of living children		2.4±1.4
Parity		
Primiparous	160 (31.6%)	
Multiparous	309 (60.9%)	
Grand multiparous	38 (7.5%)	
BMI category		26.5±4.5
Normal	201 (39.6%)	
Overweight	200 (39.5%)	
Obese	106 (20.9%)	
Baby birth weight		3.2±0.52
<4 kg	467 (92.1%)	
≥4 kg	40 (7.9%)	
Smoking during pregnancy		
Yes	58 (11.4%)	
No	449 (88.6%)	
Enuresis during childhood		
Yes	35 (6.9%)	
No	472 (93.1%)	
BMI, body mass index.		

dimension (p=0.005), psychosocial dimension (p<0.001) and avoidance and restriction behaviours (p<0.001) (table 4).

DISCUSSION

The results of the recent study conducted among postpartum women residing in the North West Bank of

Table 2 Prevalence of any kind of incontinence and the quality of life (n=69*)

	Frequency (%)	Mean±SD
Current UI (yes)	69 (13.6%)	
Experiencing UI during the last pregnancy (yes)	161 (31.8%)	
Severity of UI		
Slight	15 (21.7%)	
Moderate	40 (58.0%)	
Severe	14 (20.3%)	
Quality of life impact		
Social		73.1±22.3
Psychosocial		75.4±22.4
Avoidance and limiting behaviours		65.8±20.8
*The number 69 represents the total number of women experiencing postpartum UI, accounting for 13.6% of the entire study population (n=530). UI, urinary incontinence.		

Palestine offer valuable insights into several important aspects of UI and its relationship with QOL. The study revealed a significant prevalence of UI among postpartum women, affecting approximately 13.6% of participants. Moreover, a substantial majority, comprising 78.3% of those affected, reported experiencing moderate-to-severe UI. These results are consistent with some prior studies, although lower than findings from research in other regions, suggesting that UI is common among postpartum women. For example, 56.5% in Saudi Arabia,²⁴ 49.1% in Canada, 20.7% in France, 44.2% in the USA and 11.7% in Australia.²

The relatively lower prevalence of UI identified in our study compared with other countries can be attributed to several important factors. Cultural attitudes may play a pivotal role, as women in certain regions may feel reluctant to discuss sensitive pelvic health issues like UI, potentially leading to under-reporting. Additionally, variations in research methodologies, including the definitions of UI and the phrasing of survey questions, significantly influence the reported prevalence rates. An important consideration when interpreting our results is that we assessed UI prevalence across various postpartum stages without accounting for the exact time since delivery. As UI prevalence can fluctuate over time, with symptoms often improving as the pelvic floor recovers, the lack of stratification by postpartum intervals may have influenced the reported prevalence rates, potentially leading to over-estimation or underestimation of UI prevalence. Understanding these factors is important, and future research should explore them further to clarify the reasons behind the different rates of UI across countries.

There is significant inconsistency in the research about the various contributing factors to the risk of UI in postpartum women. The current study identified

Table 3 Bivariate and multivariate results on the relation between mothers' demographic and gynaecological characteristics and urinary incontinence (n=507)

Variables	Urinary incontinence			Multivariate analysis**	
	Yes (69)	No (438)	P value	Adjusted OR (95% CI)	Adjusted p value
Mother's age (mean±SD)	30.1 (±5.7)	28.5 (±5.2)	0.025	1.1 (0.97 to 1.2)	0.326
Current smoking					
Yes	27 (14.5%)	159 (85.5%)	0.650	–	–
No	42 (13.1%)	279 (86.9%)			
BMI category					
Normal	19 (9.5%)	182 (90.5%)		1	
Overweight	36 (18%)	164 (82%)	0.044	2.0 (1.1 to 3.7)	0.033
Obese	14 (13.2%)	92 (86.8%)		1.2 (0.56 to 2.6)	0.644
Smoking during pregnancy					
Yes	8 (13.8%)	50 (86.2%)	0.965	–	–
No	61 (13.6%)	388 (86.4%)			
Macrosomic baby					
Yes ≥4 kg	8 (20.0%)	32 (80.0%)	0.219	1.8 (0.74 to 4.3)	0.196
No <4 kg	61 (13.1%)	406 (86.9%)		1	
Birth weight in kg (mean±SD)	(3.27±0.51)	(3.19±0.52)	0.284	–	–
Parity					
Primiparous†	20 (12.5%)	140 (87.5%)	0.060	1	
Multiparous	39 (12.6%)	270 (87.4%)		0.87 (0.32 to 3.4)	0.847
Grand multiparous	10 (26.3%)	28 (73.7%)		1.4 (0.29 to 9.5)	0.751
Episiotomy					
Yes	19 (14.1%)	116 (85.9%)	0.854	1.2 (0.51 to 2.6)	0.751
No†	50 (13.4%)	322 (86.6%)		1	
Obstetric perineal tears					
Yes	6 (10.3%)	52 (89.7%)	0.441	1.7 (0.59 to 4.8)	0.328
No†	63 (14%)	386 (86%)		1	
Experiencing UI during the last pregnancy					
Yes	33 (20.5%)	128 (79.5%)	0.650	2.3 (1.3 to 3.8)	0.003
No†	36 (10.4%)	310 (89.6%)		1	
Enuresis in childhood					
Yes	5 (14.3%)	30 (85.7%)	0.904	–	–
No	64 (13.6%)	408 (86.4%)			
Number of living children (mean±SD)	2.81 (±1.9)	2.37 (±1.3)	0.017	1.2 (0.90 to 1.5)	0.235
Mode of delivery (last pregnancy)					
Norma vaginal delivery	38 (15%)	215 (85%)	0.632	1.5 (0.72 to 3.1)	0.284
Assisted vaginal delivery	5 (13.5%)	32 (86.5%)		1.6 (0.45 to 5.3)	0.477
Caesarean section	26 (12%)	191 (88%)		1	
Operative vaginal delivery					
Yes	5 (13.5%)	32 (86.5%)	0.810	–	–
No†	38 (15%)	215 (85%)			

*Multivariate analysis included variables that showed a significant or nearly significant association with the outcome in bivariable analysis ($p < 0.10$), as well as those supported by strong theoretical rationale.

†Reference group.

BMI, body mass index; UI, urinary incontinence.

**Table 4** Relationship between the severity of urinary incontinence and quality of life (social, psychosocial and avoidance and limiting behaviours)

	Social embarrassment	P value*	Psychosocial impact	P value*	Avoidance and limiting behaviours	P value*
Severity of UI (mean±SD)						
Slight	80.0±25.0	0.005	81.7±25.5	<0.001	76.0±19.5	<0.001
Moderate	76.4±17.8		80.3±16.1		68.8±17.1	
Severe	56.4±24.3		54.8±24.0		46.4±20.5	

*Analysis of Variance (ANOVA) test.
ANOVA, Analysis of Variance ; UI, urinary incontinence.

maternal overweight and experiencing UI during the last pregnancy as significant risk factors contributing to postpartum UI. Maternal BMI emerged as a significant predictor, with overweight mothers being twice as likely to experience postpartum UI compared with those with a normal weight. This finding is consistent with multiple studies, for example, the cross-sectional study done in Saudi Arabia²⁴ and many other studies.^{7–9} A high BMI might exacerbate pelvic floor weakness during pregnancy and vaginal delivery. These findings highlight the importance of considering weight and healthy lifestyle counselling during antenatal and postpartum care in reducing the risk of postpartum UI. However, our multivariate analysis yielded an unexpected result: obesity was not significantly associated with UI. This contradicts previous studies that have reported a strong association between obesity and UI. Interestingly, our findings are in line with a meta-epidemiological study that examined the relationship between overweight, obesity and UI risk in middle-aged and older women. No significant association was found in their subgroup analysis of stress UI,²⁵ suggesting that this area warrants further investigation. A potential explanation for the lack of association observed in our study could be the small sample size within the obese women's category, which may have limited the statistical power to detect the expected relationship.

The study found that women who experienced UI in their last pregnancy are 2.3 times more likely to have postpartum UI. Many studies have demonstrated a strong relationship between UI during pregnancy and a heightened likelihood of UI during the postpartum period. A systematic review and meta-analysis revealed that experiencing UI during pregnancy constitutes a significant risk factor for postpartum UI.²⁶ Additionally, a prospective cohort study reported that UI both before and during pregnancy significantly correlates with UI occurrences 3 months following childbirth.²⁷ These findings suggest that, in most instances, UI originates during pregnancy and persists after childbirth, as highlighted by Leroy *et al.*²⁸ Furthermore, Kokabi *et al* proposed that pregnancy can trigger mechanical, hormonal or physiological alterations predisposing individuals to UI.⁹ Early identification of UI during pregnancy, along with providing counselling

and education for those affected, can help mitigate its impact and enhance the QoL for mothers.

Numerous studies have investigated the relationship between mode of delivery—specifically, vaginal delivery versus caesarean section—and postpartum UI, yet the findings remain inconsistent. While some research indicates that vaginal delivery increases the risk of postpartum UI compared with elective caesarean sections,^{7–9 29} our study found no significant association between the mode of delivery—whether normal vaginal or operative vaginal versus caesarean section—and the prevalence of postpartum UI. Our study specifically excluded women who were initially admitted for vaginal delivery but required emergency caesarean sections due to complications. Consequently, our analysis focuses solely on caesarean sections performed on patients not in labour rather than including all caesarean deliveries. This approach enabled a more precise evaluation of the direct impact of delivery mode on postpartum UI outcomes. This finding aligns with previous research, including the study by Mutairi *et al*, which also reported no significant link between mode of delivery and UI.²⁴ Similarly, Groutz *et al* reported that the prevalence of postpartum UI remains comparable between vaginal delivery and caesarean section performed due to obstructed labour,³⁰ which is consistent with the conclusions reached by other studies.^{28 31} Practically, these results imply that while vaginal delivery has been associated with higher rates of postpartum UI in some studies, the actual risk may vary widely and is not universally increased compared with caesarean section. Clinically, healthcare providers should consider individualised risk factors and patient preferences when discussing mode of delivery options with pregnant women rather than solely focusing on UI risk. This approach can help optimise maternal health outcomes and patient satisfaction following childbirth.

The findings indicate a negative relationship between UI and QoL across various dimensions. As the severity of UI increases, there is a decline in QoL scores across the domains of avoidance and limiting behaviour, social embarrassment and psychosocial impacts. These results are consistent with previous studies indicating that as the severity of UI symptoms worsens, there is a significant

decrease in QoL scores, reflecting a possible influence on behaviour, psychology and social activities.^{5 32} The implications of these results highlight the multifaceted impact of UI on various aspects of women's lives and emphasise addressing both the physical and psychosocial implications of UI. A recent systematic review and meta-analysis highlighted the substantial negative impact of postpartum UI on women's physical and psychological well-being, recommending early identification of symptoms and targeted intervention to improve postpartum QoL.⁷ Addressing this issue can result in enhanced health outcomes and more social engagement, eventually facilitating a more favourable transition into motherhood.

This study provides valuable information on postpartum UI prevalence and risk factors. However, several limitations warrant consideration. First, the cross-sectional design limits our ability to establish causality or evaluate temporal relationships between variables. Second, the research was conducted in a specific region (North West Bank, Palestine), which may limit the generalisability of the findings to other populations. Third, reliance on self-reported data rather than clinical examinations may lead to recall bias, as participants might feel embarrassed or minimise the severity of their symptoms, potentially resulting in under-reporting. Fourth, although the sample included women at varying postpartum stages, the exact time since delivery was not recorded, which may affect the interpretation of UI prevalence across different postpartum phases. Finally, while the primary objective was to assess overall postpartum UI prevalence about delivery modes, the study did not differentiate between urgency UI and stress UI. This distinction could have enriched the findings by offering a more detailed understanding of the specific risks and mechanisms associated with each type. Future research should consider this distinction to better inform targeted preventive and therapeutic approaches. Additionally, longitudinal research employing objective measurements of UI severity among Palestinian women is recommended to gain a more comprehensive understanding of postpartum UI dynamics and its effects on maternal health.

Conclusion

This study highlights the significant prevalence of UI among postpartum women in Palestine, with 13.6% of participants affected. It also reveals a significant association between UI and factors such as BMI and a history of UI in previous pregnancies. Additionally, the study indicates that the severity of UI adversely impacts QoL, with women experiencing moderate-to-high severity of UI reporting significant challenges, including social embarrassment and limitations in daily activities. We recommend that healthcare providers prioritise identifying women at higher risk and implementing educational initiatives to raise awareness about UI, treatment options and preventive measures. Screening and counselling tailored to overweight or obese mothers and those with previous UI may

reduce stigma, improve QoL and address the condition's prevalence and severity effectively.

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Ethics approval This study involves human participants and was approved by Institutional Review Board at An-Najah National University (Reference #: Fam.Med. Oct. 2023/43). Participants gave informed consent to participate in the study before taking part.

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Data availability statement Data are available upon reasonable request. The data used to support the findings of this study are available from the corresponding author upon request.

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