ORIGINAL ARTICLE

Postnatal Urinary Incontinence: Prevalence and Factors Associated with It in a Malaysian Population

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ABSTRAK

Tujuan kajian ini adalah untuk menyiasat kelaziman hilang kawalan kencing selepas bersalin (PNUI), faktor-faktor risiko yang berkaitan dengannya dan penglibatan dalam mengamalkan penjagaan selepas bersalin mengikut tradisi Melayu (TMCC) di Kelantan, Malaysia. Satu kajian keratan rentas telah dijalankan di kalangan 362 wanita selepas bersalin yang berumur antara 18-45 tahun dan antara tiga hingga lima bulan selepas bersalin. Para peserta telah dipilih melalui persampelan mudah di enam Klinik Kesihatan Ibu dan Anak yang terletak di daerah yang agak sama. Analisis deskriptif dan inferensi termasuk, analisis faktor, Pearson khi-kuasa dua, ujian Mann-Whitney U dan analisis terurus logistik telah digunakan untuk menganalisis data. Secara keseluruhan, PNUI dilaporkan oleh 80 wanita (22.1%). Cara bersalin melalui faraj dikaitkan dengan PNUI. Semua wanita selepas bersalin dalam konteks kajian didapati mengamalkan TMCC. Kajian ini juga menunjukkan bahawa wanita yang mempunyai PNUI lebih cenderung untuk melibatkan diri dalam komponen 'Penjagaan Badan' TMCC. Hilang kawalan kencing adalah lazim di kalangan wanita selepas bersalin di Kelantan, Malaysia. Penyelidikan selanjutnya terhadap kesan komponen 'penjagaan badan' TMCC pada PNUI perlu dilakukan.

Kata kunci: wanita selepas bersalin, kelaziman, faktor-faktor risiko, penjagaan selepas bersalin tradisional, hilang kawalan kencing

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ABSTRACT

The aim of this study was to investigate the prevalence of postnatal urinary incontinence (PNUI), the risk factors associated with it and postnatal women's (PN) level of engagement in practicing traditional Malay confinement care (TMCC) in Kelantan, Malaysia. A cross-sectional survey was conducted among 362 postnatal women aged between 18 – 45 years and who were between three to five months post-delivery. Participants were selected through convenience sampling at six Maternal and Child Health Clinics located in comparatively similar districts. Descriptive and inferential analyses including, factor analysis, Pearson chi-square, Mann-Whitney U test and logistic regressions analysis were used for data analysis. Overall, PNUI was reported by 80 women (22.1%). Vaginal delivery was associated with PNUI. All PN women within the study context practiced TMCC. The findings revealed that women who had PNUI were more likely to engage in a higher level of the 'Body care' component of TMCC. UI is prevalent among PN women in Kelantan, Malaysia. Further research into the impact of the 'body care' component of TMCC on PNUI is required.

Keywords: postnatal women, prevalence, risk factors, traditional postpartum care, urinary incontinence

INTRODUCTION

Urinary incontinence (UI) is 'the complaint of any involuntary leakage of urine' (Abrams 2002). Its prevalence rate in women in the general global population ranges from 20-71 percent, while in pregnant women the rate is 36-65 percent (Burgio et al. 2003; Glazener et al, 2006). Compared to antenatal, postnatal women are susceptible to UI due to various risk factors such as the birthing process itself (Burgio et al. 2003). Although the fertility rate is higher in Eastern countries, including Malaysia, studies on UI in PN women are scarce. In western countries, the prevalence rate in PN women ranges from 11.4-31 per cent (Boyles et al. 2009; Burgio et al. 2003). Only two published studies of PNUI on Malaysian population were found, both conducted with women in the general population, not specific to women of childbearing age (World Health Organization 2003; Zarina et al. 2005).

Urinary incontinence (UI) most commonly is a transient condition that would normally resolve within the first three months post-delivery (Burgio et al. 2003; Farrell et al. 2001). In few women, however, if left untreated, the problem persists after delivery resulting in chronic postnatal urinary incontinence (PNUI) (Burgio et al. 2003). The relationship between traditional Malay confinement care (TMCC) practice and postnatal women wellbeing however, had not been previously examined, nor its effect on PNUI. The aim the present study was to investigate the prevalence of postnatal urinary incontinence (PNUI), the risk factors associated with

it and postnatal women's (PN) level of engagement in practicing traditional Malay confinement care (TMCC) in Kelantan, Malaysia.

MATERIALS AND METHODS

PARTICIPANTS AND DATA COLLECTION

This cross-sectional questionnaire survey was conducted from April to June 2008 in six Maternal and Child Health (MCH) clinics in six districts in Kelantan, Malaysia. Sample size was determined based on the 30% prevalence rates of UI in PN women as reported in the literature (Huebner et al. 2010; Glazener et al. 2006). A one-sample proportion formula for a prevalence study with specified absolute precision was used in this study (Creative Research Systems 2010; Lwanga & Lemeshow 1991). This power calculation, was based on a sampling frame of 420 PN women (available at the time allocated for data collection based on the previous statistical records of each clinic) and allowed for a five percent error, $\mu = 0.05$ and 95 percent confidence internal. An additional 10 percent was included to ensure that the sample size was adequately powered to overcome the possibility of drop-outs/withdrawals and missing data (Boriboonhirunsarn 2011). On this basis, it was estimated that 355 PN women were required for the study. Convenience sampling was used to select participants among PN women who attended the clinics for their child immunization during the data collection period. All PN women at three to five months postpartum, aged between 18 to 45 years old and able to read and understand Malay language presenting at the six clinics were eligible for inclusion. Exclusion criteria were :(i) PN women with less than three or more than five months postpartum and (ii) age older than 45 years.

MEASUREMENT TOOLS

Prevalence of PNUI

The prevalence was assessed through this question "Do you ever experience accidentally leakage urine even with a small amount within the last 12 – 14 months (include before pregnancy)?" where participants required to choose the answer i.e. either 'Yes' or 'No.'

Associated factors of PNUI

Associated factor was assessed within two areas: participants' background and their practice of TMCC.

Background characteristics

Twenty six questions pertained to participants background include maternal age, age at first delivery, education level, and monthly family income. In this section, obstetrics and health histories including smoking and bowel habit, and the type of toilet been used were also asked. Information about the degree of urine leakage during pregnancy and post-delivery was gathered using the Revised Urinary Incontinence Scale

Level of engagement of Traditional Malay Confinement Care (TMCC)

A self-developed scale was used to measure the practice of TMCC among PN women in this study. The questions developed for this scale was based on the 13 TMCC items. Face validity and user friendliness of the scale were confirmed by a group of experts including a gynecologist, three certified midwives and two traditional midwives. Its structural validity and reliability was later tested on the collected data.

Written informed consent was obtained before entering this study and no further physical examination and investigation was carried out. A nursing member at each health clinic was assigned to distribute the self-completion questionnaire to eligible participants whilst waiting for their children to be immunized.

STATISTICAL ANALYSIS

Statistical analysis was performed using SPSS 18.0. The prevalence of PNUI and the relationships between PNUI and possible associate factors were analyzed. Data are summarized as means standard deviations or percentages, as appropriate. Chi-square tests were used to analyze categorical variables. Factor analysis was used to identify latent factors underlying the TMCC scale and to test the structure validity of the self-developed scale. Following this, Cronbach's test was utilized to assess the internal consistency of items in the TMCC scale. The scores of each factors identified from the TMPC scale between women with PNUI and without PNUI were also compared (body care, nutrition-hydration and rest) using the Mann-Whitney U test in order to identify the differences of engagement in the TMCC in the two groups. As this is a newly developed scale, manual calculation was made to assess the level of TMCC practice by PN women. Scores from all items of the three factors of TMCC scale were range from 0 to 100%, with a higher score indicating higher level of practicing TMPC (0-29% = Not practice; 49 % = slightly practiced; 50-79 % = moderately practiced; 80-100 % = strictly practiced). Potential risk factors for PNUI were identified through a simultaneous logistic regression. A *P* value of 0.05 was considered as a level of significance.

ETHICAL CONSIDERATION

Ethics approval was obtained for the study (Reference: SBRE 3987) from the University Institutional Review Board (Flinders University) and the Government of Malaysia. Permission to conduct the study was also granted by the Medical Research and Ethics Committee, Malaysian Ministry of Health and also from the Director of the six health clinics.

RESULTS

A total of 395 PN women presented in the MCH clinics which fulfilled the inclusion criteria during the study period. Of those, 362 (91.6%) completed the questionnaires and were used as our final analytic sample. The prevalence of PNUI for women who

attended six health clinics in Kelantan, Malaysia over the study period was 22.1% (*n*=80).

The majority of PN women in this study (63.3%) were less than 25 years at their first pregnancy (*M* = 23.1, *SD* = 4.5). Most participants (40.9%, *n*= 148) had more than four children (grand multiparous), the average number of children was 2.95 (*SD* = 1.6) for all participants. Numbers of women in the three postnatal periods were almost equal (three months 31.8%, four months 32.9%, and five months 35.4%). The majority (86.7%) had undergone spontaneous VD for their last delivery, whereas the rest (13.3%) had intervention deliveries (forceps, vacuum and caesarean). The children's birth weight, however, was similar between the two groups, with the average weight of 3.1 (*SD* = 0.5). The majority (87.3%) were healthy with only 12.7 percent (*n*=46) reporting they had a medical illness such as hypertension (3.3%, *n*=12) and diabetes (2.8%, *n*=10). Consistent with these results, only 31.2 percent said they had taken medication during the study. A contraceptive drug was the main medication taken by the majority of respondents (70.8%, *n*=80). Only two participants had taken either an antihypertensive drug (0.3%) or a diabetic drug (0.3%). Constipation was rare and the majority of participants (69.1%) used the squatting toilet. Only 15.5 percent (*n*=56) of the PN women said they had undergone obstetric/ gynecological surgery.

Of the 13 initial items of TMCC, three main domains were identified through factor analysis: 1) 'body care', 2) 'nutrition-hydration' and 3) 'rest' as in

Table 1: Traditional Malay Postpartum Care Items

	TPMC items
1.	Main food taken
2.	Cooking styles
3.	Types of drink taken
4.	Amount of drink taken
5.	Keep both legs closer
6.	Walk slowly
7.	Restict routine activities(house chores)
8.	Avoidence of sex
9.	Whole body massages
10.	Pelvic area compress with warm stone
11.	Warm bath with mixed herbs
12.	Applying traditional gridle
13.	Take traditional remedies

Table 1. Cronbach's alpha coefficients of the TMCC scale were 0.7, 0.6 and 0.5 for Factor 1, Factor 2 and Factor 3 respectively. The results suggest an acceptable internal consistency of the TMPC instrument with three factors. Mean-inter correlation between 0.2 and 0.4 is viewed as an adequate indicator of internal consistency for a short scale such as the TMCC (Briggs & Cheek 1986; Polit & Beck 2014).

TMCC was practiced by all participants (*n*=362) at some point during their confinement period. The majority (73%, *n*=266) practiced it moderately. Seventy one (88%) of the 80 women who experienced PNUI said the onset was during pregnancy. Sixty two (76%) of the 80 women who experienced PNUI had stopped PNUI between two days to two months after giving birth, while the remaining 16 women (20%) were still experiencing UI more than three months postpartum during the study period (Figure 1).

Table 2: Related factors to PNUI

Variables	Non-PN UI (n=282) %	PN UI (n=80) %	P=value*
Delivery methods			
Spontaneous	(239) 84.8	(75) 93.8	0.03*
Forceps	-	(1) 1.3	
Vacuum	(3) 1.1	-	
Caesarean section	(40) 14.2	(4) 5.0	
Maternal age (years)			
< 25	(54) 19.1	(19) 23.8	0.64
26 – 29	(71) 25.2	(25) 31.3	
30 – 34	(76) 27.1	(14) 3.1	
> 35	(81) 28.7	(22) 27.5	
Child's birth weight			
< 3 kg	(140) 49.6	(40) 50	0.87
> 3 kg	(142) 50.4	(40) 50	
BMI			
Underweight	(26) 9.2	(10) 12.5	0.88
Healthy weight	(181) 64.2	(47) 58.8	
Overweight	(59) 20.9	(17) 21.3	
Obese	(16) 5.7	(6) 7.5	
Family income			
< MYR 500.00	(61) 21.6	(22) 27.5	0.24
MYR 500.00 - 1000.00	(121) 42.9	(30) 37.5	
MYR 1000.00 – 1500.00	(48) 17.0	(14) 17.5	
MYR 1500.00 – 2000.00	(23) 8.2	(2) 2.5	
> MYR 2000.00	(29) 10.3	(12) 15.0	
Parity			
1	(76) 27.0	(30) 37.5	0.19
2 – 3	(87) 30.9	(21) 26.3	
> 4	(119) 42.2	(29) 36.3	
Types of toilet used			
Sitting toilet	(55) 19.5	(12) 15.0	0.57
Squatting toilet	(191) 67.7	(59) 73.8	
Both	(36) 12.8	(9) 11.3	

*Chi square analysis

Vaginal delivery was found to be associated with PNUI ($P < 0.03$) in this study (Table 2). Other variables such as maternal age, child's birth weight, BMI, family income, parity and toilet type were not associated with PNUI ($P>0.05$). Women with PNUI and without PNUI differed significantly for 'body care' (mean rank 168.60 compared to 226.99; p<0.000) (Table

Table 3: Ranks of Body care, Nutrition and Rest on PNUI

	PNUI	N	Mean Rank	Sum of Ranks
Factor 1 Body care	Non-PNUI	282	168.60	47544.00
	PNUI	80	226.99	18159.00
	Total	362		
Factor 2 Nutrition-Hydration	Non-PNUI	282	177.62	50090.00
	PNUI	80	195.16	15613.00
	Total	362		
Factor 3 Rest	Non-PNUI	282	176.82	49863.00
	PNUI	80	198.00	15840.00
	Total	362		

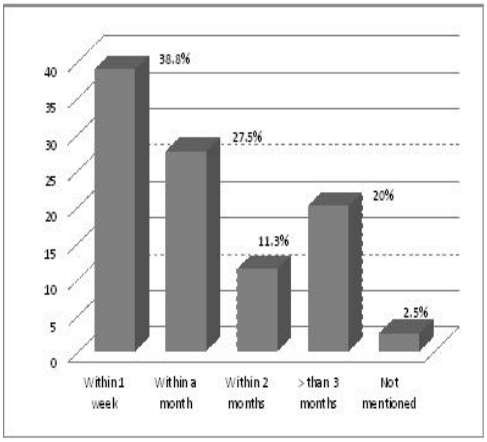

Figure 1: Resolution of PNUI after childbirth (n=80)

3). This revealed that women who had PNUI were more likely to engage in a higher level of 'Body care'. Although vaginal delivery and 'Body care' were indicated as significant in the initial analysis, they were excluded from further analysis due to sampling bias. These includes the difference between numbers of multiparous (70.7%, *n*=256) and primiparous 29.3% (n=106) in this study. In addition, more PN women had delivered vaginally (86.7%, *n*=314) and the rest had assisted deliveries (13.2%, n=48). With these limitations, two variables emerged from the study, which could have potential relationship with PNUI (age at first delivery less than 25 years old and monthly family income less than RM1000.00 (USD300)) and other predictor variables identified from the literature were further tested through simultaneous logistic regression to model the risk of PNUI. However, the model was unable to indicate any potential predictor for PNUI, which indicates the needs for further exploration of this issue in future research.

DISCUSSION

The prevalence rate of PNUI identified in our study is 22.1%. Our results also indicate that 20% of the women in the study who experienced PNUI were still experiencing it a three months post-delivery. This finding is similar to other studies that between 8.2-29% of PN women reported as still experiencing UI at three months post-delivery (Pregazzi et al. 2002; Torrisi et al. 2007; Glazener et al. 2006). Our study also revealed that vaginal delivery has a positive association with PNUI, which

is consistent with Ahmadi et al. (2010) and Farrell et al. (2001). In addition, women who had PNUI were more likely to engage in a higher level of 'Body care', a component of TMPC than those without PNUI.

The prevalence rate identified in our study is within the range found in studies in the Western countries. However, our study was unable to clarify causes and types of PNUI due to the use of self-administered survey without clinical assessment. In addition, the definition of UI and the use of a convenience sample may also have impacted on the prevalence rate compared with other studies (Abram et al. 2005; Minichiello et al. 2004). It is acknowledged that determining prevalence rates of PNUI is difficult as there are different definitions, and risk factors of PNUI. Some factors may attributes to these variances such as different sample size and age range of women involved. It is also suggested that while UI in younger women is mostly associated with vaginal delivery, other factors may differs in a much older women. Age and the existence of other diseases may also contribute to the occurrence of UI in this group of women by influencing the healing process and also depending on their body's ability to compensate for the symptom (Glazener et al. 2006).

Similar to other studies (Burgio et al. 2003; Farrell et al. 2001), the findings of this study suggests that PNUI is a transient condition for the majority of women who experience it post-delivery. Also, this study have found that a reasonable proportion of the study populations were still experiencing UI at three months post-delivery, as indicated in other studies (Pregazzi et al. 2002; Torrisi et al. 2007). This suggests, much more attention should be paid to this group when planning health care for PN women as they may suffer from persistent UI if the problem remains untreated (Burgio et al. 2003). In order to address clinical management for PN women with persistent UI, it is suggested that a standard time period should be established to determine the prevalence rate for PNUI in future research. Considering there is evidence that indicates the symptom resolves within three months post-delivery and exceeding this period onwards may indicate persistent PNUI, measurement at three and six months postpartum is suggested. The use of a standard period is important to allow comparison between studies on prevalence rates of UI and management outcomes of UI.

It is acknowledged that childbearing-age women are susceptible to PNUI because of the many risk factors related to pregnancy and the delivery process. The most common risk factors associated with PNUI includes UI before pregnancy, UI beginning during pregnancy, vaginal delivery, maternal BMI, maternal age of more than 30 years old, and instrumental delivery. Stainton et al. (2005) examined those who were at risk for PNUI following their first pregnancy and birth. The findings showed that urine leakage before the first pregnancy was a key predictor of PNUI. Those with pre-pregnancy UI were 4.14 times more at risk of experiencing PNUI one year after giving birth than those without previous urine leakage (Stainton et al. 2005). Similarly, Fritel et al. (2004)

reported that UI before pregnancy was one of the independent risk factors for PNUI [OR18.7; 95% CI 3.6-96.4]. For our study however, only 5% (n=362) of the participants experienced the symptoms before pregnancy.

Urinary incontinence that begins during pregnancy is also associated with PNUI. This can be seen in a longitudinal cohort study (Vinktrup et al. 2006) in which the prevalence of postnatal SUI was significantly higher ($p<0.01$) in those who had UI during the first pregnancy (58%). This finding is supported by other studies where UI during pregnancy was found to strongly predict PNUI (Arrue et al. 2010; Foldspang et al. 2004). However, other research findings showed that the group of women who experienced PNUI was different from the group who experienced UI during pregnancy (Huebner et al. 2010). The findings identified that the women who had PNUI were not the same women who were incontinent before delivery and vice versa in almost 50 percent of cases. PNUI beginning during pregnancy was most commonly reported by PN women in previous studies (Burgio et al. 2003). Similarly, the majority of women who indicated that they experienced PNUI (89%, *n*=71) in our study said the onset was during pregnancy.

It has been reported that vaginal birth damages the tissue of the pelvic floor, mainly affecting the nerve supply to the pelvic floor muscles and therefore their strength. There are three potential causes of injury to pelvic floor muscle tissue; direct muscular injury, direct connective tissue damage, and direct neural damage or damage during remodeling (McLean & Cardozo 2002). Abnormal damage of pelvic floor muscles following vaginal birth may cause morphological and functional changes that are not entirely reversible (Connoly & Thorp 1999) and may later impair the bladder neck support, thereby contributing to the development of PNUI [41]. UI may persist for those who have undergone repeated vaginal delivery (Burgio et al. 2003; Farrell et al. 2001). Vaginal delivery is associated significantly with PNUI (OR 2.360; P=0.002) as reported previously (Burgio et al. 2003). This is similar to our study which showed that delivery method was significantly associated with PNUI (p= 0.03) (Table 2).

The components of TMCC share many similarities with traditional care practices in other Asian countries. This includes rest, food, family support and duration of the care practice. The TMCC however, appears to have some unique components such as whole body massage, pelvic area warm compress and warm bath with herbs (Dennis et al. 2007). Our study found that women who had PNUI were more likely to engage in a higher level of 'Body care', than those without PNUI. These findings reflect that most Malay PN women were obsessed towards TMCC. Since TMCC has been practiced by PN women in Malaysia for so many years now, this finding need to be challenged in future research to confirm its effectiveness to maintain women's overall health including prevention of PNUI. To date, there has been no study published on TMCC and postnatal incontinence. Henceforth, whether

TMCC actually has any benefit in PNUI or allow resolution of PNUI earlier is not known.

IMPLICATIONS FOR PRACTICE

There is a requirement for additional professional education programmes in continence-specific care for health professionals (HPs) in the clinical area, particularly those at primary care settings because they would be the first to meet women with urinary symptoms. Accordingly, early assessment of PNUI can be undertaken in the primary healthcare setting because it is a centre of health reference and serves a large number of women in the community. As pre-pregnancy UI and UI during pregnancy are some of the risk factors of PNUI and PNUI itself is a risk factor for long-term UI in women, screening should be done for all women during their first visit to antenatal clinic to identify those at risk for PNUI.

STUDY LIMITATIONS

Due to the nature of descriptive study and sampling bias, this study was unable to explore causes and types of PNUI. In addition, due to small numbers of women with PNUI, future research is suggested with a larger sample size and more in depth study in relation to the prevalence and risk factors of PNUI including the impact of the body care component of PNUI.

CONCLUSION

In this study, UI is prevalent among PN women in Kelantan, Malaysia. Vaginal delivery was the only variable found to be significantly associated with PNUI. Additionally, the practice of 'body care', a component of TMCC, was found to have positive association with PNUI.

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