

Effect of Acupoint Hot Compresses on the Occurrence of Postpartum Urinary Retention and Its Consequences among Women after Vaginal Delivery

Wesam Kamal Ali¹, Walaa Mahmoud Abdelrahman² & Afaf Hassan Ahmed³

¹ Assistant Professor of Obstetrics and Gynecologic Nursing Department, Faculty of Nursing, Damanhour University, Egypt.

² Lecturer of Maternal and Newborn Health Nursing, Faculty of Nursing, Cairo University, Egypt.

³ Assistant professor of Obstetrics and Gynecologic Nursing Department, Faculty of Nursing, Alexandria University, Egypt.

Abstract

Background: Acupoint hot compresses during the immediate postpartum period may benefit women after vaginal delivery by reducing the occurrence of postpartum urinary retention and its consequences. **The study aims to** determine the effect of acupoint hot compresses on the occurrence of postpartum urinary retention and its consequences among women after vaginal delivery. **Research design:** A quasi-experimental research design. **Setting:** This study was conducted at the obstetrics and gynecology unit at the Medical National Institute in Damanhour. **Subjects:** A convenience sample of 80 postpartum women. **Tools:** Four tools were used; **Tool (I):** Basic data structured interview schedule, **Tool (II):** Visual Analog Scale (VAS), **Tool (III):** Infant breastfeeding Assessment tool (IBFAT) and **Tool IV:** Edinburgh Postnatal Depression Scale (EPDS). **Results:** A statistically significant difference was found between the two groups after intervention in relation to the incidence of postpartum urinary retention, afterpain, breastfeeding and emotional disorders ($p \leq 0.005$). Finally, the findings revealed a positive statistically significant correlation between the occurrence of urinary retention and afterpain as well as emotional disorders. However, a statistically significant negative correlation was found between the occurrence of urinary retention and breastfeeding. **Conclusion:** Acupoint hot compresses can be one of the essential non-pharmacological interventions to reduce postpartum urine retention, afterpain, and emotional disorders. It also improves breastfeeding. **Recommendations:** Acupoint hot compresses may potentially serve as a supplementary measure in the provision of postnatal healthcare.

Keywords: *Acupoint hot compresses, Postpartum urinary retention, Consequences & Vaginal Delivery.*

Introduction

Post-partum urinary retention (PUR) is a frequently encountered, under-recognized phenomenon that possesses a profound impact on women in the immediate days after vaginal delivery. It has traditionally been described as the inability to spontaneously urinate within a period of six and a half hours after a vaginal delivery (Avondstondt et al., 2020).

Postpartum urine retention is divided into three types: symptomatic (overt), asymptomatic (covert), and persistent. Overt retention manifests as an inability to void, whereas covert retention pertains to post-void residual volumes of >150 mL subsequent to the first spontaneous urination, despite not exhibiting any signs of urinary retention. It is accompanying with incomplete bladder emptying as determined through the use of an ultra-sonography or catheterization (ul Ain et al., 2021). Persistent urinary retention may continue beyond the third day after giving birth and in rare instances, endure for several weeks (Lauterbach et al., 2018).

The normal mechanism of urination involves the initial relaxation of the pelvic floor musculature and

the urethral sphincter, simultaneously accompanied by rising intra-abdominal pressure and detrusor muscle contractions. The debilitation of the detrusor muscle, irrespective of the state of relaxation of the urethra, can restrict its ability to expel urine. Despite the pathophysiology of PUR remains unclear, numerous factors pertaining to the physiological, neurological, and mechanical processes occurring throughout pregnancy and vaginal delivery have been documented (Li et al., 2020).

During the gestational period, various physiological adaptations take place. These adaptations include increased bladder capacity, elongated urethral length, enhanced urethral closure pressure, and elevated urethral pressure, which serve as preventive measures against urinary incontinence during pregnancy. These changes will lead to a higher occurrence of PUR. Additionally, the presence of peri-urethral and vulvar edema following childbirth can result in a physical hindrance which obstructs the bladder outlet. This obstruction arises as a consequence of excessive expansion of the bladder leading to potential long-term harm to the detrusor muscle. Consequently, the physiological adjustments that occur after pregnancy

and the trauma endured during the process of vaginal childbirth possess the capacity to give rise to PUR (Li et al., 2020).

Untreated postpartum urine retention has the potential to cause recurrent overdistention injury, which may cause damage to the parasympathetic nerve fibers in the bladder wall and the detrusor muscle. In extremely rare circumstances, the occurrence of postpartum urinary retention can potentially result in bladder rupture, an entirely avoidable complication that poses a threat to the individual's life (Nutaitis et al., 2023).

Furthermore, excessive filling within the bladder impedes the process of uterine regeneration, increases afterpain, decreases lactation, amplifies postpartum hemorrhage, triggers urinary tract infections and permanent voiding difficulties as well as urinary incontinence in severe instances (Zhu & Zhang, 2021). These elements work together to produce negative feelings like anxiety, stress, and desperation, threatening the parturient general health. (Li et al., 2020; ul Ain et al., 2021).

Early detection and identification of risk factors as well as timely intervention of PUR are imperative in reducing its consequences (Lauterbach et al., 2018). Postpartum urine retention is associated with a variety of risk factors, including nulliparity, prolonged labour (particularly in the second stage), instrumental or assisted delivery, perineal trauma, tissue edoema, a caesarean delivery, and regional analgesia. Additionally, urinary retention may also arise from nerve damage during childbirth. In addition, women fear urination after giving birth because it can cause urine retention due to their painful and damaged perineal incisions. However, many of the women who suffer from postpartum voiding don't have any specific risk factors. (Lauterbach et al., 2018).

When PUR results, an indwelling catheter is often used and kept in place for a period of 24 to 72 hours. In situations where the symptoms persist, it may be recommended to proceed with catheterization for a week or even longer. Others encourage intermittent catheterization as it has the potential to reduce the likelihood of urinary infection. However, it is worth noting that there is a lack of clinical recommendations concerning the management of postpartum urinary retention. Consequently, this results in either inadequate or over-treatment of patients in the field of clinical practice (Mulder et al., 2018).

Accordingly, the adoption of scientific and efficient nursing interventions is of utmost importance in the prevention of urinary retention (Lauterbach et al., 2018; ul Ain et al., 2021). Previous studies have uncovered the limitations in conventional approaches, such as the application of a hot compress, listening to the sound of flowing water, providing privacy and a

relaxed place to rest indicating that these methods do not possess sufficient advantages in the realm of preventive nursing care (Hafizi et al., 2021; Lamblin et al., 2019; Lauterbach et al., 2018).

However, these methods were ineffectual for a subset of postpartum women, which could lead to suboptimal provision of care during the postpartum period as well as diminished levels of satisfaction with treatment (Li et al., 2020).

The Traditional Chinese Medicine (TCM)-based auricular acupressure method regulates the internal organs via physical activity and the promotion of Qi of the Three Jiao, ultimately facilitating the revitalization of the detrusor muscle and smooth the function of the internal organs, thus enhancing the synergistic effect of the urethral sphincter and the bladder forcing muscles. It may facilitate urination and diminishes the occurrence of urinary retention by improving nerve excitability and tissue tension. So, joint care measures, including comprehensive nursing and the application of acupressure, are highly recommended in the field of clinical practice (Dolezal et al., 2019; Geng et al., 2022; Lamblin et al., 2019).

Early puerperium rehabilitation has a great deal of potential with traditional Chinese medicine because of its unique theoretical framework and durable clinical application. The utilization of acupressure may have a notable and advantageous outcome, particularly in promoting the initial act of urination subsequent to a vaginal delivery (Sudhakaran, 2019; Wang et al., 2018).

As a noninvasive, nonpharmacologic technique, hot compresses can successfully prevent the potentially harmful side effects of medication. (Akbarzadeh et al., 2016; Zhu & Zhang, 2021).

Acupoint hot compress, which involves acupoints and natural physical agent heat, is considered more acceptable for puerperal women and their families both from a physical and psychological perspective (Akbarzadeh et al., 2016; Yin et al., 2020). Hot compress has been extensively employed by obstetric professionals to mitigate the occurrences of perineal injury and enhance maternal comfort during the process of childbirth (Zhu & Zhang, 2021).

Few studies have been conducted that have utilized the integration of preventative nursing care and auricular acupressure in the context of preventing urinary retention. Consequently, this study aims to examine the efficacy of employing the aforementioned approaches in the prevention of urinary retention.

Significance of the study:

Postpartum urinary retention (PUR) is a significant and commonly encountered complication following the process of vaginal delivery. The occurrence rate

varies between 0.18 to 14.6% (Avondstondt et al., 2020; Mohr et al., 2022). It increases the risk for postpartum bleeding, slowing down uterine regeneration, and placing a psychological strain on the parturient which has a significant negative impact on the postpartum recovery process (Li et al., 2020; ul Ain et al., 2021). Furthermore, failure to promptly recognize this condition may result in denervation, detrusor atony, impairment of bladder function and rupture of the urinary bladder (Mohr et al., 2022; Mulder et al., 2016). These complications can persist into later life (Clancy & Pascali, 2019).

To date, it has been discovered that any factor implicated in the enervated urinary musculature and neuronal fibers may augment the susceptibility to urinary retention (Li et al., 2020; ul Ain et al., 2021). Hence, the majority of postpartum women are considered to be in an elevated state of susceptibility to experiencing urinary retention, necessitating enhanced postnatal care to reduce its occurrence (Gupta et al., 2021).

It is important to understand that the majority of specialized nursing interventions that involve traditional methods, such as hot fumigation, hot compress, and the technique of listening to flowing water to promote urination, need to be implemented alongside other nursing measures as acupressure in order to achieve comprehensive nursing care. So, it effectively decreases the frequency of employing indwelling urinary catheters (Geng et al., 2022). Accordingly, this study was designed to evaluate the effect of acupoint hot compresses on the occurrence of postpartum urinary retention and its consequences among women after vaginal delivery.

Operational definition: Consequences in this study included (afterpain intensity, successful breastfeeding & emotional disorders).

Aim of the study: The aim of this study was to determine the effect of acupoint hot compress on the occurrence of postpartum urinary retention and its consequences among women after vaginal delivery.

Research hypothesis

H0: Post-partum women who received acupoint hot compresses in the early post-natal period exhibit a higher incidence of urinary retention and its consequences than those who received routine care.

H1: Post-partum women who received acupoint hot compresses in the early post-natal period exhibit lower incidence of urinary retention and its consequences than those who received routine care.

Subjects and Method

Subjects

Research design:

A quasi-experimental research design was used to assess the effect of the independent variables (acupoint hot compresses) on the dependent variable

(postpartum urinary retention and its consequences among women after vaginal delivery).

Setting:

The research was conducted at the postpartum department at the National Medical Institution, El-Beheira Governorate.

Subjects:

A convenient sample of 80 postpartum women was enrolled in the study and distributed equally between the two groups: **Intervention group** (1) included "40" women who received acupoint hot compress, and **Control group** (2) included "40" women who received routine hospital care. Women in each group were selected according to the inclusion criteria:-

- Over the age of 18 years
- Age at gestation: 37–40 weeks (normal term pregnancy)
- Free from medical and mental diseases
- Full-term infant, free from physical or congenital problems to exclude any factor affecting breastfeeding
- Willingness to participate in the research.

Sample size:

Epi info program version 10 was used to estimate the sample size using the following parameters; population size of 100, 50% expected frequency, 5% acceptable error, and 95% confidence coefficient. The estimated minimal sample size was 80 women.

Tools:

Four tools were used to collect data.

Tool (I): Basic data structured interview schedule

It includes three parts:

Part (I): socio-demographic data as age, level of education, residence, and occupation.

Part (II): Reproductive history as number of pregnancies, labor, abortion, stillbirth, and living children.

Part (III): Current labor history as induction during labor, membrane rupture, time of 1st, 2nd, 3rd stage by hours, and total time of labor process.

Part (IV): Occurrence of urinary retention data was defined as the first urination taking place after a duration of more than 6.5 hours after childbirth.

Tool (II): Visual Analog Scale (VAS): This tool was formulated by Melzack (2005). It serves as a self-report assessment tool for measuring the intensity of pain. Subsequently, it was adapted and translated into the Arabic language to suit the specificities of Egyptian culture. The tool consists of a horizontal line that is employed for the subjective evaluation of the patient's pain. Additionally, it encompasses a numerical scale consisting of ten points, which correspond to the varying degrees of pain. Zero on the scale signifies the absence of pain, while ten represents the worst intensity of pain. In the intermediate regions between these two extremes, words such as mild, moderate, severe, and

unbearable are allocated to each 2 cm increment, respectively.

Tool (III): Infant Breastfeeding Assessment Tool (IBFAT): The IBFAT, as postulated by Matthews (1988) and subsequently adapted by the researcher, serves as a tool for evaluating and measuring an infant's preparedness for breastfeeding, encompassing vital aspects such as rooting, fixing, and sucking activity. Comprising four distinct components, each of which plays a significant role in assessing infant breastfeeding behavior, this instrument assigns numerical values of 0, 1, 2, or 3 to the chosen responses, thereby yielding a total score ranging from 0 to 12.

It was ranked as follows:

- Successful breastfeeding 7-12
- Unsuccessful breastfeeding 0 – 6

The researchers added two questions: initiation and duration of breastfeeding in minutes.

Tool (IV): the Edinburgh Postnatal Depression Scale (EPDS)

This tool was developed by Lane et al. (1997). It is employed as an emotional disorders screening tool. The inventory comprises a total of ten items, namely sleep disorder, self-blame, lack of interest, worry, impaired ability, fear, tearfulness, pessimism, sadness, and self-injury or suicidal ideation. Pessimism, lack of interest, and worry were evaluated on a scale of 0 (indicating the absence of symptoms) to 3 (indicating the most severe symptoms). Reverse scoring was employed to assess feelings of self-blame, tearfulness, sleep disorder, sadness, fears, impaired ability, and self-injury or suicidal ideations. Questions 1, 2, and 4 were assigned scores ranging from 0 to 3, with the highest box corresponding to 0 and the lowest box corresponding to 3. On the other hand, questions 3, 5 to 10 were reverse scored, with the highest box assigned a score of 3 and the lowest square assigned a score of 0. The maximum score attainable on the scale is 30, and the postpartum emotional disorders were evaluated accordingly:-

- No emotional disorders less than 10.
- Emotional disorders 10 and more.

The study was achieved according to the following steps:

Approval:

- After the research proposal, an approval letter from research Ethics committee at the Faculty of Nursing, University of Damanhour was obtained.
- An official letter from the University of Damanhour Faculty of Nursing was addressed to the relevant authorities of the study site to acquire authorization to collect data.

Tools:

- The tool (I) was developed by the researchers after reviewing the recent literature, tools **II**, **III**, and **IV** were adapted and translated into Arabic.

- Content and face validity for tools were tested by five obstetric and gynecological nursing experts.
- The reliability of tools **II**, **III**, and **IV** was determined using Cronbach's alpha test, where $r = 0.93$, $r = 0.90$, and $r = 0.88$ respectively.

Pilot Study: A pilot study was carried out on eight women (excluded from the sample).

The pilot study's main goals were to:

- Determine the tools' applicability, clarity, and usefulness.
- Calculate the amount of time necessary to obtain the data.
- Identify any problem with the statements' order and clarity that may interfere with the data collection process.

Results of the pilot study:

- After the pilot study, the tools were rebuilt and prepared for usage.
- As a consequence of the pilot study, a few terms were changed.
- The tool phrases were clear, relevant, and suitable.

Work field:

1. Data were gathered over the period of four months starting from June and ending in September 2023.
2. Each postpartum woman who met the specified requirements for inclusion and voluntarily agreed to take part in the research was non-randomly assigned into intervention and control groups.
3. Data of tool I was collected from both groups through an interview schedule for 10 – 15 minutes, it was conducted individually and in total privacy for both groups.
4. The data of tools II, III, and IV were collected from both groups to assess the after-pain intensity, successful breastfeeding, and postpartum emotional disorders (pretest) at 6.5, 24, and 48 hours after delivery.
5. To avoid study contamination the researcher was began by the control group before the intervention group.

For the intervention group

- At time point 1, which lasted for duration of 30 minutes, women who were part of the intervention group were provided with the standard postpartum care. Additionally, during this time, they also received a 4-hour acupoint hot compress at a consistent average temperature of 45 °C. This particular care was administered at time point 2, which encompassed a span of 24 hours. Furthermore, the same intervention was given to the participants at time point 3, which lasted for duration of 48 hours.
- According to (**Figure 1**), at time point 1, two hot cores (model A) were applied to the Shenque (RN8 acupoint) in the umbilicus's center and to the Baliao (BL31-BL34 acupoints) in the sacrum's region

between the posterior-superior iliac spine and the posterior midline in the first, second, third, and fourth posterior sacral foramens (Shangliao, Ciliao, Zhongliao, and Xialiao).

- Under model B, two hot cores were applied bilaterally to the Yongquan (KI1 acupoint) on the sole in the anterior depression when the foot was flexed and in the depression when the foot was in plantar flexion, roughly where the anterior and posterior two-thirds of the sole meet. Shenque received just one heated core (model A) at time points two and three.

6. Evaluation of both groups:-

- The occurrence of urinary retention after delivery was recorded using tool I.

- Afterpain intensity was measured at 6.5, 24, and 48 hours after delivery using visual analog scale tool II.
 - The successful breastfeeding was measured at 6.5, 24, and 48 hours after delivery. In addition, initiation of breastfeeding (in hours) and duration (in minutes) were measured using tool III.
 - The Edinburgh Postnatal Depression Scale (tool IV) was used to screen for emotional disorders at 48 hours and 7 days after delivery by telephone calling.
7. Comparison between the two groups was made to determine the effect of acupoint hot compress on postpartum urinary retention and its consequences among women after vaginal delivery.

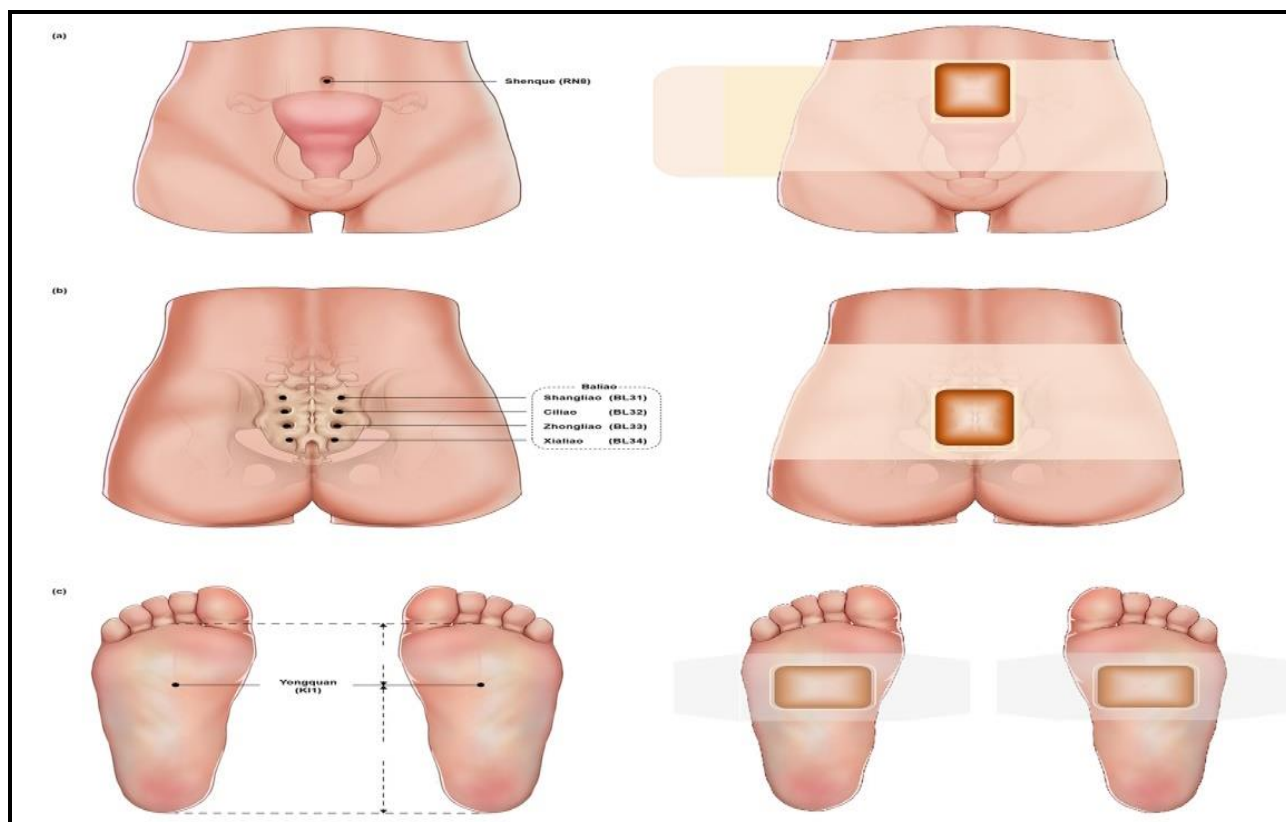


Figure (1): Location of the Acupoint Used for the Intervention Group

Statistical analysis:

The researcher conducted data analysis in the following steps:

- Data were entered into the computer, and IBM SPSS was used for analysis. The computer was fed data, and IBM SPSS software package version 23.0 was used for analysis. The normality of the variable distribution was confirmed using the Shapiro-Wilk test; group comparisons for categorical variables were evaluated using the Chi-square test (Monte Carlo or Fisher Exact). For regularly distributed

quantitative data, two categories were compared using the student t-test. The Friedman Test was employed to examine the importance of ordinal data across various days. The results were deemed significant at the 5% level.

Ethical consideration:

For each subject appointed, the following aspects were considered: obtaining informed consent, respecting her privacy and right to withdraw at any time as well as assuring confidentiality of her data.

Results

Table (1): Number and percent distribution of postnatal women according to their socio-demographic data (n=80).

Socio-demographic data	Study group (n=40)		Control group (n=40)		χ^2 (p-value)
	No	%	No	%	
Age					
<20	6	15.0	11	27.5	2.287 (p=0.319)
20-29	27	67.5	21	52.5	
≥30	7	17.5	8	20.0	
Level of education					
Illiterate or read & write	9	22.5	8	20.0	1.456 (MC p=0.751)
Primary education	10	25.0	10	25.0	
Secondary education	19	47.5	17	42.5	
University education or higher	2	5.0	5	12.5	
Occupation					
Working	38	95.0	36	90.0	0.721 (FE p=0.675)
Housewife	2	5.0	4	10.0	
Residence					
Urban	1	2.5	4	10.0	1.920 (FE p=0.359)
Rural	39	97.5	36	90.0	

 χ^2 : Chi-square test

MC: Monte Carlo

FE: Fisher Exact

Table (2): Number and percent distribution of postnatal women according to their reproductive history (n=80).

Reproductive history	Study group (n=40)		Control group (n=40)		χ^2 (p-value)
	No	%	No	%	
Gravidity					
One	17	42.5	19	47.5	3.740 (MC p=0.357)
Two	9	22.5	12	30.0	
Three	11	27.5	9	22.5	
4 and more	3	7.5	0	0.0	
Parity					
One	19	47.5	19	47.5	2.154 (MC P=0.702)
Two	12	30.0	14	35.0	
Three	7	17.5	7	17.5	
4 and more	2	5.0	0	0.0	
Number of abortion					
Not applicable	32	80.0	37	92.5	2.962 (MC P=0.198)
One	7	17.5	3	7.5	
Two	1	2.5	0	0.0	
Number of stillbirth					
Not applicable	36	90.0	35	87.5	0.125 (FE P=1.000)
One	4	10.0	5	12.5	
Number of living children					
One	18	45.0	21	52.5	2.928 (MC P=0.553)
Two	16	40.0	17	42.5	
Three	4	10.0	2	5.0	
4 and more	2	5.0	0	0.0	

 χ^2 : Chi-square test

MC: Monte Carlo

FE: Fisher Exact

Table (3): Number and percent distribution of postpartum women according to their current labor history (n=80).

Current labor history	Study group (n=40)		Control group (n=40)		χ^2/t (p-value)
	No	%	No	%	
Any induction during labor					
Yes	36	90.0	33	82.5	0.949 (0.518)
No	4	10.0	7	17.5	
Membrane rupture					
Normal	36	90.0	35	87.5	0.125 (FE p=1.000)
Synthetic	4	10.0	5	12.5	
Time of 1st stage by hours	8.70±4.25		7.95±4.08		0.806 (0.423)
Time of 2nd stage by minutes	57.0±27.85		51.0±18.23		1.140 (0.258)
Time of 3rd stage by minutes	22.50±3.92		21.63±3.28		1.082 (0.282)

χ^2 : Chi-square test

MC: Monte Carlo

FE: Fisher Exact t: Student t-test

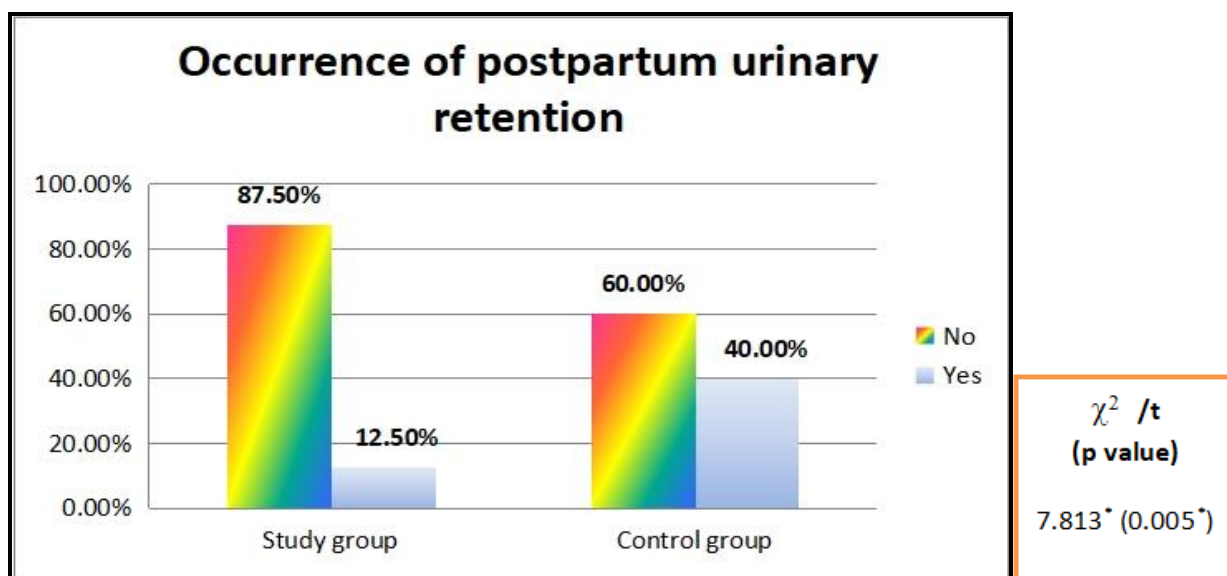


Figure (1): Number and percent distribution of postpartum women according to the occurrence of postpartum urinary retention (n=80).

Table (4): Number and percent distribution of postpartum women according to the intensity of after pain using (VAS) (n=80).

After pain	Study group (n=40)		Control group (n=40)%		χ^2/MC p-value)
	No.	%	No.	%	
Before					
No pain	0	0.0	0	0.0	0.844 (0.839)
Mild pain	6	15.0	8	20.0	
Moderate pain	14	35.0	12	30.0	
Severe pain	10	25.0	12	30.0	
Unbearable	10	25.0	8	20.0	
After 6hrs and half					
No pain	0	0.0	0	0.0	1.556 (0.670)
Mild pain	10	25.0	8	20.0	
Moderate pain	15	37.5	12	30.0	
Severe pain	10	25.0	15	37.5	
Unbearable	5	12.5	5	12.5	

After pain	Study group (n=40)		Control group (n=40)%		χ^2 /MC p-value)
	No.	%	No.	%	
After 24hrs					
No pain					20.422* (<0.001*)
Mild pain	17	42.5	8	20.0	
Moderate pain	21	52.5	12	30.0	
Severe pain	2	5.0	20	50.0	
Unbearable	0	0.0	0	0.0	
After 48hrs					
No pain	23	57.5	0	0.0	45.074* (<0.001*)
Mild pain	14	35.0	11	27.5	
Moderate pain	3	7.5	18	45.0	
Severe pain	0	0.0	11	27.5	
Unbearable	0	0.0	0	0.0	
Fr (p)	104583* (<0.001*)		42.969* (<0.001*)		

χ^2 : Chi-square test

MC: Monte Carlo

Fr: Friedman Test to compare the change between the different periods in each group

*: Statistically significant at $p \leq 0.05$

Table (5): Number and percent distribution of postpartum women according to their breastfeeding using (IBFAT) (n=80).

Breastfeeding	Study group (n=40)		Control group (n=40)%		χ^2 : / t (p-value)
	No.	%	No.	%	
Part I					
Before					
Unsuccessful 4 – 7	19	47.5%	18	45.0%	0.050 (0.823)
Successful 8 – 12	21	52.5%	22	55.0%	
After 6.5hrs					
Unsuccessful 4 – 7	10	25.0%	19	47.5%	4.381* (0.036*)
Successful 8 – 12	30	75.0%	21	52.5%	
After 24hrs					
Unsuccessful 4 – 7	6	15.0%	15	37.5%	5.230* (0.022*)
Successful 8 – 12	34	85.0%	25	62.5%	
After 48hrs					
Unsuccessful 4 – 7	4	10.0%	17	42.5%	10.912* (0.001*)
Successful 8 – 12	36	90.0%	23	57.5%	
Fr (p)					
Initiation of breastfeeding after delivery					
1Hour after delivery	17	42.5%	7	17.5%	6.107* (0.047*)
2-3 hours after delivery	14	35.0%	11	27.5%	
More than 3 hours after delivery	12	30.0%	19	47.5%	
Duration of breastfeeding by minutes					
Mean ± SD	8.95±1.65		7.43±1.99		3.738* (0.001*)

χ^2 : Chi-square test

FE: Fisher Exact

t: Student t-test

Fr: Friedman Test to compare the change between the different periods in each group

*: Statistically significant at $p \leq 0.05$

Table (6): Number and percent distribution of postpartum women according to their emotional disorders using (EPDS) (n=80).

Tool IV. Edinburgh scale	Study group (n=40)		Control group (n=40)%		χ^2 :t (p-value)
	No.	%	No.	%	
Before					
No emotional disorders	29	72.5%	27	67.5%	0.238 (0.626)
Emotional disorders	11	27.5%	13	32.5%	
Mean ± SD	13.38±9.91		13.07±11.8		614.5 (0.065)
After 48 hrs					
No emotional disorders	36	90.0%	28	70.0%	5.00* (0.025*)
Emotional disorders	4	10.0%	12	30.0%	
Mean ± SD	7.15±7.6		12.65±11.43		563.0* (0.009*)
After 7days					
No emotional disorders	37	92.5%	30	75.0%	4.501* (0.034*)
Emotional disorders	3	7.5%	10	25.0%	
Mean ± SD	6.10±6.0		11.35±10.8		501.0* (0.002*)
Fr (p)	13.00*(<0.002*)		0.261(0.878)		

χ^2 : Chi-square test t: Student t-test *: Statistically significant at $p \leq 0.05$

Fr: Friedman Test to compare the change between the different periods in each group

Table (7): Correlation between the occurrence of urinary retention after vaginal delivery with its consequences (n=80).

Variables	Occurrence of post-partum urinary retention			
	Study group (n=40)		Control group (n=40)	
	r	P	r	P
After Pain				
Before	0.777*	<0.001*	0.511*	0.001*
After 6hrs and half	0.620*	0.000	0.487*	0.001*
After 24hrs	0.434*	0.005*	0.431*	0.005*
After 48hrs	0.354*	0.032*	0.524*	0.001*
Breastfeeding				
Before	-0.377*	0.017*	-0.093	0.567
After 6hrs and half	-0.276	0.084	-0.245	0.128
After 24hrs	-0.225	0.043*	-0.074	0.652
After 48hrs	-0.249	0.048*	0.002	0.992
Emotional disorders				
Before	0.558*	0.001*	0.342*	0.031*
After 48hrs	0.357*	0.024*	0.361*	0.022*
After 7days	0.326*	0.040*	0.260	0.105

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Table (1): Presents number and percent distribution of postnatal women according to their socio-demographic data. It was observed that more than two-thirds (67.5%) of postnatal women in the study group compared to 52.5% of the control group aged from 20-29 years old. Level of education also manifested that 47.5% of the study group had

secondary education compared to 42.5% of the control group. In addition, occupation revealed that (95%, 90%) of the study and control groups respectively were working. Moreover, (97.5, 90%) of the former and latter group were rural residents. Accordingly, the two groups' socio-demographic data

were almost similar, where no statistically significant differences were found between them.

Table (2): Shows number and percent distribution of postnatal women according to their reproductive history. Gravidity for one pregnancy was (42.5%, 47.5%) of the study and control groups respectively, while parity for one delivery was the same among both groups (47.5%). In addition, the vast majority of the study and control groups (80%, 92.5%) respectively had no abortion, and most of them (90%, 87.5%) had no stillbirth. Furthermore, the number of living children was one for (45%, 52.5%) of the former and latter groups respectively, while it was two for (40%, 42.5%) of the study and control groups respectively. Accordingly, the two groups' reproductive history were almost similar, where no statistically significant differences were found between them

Table (3): Displays number and percent distribution of postpartum women according to their current labor history. It was observed that (90.0% & 82.5%) of the study and control groups respectively received induction of labor. Furthermore, (90.0% & 87.5%) of the former and the latter group had normal rupture of the membrane. The mean duration of the 1st, 2nd, and 3rd stage was (8.70±4.25 hours, 57.0±27.85 minutes & 22.50±3.92) of the study group compared to (7.95±4.08 hours, 51.0±18.23 minutes & 21.63±3.28 minutes) of control group respectively.

Figure (1): Shows the postpartum mothers' distribution based on the occurrence PUR. A statistically significant difference was observed between the two groups after intervention $p=0.005$. Where the occurrence of postpartum urinary retention was 12.5% among the study group compared to 40% of the control group.

Table (4): Manifests the number and percent distribution of postpartum mothers according to their intensity of afterpain using VAS. It was observed that no statistically significant differences were found between the two groups before intervention and 6.5 hours after intervention, where $p=(0.839, 0.670)$ respectively. However, a statistically significant difference was found between them after 24 and 48 hours of intervention ($P<0.001^*$), where the intensity of afterpain was moderate among 52.5% of the study group, compared to 30% of the control group after 24 hours of intervention. In addition, no pain was found among 57.5% of the study group compared to none of the control group after 48 hours of intervention.

Table (5): Indicates the number and percent distribution of postpartum women according to their breastfeeding using IBFAT. No statistically significant difference was found between the two groups before intervention $p=(0.823)$. However, a statistically significant difference was observed

between them at 6.5, 24, and 48 hours after intervention, where breastfeeding was successful among 75%, 85%, and 90% of the study group, compared to 52.5%, 62.5%, and 57.5% of the control group respectively. A statistically significant difference was observed between them in relation to initiation of breastfeeding $p=0.047$, where breastfeeding was initiated early 1 hour after intervention among 42.5% of the study group, compared to 17.5% of the control group. It was also initiated 2-3 hours after intervention among 35% of the former group compared to 27.5% of the latter group. On the other hand, breastfeeding was initiated late more than 3 hours after intervention among 30% of the study group, compared to 47.5% of the control group. In addition, mean duration of breastfeeding was 8.95 ± 1.65 among the former group compared to 7.43 ± 1.99 of the latter group

Table (6): Displays the number and percent distribution of postpartum women according to their emotional disorders using the Edinburgh scale. No statistically significant difference was found between the two groups before intervention $p=0.626$. However, a statistically significant difference was observed between them at 48 hours and 7 days after intervention, where emotional disorders were found among (10%, 7.5%) the study group compared to (30%, 25%) of the control group respectively.

Table (7): Demonstrates the correlation between the occurrence of urinary retention after delivery with different parameters. A positive statistically significant correlation was found between the occurrence of urinary retention and afterpain as well as emotional disorders after intervention. On the other hand, a negative statistically significant correlation was found between the occurrence of urinary retention and successful breastfeeding after intervention.

Discussion

There is scarce evidence available concerning the clinical application of acupoint hot compresses for women in the early postpartum period, despite the guideline put forth by the WHO regarding postnatal care suggests that it is advisable for both mothers and newborns to receive care within a time frame of at least 24 hours following birth (**Organization ., 2017**).

This care includes the assessment of various factors such as micturition, urinary incontinence, and bowel function, the healing process of any perineal wound, fatigue, pain, uterine tenderness, lochia, breastfeeding progress, and emotional well-being. These specific issues have the potential to hinder a woman's ability to tend to her own needs as well as those of her newborn **Meltzer-Brody et al. (2018)**.

The first few days of postpartum period, the application of acupoint hot compress can prove advantageous for women who have undergone a vaginal delivery. The implementation of acupoint hot compress on the abdominal, lumbosacral, and plantar regions might result in a reduction in postpartum urinary retention, alleviation of discomfort subsequent to childbirth, mitigation of emotional disturbances, and promotion of lactation. **Meltzer-Brody et al. (2018)** Therefore, the aim of the study was to determine the effect of acupoint hot compress on the occurrence of postpartum urinary retention and its consequences among women after vaginal delivery.

This study will discuss its results on the frame of suggested hypotheses in which women who received acupoint hot compresses in the early post-natal period exhibit less urinary retention and its consequences than those who received routine care. Concerning, occurrence of the first urination after delivery, our study findings showed that a statistically significant difference in the occurrence of first urination after delivery between the two studied groups. Where, it was noticed that the occurrence among the study group was less than the control group. This is can be attributed to enhancement of local blood flow, optimization of tissue metabolic processes and peripheral hemodynamic responses, suppression of sympathetic nervous system activity, and stimulation of parasympathetic nervous system dominance (**Li & Cui, 2017; Wu et al., 2018**).

From the researcher's point of view, this result may be due to stimulation of the root of the sacral nerve by acupoint hot compresses which may have an impact on the urinary system and other sacral nerve-dominant areas.

The results of the current study seem to be logic according to **Zhu et al. (2022)**, they investigated the effects of point massage on postpartum lactation starting time and revealed that the utilization of acupoint hot compresses yielded a significant reduction in the occurrence of postpartum urine retention among the participants involved in the trial. Additionally, these results correspond with a research of **Geng et al. (2022)**, who investigated the impact of comprehensive nursing in conjunction with acupressure on prevention of PUR and reported that occurrence of urinary retention in the intervention group was markedly lower compared to the control group.

The resemblance observed between results of the present study and the others studies can be attributed to what is elicited in the literature the clinically commonly used methods to resolve postpartum urinary retention. These methods encompass psychological motivation, cleansing the vulva with

warm water, utilizing the sound of running water to stimulate urination, applying heat to the lower abdomen or sacral region, and performing massages. **Huaying & Yuemei (2018)**.

The most recent research has demonstrated that there is no a statistically significant disparity in terms of the intensity of post-pain experienced by individuals in both the study group and control group prior to the commencement of the intervention, as well as 6.5 hours subsequent to the implementation of the intervention **Geng et al. (2022)**.

Conversely, a statistically significant difference was observed between both groups after 24 and 48 hours of the intervention. This can be attributed to the fact that acupressure has the capability to induce the secretion of enkephalins, such as endorphins and serotonin, thereby diminishing pain **Afravi (2019)**, who investigated the effect of Hugo point pressure on postpartum pain in multiparous women. .

From the researcher's point of view, this result was expected due to inhibition of the pain signals sent to the brain and increase the flow of blood alongside the delivery of requisite oxygen to the affected area. Consequently, it induces a state of muscular relaxation and facilitates the process of wound healing.

According to our research, there is a statistically significant difference ($P=0.036$, $P=0.022$ & $P=0.001$ respectively) was found between the study and control groups in relation to the evaluation of breastfeeding 6.5, 24 & 48 hours after intervention. The similarity observed in the results of the present study can be attributed to the information gathered from existing literature. By enhancing milk outflow and decreasing the likelihood of a low milk supply, the acupoint can help avoid milk stasis. It additionally stimulates the mammary gland ducts, nipples, and improves blood circulation in the breasts. Moreover, it induces the anterior pituitary gland to release oxytocin, which facilitates nursing through the reflex spray **Luo et al. (2017)**, who assessed the effects of point massage of liver and stomach channel combined with pith and trotter soup on postpartum lactation start time.

Also, from the researcher's point of view, this accordance can be attributed to the study group experienced lower pain after intervention than the control group which allows the mother to use the appropriate breastfeeding position and apply the steps of breastfeeding without pain so, it increases the amount of breast stimulation and eventually increases the milk supply.

This result was in the same as **Zhu et al. (2022)**, they investigated the effects of point massage on postpartum lactation starting time and found that acupoint hot compresses resulted of a significant

increase in the volume of breastfeeding milk. This increase was observed during measurements taken 28.5, 52.5-, and 76.5-hours following delivery. Moreover, this finding was relatively similar with a study of **Dewi et al. (2018)**, they investigated the influence of shiatsu technique on the time of expenditure of breast milk in postpartum mother and reported that acupoint massage is one of the techniques that can be done by the mothers who give birth and has many benefits for smooth breastfeeding. One of these is to aid in the production of the hormone oxytocin, which causes the muscle cells surrounding the alveoli to contract and push milk toward the nipple. While the infant sucks, more milk is produced. Furthermore, **Ngestingrum et al. (2022)**, they investigated the effectivity of the Oketani Massage and the Back Massage Combination towards Breastmilk Production and to Prevent Breast Engorgement of Postpartum Mothers and reported that latching created softness and suppleness for the breasts and nipples, which improved closure, increased nursing, and decreased breast engorgement. When discussing the initiation time of breastfeeding among both groups, the present study noticed that a statistically significant differences ($P=0.047$) was found between the study and control groups where, early initiation of breastfeeding was observed among the study group. Also, the present study revealed that the mean duration of breastfeeding among the study group was higher than the control group with a statistically significant difference between both groups. A partially similar study of **Anderson et al. (2019)**, they examined the effectiveness of breast massage for the treatment of women with breastfeeding problems: a systematic review and revealed that massage techniques can serve as a captivating option to enhance the duration of sustainable breastfeeding. Nevertheless, it is imperative to establish standardized massage skills for nurses and incorporate them into nurse education programs.

Postpartum emotional disorders is a widely acknowledged matter pertaining to public health, which holds significant consequences for the overall welfare of both new mothers and their infants, the findings of our study portrayed that the acupoint hot compresses can improve the psychological status of women 48hrs and 7 days after intervention, the number of women who had emotional disorders in the study group was decreased than in the control group. This is an expected result because the women in the study group had less urinary retention and afterpain as well as they able to breastfeed their newborn, which all led to an improvement in the psychological status of the mother.

The findings of the present study in accordance with **Zhu et al. (2022)**, an examination was carried out to investigate the effect of acupoint hot compress on the occurrence of postpartum urinary retention following vaginal delivery. The study employed a randomized clinical trial design and observed a noteworthy reduction in depressive symptoms upon assessment at 76.5 hours.

Finally, the present study showed that a positive statistically significant correlation was detected between the occurrence of urinary retention and after pain as well as emotional disorders. Moreover, a negative statistically significant correlation was noticed between the occurrence of urinary retention and successful breastfeeding. **Zhu et al. (2022)** reported that women who underwent a vaginal delivery experienced positive effects from acupoint hot compress therapy on their abdominal, lumbosacral, and plantar regions. This treatment resulted in a reduced incidence of urinary retention, decreased pain from uterine contractions, improved mood, and increased breast milk production. Lastly, it concluded that acupoint hot compression can be one of the essential non-pharmacological interventions which can be utilized as an additional intervention during the early postpartum period.

Conclusion:

In the light of current findings, the researchers concluded that acupoint hot compresses reduces postpartum urine retention, after pain and emotional disorders as well as it improves breastfeeding during the early postpartum period.

Recommendations:

The following recommendations are made in light of the study's findings:

- 1- Utilized the acupoint hot compresses as a highly successful non-pharmacologic intervention during the early postpartum period to reduce postpartum urine retention, afterpain, and emotional disorders and also improve breastfeeding during the early postpartum period.
- 2- Maternity nurses should receive in-service training programs related to acupoint hot compresses.

Further studies are needed to:

- Replicate the study on a larger sample size for better generalization.

Acknowledgment:

The researchers thank all women who participated in this study.

Conflict of interest:

The authors declare that there is no conflict of interest

Funding:

No funding was received for this study.

References:

- Afravi, S., Abbaspoor, Z., Montazeri, S., & Cheraghian, B (2019): The effect of Hugo point pressure on postpartum pain in multiparous women. *Family Medicine & Primary Care Review*, 21(1), 7-11.
- Akbarzadeh, M., Vaziri, F., Farahmand, M., Masoudi, Z., Amooee, S., & Zare, N. (2016): The effect of warm compress bistage intervention on the rate of episiotomy, perineal trauma, and postpartum pain intensity in primiparous women with delayed Valsalva maneuver referring to the selected hospitals of Shiraz University of Medical Sciences in 2012-2013. *Advances in Skin & Wound Care*, 29(2), 79-84.
- Anderson, L., Kynoch, K., Kildea, S., & Lee, N. (2019): Effectiveness of breast massage for the treatment of women with breastfeeding problems: a systematic review. *JBIC Database System Rev Implement Rep*, 17(8), 1668-1694. <https://doi.org/10.11124/jbisrir-2017-003932>
- Avondstondt, A., Hidalgo, R., & Salamon, C. (2020): Intrapartum risk factors for postpartum urinary retention: a case-control study. *International Urogynecology Journal*, 31, 2395-2398.
- Clancy, A., & Pascali, D. (2019): Bladder distension injury secondary to postpartum urinary retention. *Journal of obstetrics and gynaecology Canada: JOGC= Journal d'obstetrique et gynecologie du Canada: JOGC*, 41(8), 1069-1070.
- Dewi, C., Widiyanti, A., & Lestari, I. (2018): The influence of shiatsu technique on the time of expenditure of breast milk in postpartum mother in mojokerto *International Journal of Nursing and Midwifery Science (IJNMS)*.
- Dolezal, P., Zahumensky, J., Otapkova, P., Papcun, P., & Krizko, J. (2019): Covert postpartum urinary retention. *CLINICAL STUDY*, 673, 675.
- Geng, X., Dong, L., Sha, M., Song, X., & Cui, G. (2022): Effect of overall nursing combined with acupressure in preventing postpartum urinary retention. *Am J Transl Res*, 14(2), 1347-1353.
- Gupta, A., Pampapati, V., Khare, C., Murugesan, R., Nayak, D., & Keepanasseril, A. (2021): Postpartum urinary retention in women undergoing instrumental delivery: A cross-sectional analytical study. *Acta Obstetrica et Gynecologica Scandinavica*, 100(1), 41-47.
- Hafizi, L., Razmjoo, N., Yousefi, F., & Azizi, H. (2021): The effect of complementary medicine on maternal health promotion: An experimental study. *Journal of Education and Health Promotion*, 10.
- Huaying, W., & Yuemei, Z. (2018): Clinical Study on Postpartum Urinary Retention with Compound Chinese Medicine. *Sci Forschen , Journal of Surgery: Open Access* 5(1).
- Lamblin, G., Chene, G., Aeberli, C., Soare, R., Moret, S., Bouvet, L., & Doret-Dion, M. (2019): Identification of risk factors for postpartum urinary retention following vaginal deliveries: a retrospective case-control study. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 243, 7-11.
- Lane, A., Keville, R., Morris, M., Kinsella, A., Turner, M., & Barry, S. (1997): Postnatal depression and elation among mothers and their partners: prevalence and predictors. *The British Journal of Psychiatry*, 171(6), 550-555.
- Lauterbach, R., Ferrer Sokolovski, C., Rozenberg, J., & Weissman, A. (2018): Acupuncture for the treatment of post-partum urinary retention. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 223, 35-38. <https://doi.org/https://doi.org/10.1016/j.ejogrb.2018.01.029>
- Li, K., & Cui, M. (2017): Physiotherapy Technology. *Introduction; Conductive therapy*, 1-15.
- Li, Q., Zhu, S., & Xiao, X. (2020): The risk factors of postpartum urinary retention after vaginal delivery: a systematic review. *International Journal of Nursing Sciences*, 7(4), 484-492.
- Luo, Q., Hu, Y., & Zhang, H. (2017): Effects of point massage of liver and stomach channel combined with pith and trotter soup on postpartum lactation start time. *Journal of Obstetrics and Gynaecology*, 37(7), 872-876. <https://doi.org/10.1080/01443615.2017.1309366>
- Matthews, M. (1988): Developing an instrument to assess infant breastfeeding behaviour in the early neonatal period. *Midwifery*, 4(4), 154-165.
- Meltzer-Brody, S., Howard, L., Bergink, V., Vigod, S., Jones, I., Munk-Olsen, T., & Milgrom, J. (2018): Postpartum psychiatric disorders. *Nature Reviews Disease Primers*, 4(1), 1-18.
- Melzack, R. (2005): Evolution of the neuromatrix theory of pain. The Prithvi Raj Lecture: presented at the third World Congress of World Institute of Pain, Barcelona 2004. *Pain practice*, 5(2), 85-94.
- Mohr, S., Raio, L., Gobrecht-Keller, U., Imboden, S., Mueller, M., & Kuhn, A. (2022): Postpartum urinary retention: what are the sequelae? A long-term study and review of the literature. *International Urogynecology Journal*, 33(6), 1601-1608.
- Mulder, F., Hakvoort, R., de Bruin, J., van der Post, J., & Roovers, J.-P. (2018): Comparison of clean intermittent and transurethral indwelling catheterization for the treatment of overt urinary retention after vaginal delivery: a multicentre

- randomized controlled clinical trial. *International urogynecology journal*, 29, 1281-1287.
- **Mulder, F., Rengerink, K., van der Post, J., Hakvoort, R., & Roovers, J.-P. (2016):** Delivery-related risk factors for covert postpartum urinary retention after vaginal delivery. *International Urogynecology Journal*, 27, 55-60.
 - **Ngestiningrum, A., Nuryani, N., & Setiyani, A. (2022):** Effectivity of the Oketani Massage and the Back Massage Combination towards Breastmilk Production and to Prevent Breast Engorgement of Postpartum Mothers. *Health Notions*, 6(01), 23-26.
 - **Nutaitis, A., Meckes, N., Madsen, A., Toal, C., Menhaji, K., Carter-Brooks, C. Hickman, L. (2023):** Postpartum urinary retention: an expert review. *American journal of obstetrics and gynecology*, 228(1), 14-21. <https://doi.org/https://doi.org/10.1016/j.ajog.2022.07.060>
 - **Organization, W. (2017):** WHO recommendations on maternal health: guidelines approved by the WHO Guidelines Review Committee.
 - **Sudhakaran, P. (2019):** Urinary retention in pregnancy and puerperium: acupuncture treatment. *Medical Acupuncture*, 31(5), 269-273.
 - **ul Ain, Q., Shetty, N., & Supriya, K. (2021):** Postpartum urinary retention and its associated obstetric risk factors among women undergoing vaginal delivery in tertiary care hospital. *Journal of Gynecology Obstetrics and Human Reproduction*, 50(2), 101837.
 - **Wang, X.-M., Gong, J., Li, S.-C., & Han, M. (2018):** Acupuncture compared with intramuscular injection of neostigmine for postpartum urinary retention: a systematic review and meta-analysis of randomized controlled trials. *Evidence-Based Complementary and Alternative Medicine*, 2018.
 - **Wu, X.-f., Yu, Y.-j., Ying, L.-m., Tan, W.-f., Zhan, X.-y., & Wang, L.-c. (2018):** Hot compress with Chinese herbal salt packets reducing PICC catheter complications: a randomized controlled trial. *Chinese journal of integrative medicine*, 24, 809-814.
 - **Yin, J., Nisar, A., Waqas, A., Guo, Y., Qi, W. L., Wang, D., & Li, X. (2020):** Psychosocial interventions on perinatal depression in China: A systematic review and meta-analysis. *Journal of Affective Disorders*, 271, 310-327.
 - **Zhu, Y., Wang, F., Zhou, J., Gu, S., Gong, L., Lin, Y., & Ma, D. (2022):** Effect of acupoint hot compress on postpartum urinary retention after vaginal delivery: a randomized clinical trial. *JAMA Network open*, 5(5), e2213261-e2213261.
 - **Zhu, Y., & Zhang, A. (2021):** Effectiveness of acupoint hot compress on early puerperal rehabilitation of parturients after natural childbirth: study protocol for a prospective, multi-center, randomized controlled clinical trial.

This is an open access article under
[Creative Commons by Attribution Non-Commercial \(CC BY-NC 3.0\)](https://creativecommons.org/licenses/by-nc/3.0/)
(<https://creativecommons.org/licenses/by-nc/3.0/>)