

A Study to Evaluate the Effectiveness of Lukewarm Water Soaked Gauze on Urinary Retention among Post Operative Patients at Selected Hospital, Coimbatore

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ABSTRACT

Postoperative urinary retention (POUR) is defined as unable to urinate after a surgical procedure despite having a full bladder. The lukewarm water soaked gauze application will allow the client to pass the urine spontaneously. A quasi-experimental study to evaluate the effectiveness of lukewarm water soaked gauze on urinary retention among post operative patients. The main aim of the study was to assess the effect of lukewarm water soaked gauze on urinary retention among post operative patients at selected hospital, Coimbatore. Non-randomized quasi experimental pretest - posttest with control group design was adopted in the study. By using Non probability purposive sampling technique 30 study participants were selected based on inclusion and exclusion criteria, 15 were assigned to the experimental and control group respectively. The pretest assessment of demographic variables, clinical variables and urinary retention were assessed by using post operative urinary retention (POUR) data sheet in both experimental and control group. After the pretest, the investigator applied lukewarm water (98° F to 105° F (36.5°C to 40.5°C) of 200 ml) over the Supra Pubic region to the experimental group. The soaked gauze were changed for every 5 minutes or when it becomes cold. Observe the patients for 20-30 minutes for urinary retention relief. In the Control group, patients received routine treatment. The post

test was done immediately after one hour by using post operative urinary retention (POUR) data sheet in both experimental and control group. It was identified that the mean score of post operative urinary retention among post operative patients in experimental group was 22.73 ± 7.31 and in control group was 42.26 ± 10.25 . The estimated unpaired 't' value was 18.08 which is significant at p value 0.000. Hence, it was concluded that lukewarm water soaked gauze was an effective method in reducing the urinary retention among post operative patients.

KEY WORDS: Lukewarm water soaked gauze application, urinary retention, post operative patients

Urinary system (Renal System) is one of the excretory systems of the body. The body's primary excretory organs are the kidneys. Each kidney is a bean shaped purplish-brown organ which secretes urine and remove dissolved waste and excess substances from the blood and form urine. Ureters are a pair of muscular, thin-walled, narrow tube which transported urine from the kidneys to the urinary bladder. The urinary bladder is a muscular hollow muscular organ. It is responsible for collecting urine from the ureters and stores it until it is excreted from the body through the urethra.¹

Anesthesia can be impact normal micturition. General, spinal, and regional anesthetics can lead to postoperative urinary retention by preventing neuronal transmission in the sacral spinal cord, which inhibits the regulation and reflexes of urination both at the level of the peripheral nervous system (pontine micturition centre) and at the level of the central nervous system.²

The depressant effects of anesthetics and analgesics impair the feeling sensation of bladder fullness. If bladder tone is reduced, the client has difficulty starting urination. However, client needs to void within 8-12 hours after surgery. A client does not void within 8 hours of surgery or bladder distention present, it may be necessary to insert a straight urinary catheter. Continued difficulty in voiding may require an indwelling catheter. An accepted level of urinary output is at least 1 ml/kg/hr for adults.³

Urinary retention is the inability to void urine voluntarily. It is a widespread issue that can manifest either suddenly or chronically.⁴

The incident rate of postoperative urinary retention (POUR) may be influenced by a number of factors, such as the type of anaesthesia used, the type and length of surgery, underlying comorbidities, and medications taken during the perioperative period.⁵

Postoperative urinary retention (POUR) can be treated both pharmacologically and non-pharmacologically. Pharmacological treatment is cholinergic agents and alpha-adrenergic blockers. Non-pharmacological therapies such as massage therapy acupuncture and warm compress approaches. A clinical non-pharmacological protocol of interventions effective in preventing postoperative urinary retention.⁶

There are different safe and inexpensive nursing interventions for preventing and managing post operative urinary retention that can be reduce the need for catheterization. In non-pharmacological therapy, the lukewarm water soaked gauze application is more effective intervention for postoperative urinary retention. And also this intervention is most effective than the catheterization. The lukewarm water soaked gauze application will allow the client to pass the urine spontaneously.⁷

Need for the study

Postoperative urinary retention (POUR) is a common complication following surgery. The reported incidence varies for the wide range of 5%-70%.⁸

The post operative urinary retention rate was 3.8% among patients undergoing outpatient routine and general surgical procedures, 10-84% of the patients undergoing outpatient orthopedic surgical procedures. In terms of post-operative urine retention following anorectal surgery, colorectal surgery appears to have an advantage of 1%–52% and causes herniorrhaphy between 5.9% and 38% of the time.²

In India the Incidence rate of post operative urinary retention was 40%. A study conducted by Thakur et al., (2019) to assess the incidence rate of post operative urinary retention following spinal anesthesia among 100 participants. The study results found that, In the age group of 20-29 years, none of them had voiding difficulty, age group between 30-39 years of age 16.67% patients had Grade 1 difficulty in voiding urine. Age group between 40-49 years, 23.53% of them had grade 1 difficulty in voiding urine and 5.88% had grade 2 difficulty in voiding urine. In the age group of 50-60 years, 25% of them had Grade 1 difficulty, 18.75% of them had grade 2 difficulty and 25% of them had Grade 3. Which indicates increasing age was significantly associated with higher incidence of POUR with p value <0.05.⁹

A recent study conducted by Boitano et al. (2019) to assess the incidence and risk factors for postoperative urinary retention among 294 men after surgery. The study results showed that 82 (28.2%) of them were developed postoperative urinary retention. Of these, 48 (57.8%) had mild, 15 (18.1%) had moderate, and 20 (24.1%) had severe postoperative urinary retention. Majority 85% of the cases with severe postoperative urinary retention required a foley's catheter at discharge, and 50% of the patients had severe category and had a discharge delay due to postoperative urinary retention. post Operative Urinary Retention (POUR) was associated with risk factors such as older age (p= 0.001), peripheral artery disease (PAD) (p=0.036), chronic kidney disease (p=0.05), diabetes (0.016), prior urinary retention (p=0.002), statin (p=0.007) and chronic tamsulosin use (p=0.042).¹⁰

In Tamil Nadu, at Coimbatore conducted a study by Aiyer, SN., (2018) to assess the factor influencing post operative urinary retention among 370 patients underwent posterior lumbar spine surgery. The study results found that, 16.4% of them were developed postoperative urinary retention (POUR). The study results revealed that the associated significant risk factors of post operative urinary retention were included older age ($p=0.036$), higher body mass index (BMI) ($p<0.0001$), surgery duration ($p<0.0001$), intraoperative fluid administration ($p=0.001$), lumbar fusion versus discectomy/ decompression ($p=0.001$), and higher postoperative pain scores ($p<0.05$ for all).¹¹

The investigator during his clinical posting found that majority of the post operative patients were developed post operative urinary retention and after catheterized the patients developed urinary tract infections. So the investigator felt to manage the post operative urinary retention (POUR) in a better way which could be easily accessible and affordable for post operative urinary patients. And also currently there are very few studies on lukewarm water soaked gauze from India. Hence the investigator was interested to evaluate the effectiveness of lukewarm water soaked gauze on post operative urinary retention among post operative patients.

Statement of the problem

A study to evaluate the effectiveness of lukewarm water soaked gauze on urinary retention among post operative patients at selected hospital, Coimbatore.

Objectives of the study

The main aim of the objectives was

1. To assess the level of urinary retention among post operative patients in experimental group and control group
2. To evaluate the effectiveness of Lukewarm water soaked gauze on urinary retention among post operative patients in experimental group
3. To associate between urinary retention among post operative patients with the selected demographic and clinical variables in experimental group and control group

Hypotheses

H₁ :There is a significant difference between pretest and posttest level of urinary retention

among post operative patients in experimental group

H₂ :There is a significant difference between posttest level of urinary retention among post operative patients in experimental group and control group

H₃ : There is a significant association between level of urinary retention with demographic variables among post operative patients in the experimental group and control group.

H₄ :There is a significant association between level of urinary retention with the clinical variables among post operative patients in experimental and control group

Research Methodology

Quasi-experimental-pretest and posttest control group design was adopted in this study. The duration of the study from Dec 2021- Jan 2022 among post operative patients at GEM hospital, Coimbatore. The study was conducted with the approval from the principal, hospital authority, and the institutional ethics committee. Participants were explained clearly about the purpose of the study and a written informed consent was obtained from all the participants before conducting the study. Confidentiality of the responses were taken and maintained throughout the study. The present study was conducted among 60 post operative patients who fulfilled the inclusion criteria and were recruited by using purposive sampling technique and were allocated to experimental (15) and control (15) group.

Data Collection

The data collection was carried out for one month. The formal written permission was obtained from the Principal, GEM Hospital Authority and college correspondence at PPG College of nursing, Coimbatore. The Institutional Ethics Committee for students gave the approval to conduct the study. A sample of 30 (15 in experimental group and 15 in control group) post operative patients who had developed urinary retention were selected using the purposive sampling technique based on inclusion and exclusion criteria. The purposes of the study and their right to participate or withdraw from the study was explained to the patients for obtaining the written informed consent.

Lukewarm water application is a local moisturizer and it is sterile. Lukewarm water

application was made up of folded layer with gauze or lint piece were soaked in to the lukewarm water before applying. In this non-medical form of treatment, the medium size gauze was soaked in 98° F to 105° F (36.5°C to 40.5°C) of 200 ml warm water, which was applied over the Supra Pubic region of postoperative patients.

In pretest demographic variables, clinical variables and post operative urinary retention were collected in both experimental and control group. After the pretest the investigator applied lukewarm water over the Supra Pubic region to the experimental group of postoperative urinary retention patients. The soak gauze were changed for every 5 minutes or when it becomes cold. Observe the patients for 20-30 minutes for urinary retention relief. In the Control group, patients were received routine treatment. The post test was done immediately after one hour by using post operative urinary retention (POUR) data sheet in both experimental and control group. The present study result showed that the mean score of post operative urinary retention among post operative patients in experimental group was 22.73 ± 7.31 and in control group was 42.26 ± 10.25 . The estimated unpaired 't' value was 18.08 which is significant at p value 0.000. Which indicates the lukewarm water soaked gauze application was very effective to reducing the level of post operative urinary retention among post operative patients.

RESULTS

The study samples comprised of 30 patients (15 in experimental group and 15 in control group) with post operative urinary retention. Out of 30 patients, in experimental group majority 6 (40%) were belong to the age group of above 65 year whereas in control group, majority 7 (46.67%) were belong to the age group between 51-65 years. The demographic variables represented in Table 1. Regarding kind of surgery, in experimental and control group, majority 6 (40%) were undergone lower abdominal surgeries. The clinical variables is shown in Table 2. The present study showed that, in experimental group during pre test, majority 10 (66.67%) had

moderate level of urinary retention whereas after intervention majority 8 (53.33%) had moderate level of urinary retention, 7 (46.67%) had mild level of urinary retention and none of them had severe level of urinary retention. In control group, during pretest majority 6 (40%) had severe level of urinary retention whereas after intervention, majority 10 (66.67%) had severe level of urinary retention. The level of urinary retention showed in Table 3 & 4. There was a mean difference noted between the pretest and post test level of urinary retention in both experimental and control groups. Comparison of mean and standard deviation between pretest and post test scores in both experimental and control groups was showed in Table 5 & 6. The experimental and control group posttest mean and standard deviation scores was 22.73 ± 7.31 & 42.26 ± 10.25 , respectively. The comparison of experimental and control group posttest scores was shown in Table 7.

DISCUSSION

The study samples comprised of 30 patients (15 in experimental group and 15 in control group) with post operative urinary retention.

The present study found that in experimental group during pre test, majority 10 (66.67%) had moderate level of urinary retention and 5 (33.33%) had severe level of urinary retention whereas after intervention majority 9 (60%) had moderate level of urinary retention, 6 (40%) had mild level of urinary retention and none of them had severe level of urinary retention. In control group, during pretest majority 8 (53.33%) had severe level of urinary retention, 7 (46.67%) had moderate level of urinary retention whereas after intervention, majority 10 (66.67%) had severe level of urinary retention, 3 (20%) had moderate level of urinary retention and 2 (13.33%) had mild level of urinary retention.

The above findings were supported by Simsek et al., (2017) to assess the effect of nursing interventions on prevention and management of postoperative urinary retention among 132 patients (66 in experimental group & 66 in

Table. 1 : Demographic variables of patients with post operative urinary retention

S. No	Demographic variables	Number of patients				Chi-square	p value
		Experimental group (n=15)		Control group (n=15)			
		Frequency	Percentage (%)	Frequency	Percentage (%)		
1	Age in years a. 21- 35 years b. 36- 50 years c. 51 - 65 years d. Above 65 years	1 3 5 6	6.67 20 33.33 40	1 2 7 5	6.67 13.33 46.67 33.33	4.83	0.56 (NS)
2	Gender a. Male b. Female	6 9	40 60	9 6	60 40	0.28	0.86 (NS)
3	Marital status a. Married b. Single c. Widower d. Separated	7 1 6 1	46.66 6.67 40 6.67	9 1 3 2	60 6.67 20 13.33	4.89	0.55 (NS)
4	Educational qualification a. No formal education b. Primary education c. Secondary education d. Higher secondary e. Diploma f. Graduate	2 5 3 3 1	13.33 33.33 20 6.67 6.67	4 4 2 0 2 3	26.67 26.67 13.33 0 13.33 20	4.14	0.94 (NS)
5	Occupational status a. Professional b. Semi profession c. Clerical/shop/farm d. Skilled worker e. Semiskilled worker f. Unskilled worker g. Unemployed	0 1 5 1 0 0 8	0 33.33 6.67 0 0 53.33 66.67	2 1 3 1 5 11	13.33 6.67 20 6.67 33.33 73.33	5.35	0.94 (NS)
6	Social habits a. No b. Yes	10 5	66.67 33.33	4	26.67	0.49	0.78 (NS)

Table.2 : Clinical variables of patients with post operative urinary retention

S.No	Clinical variables	Number of patients				Chi-square	p value
		Experimental group (n=15)		Control group (n=15)			
		Frequency	Percentage (%)	Frequency	Percentage (%)		
1	Body mass index a. <18.5 b. 18.5-24.9 c. 25-29.9 d. 30-34.9 e. 35-39.9 f. ≥ 40	1 1 7 4 1 1	6.67 6.67 46.66 26.66 6.67 6.67	0 1 6 5 3 0	0 6.67 40 33.33 20 0	19.21*	0.03* (S)
2	Kinds of surgery a. Anorectal surgery b. Urologic surgery c. Lower abdominal surgery	5 6 6	20 40 40	4 5 6	26.67 33.33 40	1.15	0.88 (NS)
3	Type of anesthesia a. General anesthesia b. Spinal anesthesia	11 4	73.33 26.67	10 5	66.67 33.33	2.31	(NS)
4	Duration of surgery a. 1-3 Hours b. 3-6 Hours c. More than 6 Hours	8 4 3	53.33 26.67 20	9 1 5	60 6.67 33.33	4.81	0.30 (NS)
5	Previous history of surgery a. Yes b. No	7 8	46.67 53.33	7 8	46.67 53.33	0.01	0.99 (NS)
6	Volume of IV fluid received at the time of surgery a. < 500 ml b. 500-1000 ml c. 1000-2000 ml d. >2000ml	1 5 7 2	6.67 33.33 46.67 13.33	1 7 6 1	6.67 46.66 40 6.67	5.64	0.46 (NS)

Table 3 :Pretest level of urinary retention among post operative patients in experimental and control group

S. No	Level of post operative urinary retention (POUR)	Number of patients			
		Experimental group (n=15)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	Mild (1-20)	0	0	0	0
2	Moderate (21-40)	10	66.67	7	46.67
3	Severe (41-60)	5	33.33	8	53.33

Table 4: Posttest level of urinary retention among post operative patients in experimental and control group

S. No	Level of post operative urinary retention (POUR)	Number of patients			
		Experimental group (n=15)		Control group (n=15)	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	Mild (1-20)	6	40	2	13.33
2	Moderate (21-40)	9	60	3	20
3	Severe (41-60)	0	0	10	66.67

Table 5: Analysis on the effectiveness of lukewarm water soaked gauze on urinary retention among post operative patients in experimental group

Group	Level of post operative urinary retention (POUR)	Mean	Standard Deviation	Paired 't' test & p value	
				Mean Difference	p value
Experimental group	Pretest	36.66	7.22	13.93	t=-11.88***
	Posttest	22.73	7.31		P=0.000
***p<0.001					

Table 6: Analysis on the effectiveness of lukewarm soaked gauze on urinary retention among post operative patients in control group

Group	Level of post operative urinary retention (POUR)	Mean	Standard deviation	Paired 't' test & p value	
				Mean difference	p value
Control Group	Pretest	37.6	7.93	4.66	t= 0.29
	Posttest	42.26	10.25		P=0.77 (NS)
p>0.05 Non significant					

Table 7: Analysis on the effectiveness of lukewarm water soaked gauze on urinary retention among post operative patients

Level of post operative urinary retention (POUR)	Mean	Standard deviation	Mean difference	Unpaired 't' test & p value
Experimental group	22.73	7.31	19.53	t= 18.08*** p=0.000
Control group	42.26	10.25		
***P<0.001				

control group) with orthopedic surgery under spinal anaesthesia. The study results revealed that majority 77.3% were developed post operative urinary retention in intervention group and 97% were developed in control group.¹²

The present study found that, in experimental group there was a significant mean difference noted in the mean scores (13.93) of the level of urinary retention between pretest and posttest at p value 0.000. The estimated paired 't' value was -11.88 which is highly statistically significant at p value <0.001. It shows that Lukewarm Water Soaked Gauze application was very effective in reducing the level of urinary retention among patients with Post Operative Urinary Retention.

In control group the estimated paired 't' value was 0.29 which is statistically non significant at p value 0.07. It shows that comparing to lukewarm water soaked gauze application and routine care treatment, lukewarm water soaked gauze application was very effective treatment to reducing the level of urinary retention among patients with post operative urinary retention.

The present study found that there was a significant mean difference noted in the mean scores (19.53) of posttest urinary retention score between experimental group and control group at p value 0.000. The estimated Unpaired 't' value was 18.08 which is significant at p<0.001. It shows that Lukewarm Water Soaked Gauze application was very effective in reducing the level of urinary retention among patients with Post Operative Urinary Retention.

The above findings were supported by the study of Sarebanhassanabadi M., (2021) to assess the effect of wet gauze on relief of acute urinary retention among 36 male patients (13 in wet gauze, 12 in dry gauze & 11 in control group) after cardiac catheterization at Afshar Hospital, Yazd, Iran. The study results revealed

that relieving urinary retention in wet gauze, dry gauze and control groups was 61.5%, 25%, and 9.1%, respectively. There was a significant difference noted in relieving urinary retention among the groups at p value 0.022 and also there was a significant difference noted among wet gauze and other two groups based on urinary retention relief at p value 0.007. It's indicates wet gauze is very effective to relief the acute urinary retention.¹³

A similar study conducted by Zhu et al., (2022) to assess the effect of acupoint hot compress on postpartum urinary retention after vaginal delivery among 1085 (537 in experimental group & 548 in control group) participants at 12 hospitals, China. The study results showed that in experimental group, after intervention the postpartum urinary retention score was 4.5% whereas in control group 7.7%. It showed there was significant difference noted between experimental group and control group at p value .03.¹⁴

The present study found that there was a statistically significant association found between level of post operative urinary retention and body mass index at p value 0.03. Other Selected clinical variables and demographic variables are not found significant association with urinary retention score at p value >0.05.

A similar study conducted by Afazel et al., (2014) conducted a study to compare the effects of hot pack and lukewarm-water-soaked gauze on postoperative urinary retention among 126 participants at surgical unit of Milad Hospital, Kashan City, Iran. The study results revealed that there was no significant association found among the experimental groups regarding patients' age, body mass index, body temperature, and the amount of intravenous fluids administered during surgery, the kind of surgery, administration of opioid agents,

and patients' underlying conditions at p value <0.05.⁷

LIMITATION

- Sample size of the study was small which limits the generalization of the study findings
- Adult both male and female patients were admitted one hospital were included.

RECOMMENDATIONS FOR FURTHER STUDY

- A similar study can be conducted among postoperative patients with different settings.
- A descriptive study can be conducted to identify the risk factors of post operative urinary retention among post operative patients.
- A systemic review can be conducted regarding benefits of lukewarm water soaked gauze on post operative urinary retention.
- An experimental study can be conducted to assess the effect of massage therapy on prevention of post operative urinary retention.
- An observational study can be conducted to identify the complications of post operative urinary retention.
- A comparative study can be conducted among patients with post operative urinary retention with two interventions such as lukewarm water soaked gauze and massage therapy.
- The study can be replicated with large number of samples which would facilitate generalization of findings.

CONCLUSION

- Urinary retention was found in post operative patients. The presence of urinary retention was treated by lukewarm water soaked gauze application. It is a non-pharmacological therapy. The heat relaxes the sphincter muscles and it will be aids urination. Lukewarm water soaked gauze application will be promote to void and manage their urinary retention symptoms themselves and it helps to reduce urinary retention and which has positive effect on treating urinary retention among post operative patients. Thus they expressed a greater level of comfort and assured that they

will practice it regularly in their clinical settings.

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