

KNOWLEDGE AND PRACTICE AMONG THE CARETAKERS OF BEDRIDDEN PATIENTS ON PREVENTION OF URINARY TRACT INFECTION

Khanal N¹

ABSTRACT

INTRODUCTION: Urinary tract infection (UTI) is one of the major complications of immobility or bedridden condition. Between 46-59% of spinal cord injury patients develop urinary tract infection during the first year of trauma. UTI is a second most common type of infection, accounting for nearly 25% of all infections and a serious health problem affecting millions of people each year. The findings of the study might be helpful to the long term care health institution for the development the strategies to involve the caretakers to prevent urinary tract infection in bedridden patients.

OBJECTIVE: The purpose of the study was to find out the level of knowledge and current practice of caretakers of bedridden patients on prevention of urinary tract infection.

METHODS: The descriptive and cross-sectional study design was adopted in this study. A self-prepared structured interview questionnaire and observation checklist was used to collect data from 30 caretakers of hospitalized bedridden patients of Nepal Orthopedic Hospital and Spinal Injury Rehabilitation Center Jorpati implying purposive & convenient sampling technique.

RESULTS: Out of 30 caretakers, no one had adequate (>80%) knowledge and 46.6% had moderate (50-80%) knowledge and 53.3% had low (<50%) knowledge on meaning, high risk group, contributing factors, signs & symptoms, consequences and preventive measures of UTI as a whole. Caretaker's preventive practices of UTI for their bedridden patients were not satisfactory except encourage the patient for drinking 2-3 liters water per day.

CONCLUSION: Majorities (53.3%) of the caretakers of bedridden patients had low level knowledge on preventive measures of UTI. Similarly UTI preventive practices of caretakers were also not satisfactory. Therefore, awareness raising programme on preventive measures of UTI need to be organized specially for caretakers.

KEY WORDS: Knowledge and Practice of UTI, Nepal Orthopedic Hospital, Spinal Injury Hospital, Bedridden patient

For Correspondence

Mrs. Narbada Khanal

Associate Professor

Universal College of Nursing Sciences,

Bhairahawa, Nepal

Email: narbadakhanal@gmail.com

INTRODUCTION

Patients mobility is restricted due to pain, paralysis, loss of muscles strength, systemic disease and use of immobilizing device like cast, brace, traction etc. Frequently, patients are placed on bed rest or limited their activities for therapeutic purpose. Spinal fracture, lower limbs fracture, pelvic fracture and multiple limbs fracture require prolong immobilization to maintain skeletal alignment to enhance bone healing. Immobility & bed rest (bedridden condition) brings many physiological complications if appropriate care is not provided.

Urinary tract infection (UTI) is one of the major complications of immobility or bedridden condition that influences the health and quality of life with enormous cost to the health system. Between 46-59% of spinal cord injury patients develop urinary tract infection during the first year of trauma¹. Likewise, untreated or persistent UTI may cause other more serious complications such as kidney damage and prostate infections². Renal failure is one of the major causes of recurrent UTI that increase the mortality rate of bedridden patient. Although, effective treatment may resolve lower urinary tract infection (cystitis) by decreasing the duration of symptoms and incidence of progression to upper urinary tract infection.

The *Escherichia coli* (*E.coli*), gram-negative bacteria are responsible for 80% to 85% of cystitis and stool is a common and major source of UTI. Therefore, bowel incontinent patients developed UTI almost three times more than bowel continent patients.³ Likewise, use of indwelling urinary catheters and duration is the most significant risk factors to develop urinary tract infections. The risk of UTI rises from 19% for 5 days long catheterization to 50% for 14 days.⁴ European national prevalence studies show that urinary tract infections account for 23.49% of all nosocomial infections. Among the nosocomial urinary tract infections, 62.8% are catheter associated. Catheter associated UTI can be prevented by maintaining closed drainage system and using silver-coated catheter. The costs for the prevention, detection and treatment of UTI significantly affect a country's health-care budget so that, decreasing in the UTI rate would have important economic implications.⁵

UTI is a preventable disease. It can be prevented if appropriate preventive measures are adopted while providing care to the patient. Appropriate patient education is necessary to help the client understand the process and follow an effective treatment plan to prevent urinary tract infection.² Nurses are the main professional components of the front line staff in most health system. Nursing care is essential to catch their developmental goals for safe and effective care. But the world has entered into

a critical period of shortage of nurses. The scarcity of nurses is being highlighted as one of the obstacles to achieve the wellbeing of the global population.⁶ Therefore, the caretakers are the key persons to prevent complications of bedridden condition. Caretakers should be included while caring bedridden patients for continuity of the care during and after hospitalization. If the caretakers have adequate knowledge and skills, they can incorporate that knowledge and skills while providing care to the patient continuously. Therefore, the main purpose of the study was to find out the level of knowledge and practices of caretakers 'of bedridden patient to prevent urinary tract infection.

METHOD AND MATERIALS

Descriptive and cross-sectional study design was adopted in this study. The study was carried out in Nepal Orthopedic Hospital (NOH) and Spinal Injury & Rehabilitation Centre, Jorpati, (SIARC). The population of the study consisted of all caretakers who were attending of their bedridden patients continuously at least for 7 days. A total 30 caretakers; 9 from Nepal Orthopedic Hospital and 21 from Spinal Injury Rehabilitation Center Jorpati were selected purposively and available during the time of data collection.

Structured interview questionnaire (translated in Nepali language) was developed to collect the information about meaning, risk group, contributing factors, signs & symptoms, consequences and preventive measures of UTI. An observation check list was developed to measure the activities carried out by the caretakers to prevent UTI. Observation checklist-A, that consisted "encourage the patient for drinking 2-3 liters water per day", "avoid to drink bladder irritating fluids", "use clean and dry urinal / bedpan" and "wipe the perineal area from front to back after defecation" for all caretakers and encourage to void 2-3 times per day for those caretakers whose patients were not with Foley's catheter. An observation checklist-B, that consisted "hang the urinary bag below the bladder level of the patient", "change the catheter once a week", "get the urinary bag replace every three days", "do the perineal care once a day" and do Kegal exercise" for those caretakers whose patients were with Foleys catheter. Validity of the tools was maintained by searching the available literature and consultation with urologist, neurologist and orthopedic surgeon. Reliability of the instrument was maintained by pre-testing the interview questionnaire with the 5 caretakers of orthopedic ward in Nepal Medical College.

Before collecting data, permission was obtained from the NOH and SIARC, Jorpati. The researcher herself was collected the data from mid of August to mid of September 2006 within 4 weeks period. Informed verbal consent has

taken from all the caretakers who participated in the study. Knowledge was measured by administering structured interview questionnaire among 30 caretakers of bedridden patients. Practices were observed by using observations check list-A and B on those caretakers who were participated in interview. The researcher instructed the caretakers to show the amount of water drinking by the patient to the researcher from 8 am to 4 pm and to the nursing staff from 4 pm to 8 am (when the researcher was not available) for recording in intake and output chart (Nursing Note) each time within 24 hours. The next day, researcher herself calculated the total amount of water taken by the patient within 24 hours on previous day. Likewise, the researcher herself observed each caretaker practices related to use of urinal/bedpan and wiping from front to back at the same time after long toileting of the patient. Furthermore, caretaker's practices related to hang urinary bag below the bladder level of the patient, do perineal care and encourage the patient to perform Kegel's exercise were observed and recoded the date of urinary catheter change and urinary bag change on nursing note. All interview forms and checklists were reviewed for completeness by the researcher herself and was checked the correctness and accuracy before leaving from the field work.

The questionnaire was re-checked for the completeness and correctness. Identification number was given orderly as code number for each interviewed questionnaire and observation checklist before entering the data. SPSS version 16 computer software programme was used for entering, cleaning and analysis of the data about preventive measures of urinary tract infection. Analyzed data were reported in descriptive statistics such as frequency, percentage, mean and standard deviation. To calculate the mean knowledge in each multiple responses answer about different aspects of urinary tract infection, the number of correct answer/answers was considered as frequency (f) whereas the number of item in this concept was considered as observation (x), response of all subjects was counted separately. Similarly, in negative response option "NO" was considered as correct answer.

RESULT

Out of 30 caretakers, majority (60%) were female and 40% male. The maximum (30%) of the caretakers were Brahman, followed by Chhetri, Tamang, Newar, Rai and others (Pariyar) by 26.6%, 20%, 16.6%, 3.3%, and 3.3% respectively and 76.7% were literate. Regarding caretaker's relation with patient, 86.6% were family members and only 13.3% were paid caretakers (non professional). Among the family members, 36.6% were housewives. The mean age of the caretakers was 34 years.

Table 1: Caretakers' Knowledge on UTI: Meaning

Items	Number	Percent	Mean	Standard Deviation
Multiplication of micro-organism with in the urinary passage	14	46.6	0.76	0.93
*Formation of stone with in the urinary passage	4	13.3		
*Renal failure	5	16.6		

* Negative responses ('No' is Correct answer) Multiple Responses

Only 46.6% of the caretakers could define the term urinary tract infection correctly. The mean score on meaning of urinary tract infection was found 0.76 with the standard deviations of 0.93.

Table 2: Caretakers' Knowledge on UTI: High Risk Group

High Risk Group	Number	Percent	Mean	Standard Deviation
Adult Female	12	40.0	1.50	1.71
*Adult Male	5	16.6		
Elderly Female	9	30.0		
Elderly Male	12	40.0		
* Under 5 Male Children	3	10.0		
Under 5 Female Children	4	13.3		

* Negative Responses ('No' is Correct Answer) Multiple Responses

The maximum (40%) of the caretakers reported that adult female & elderly male and only 13.3% of the caretakers said under 5 female children are the high-risk group for UTI and the mean score was found 1.50 with the 1.71 standard deviation.

Table 3: Caretakers' Knowledge on UTI: Contributing Factors

Contributing Factors	Number	Percent	Mean	Standard Deviation
Inadequate fluid intake	22	73.3	3.50	2.25
Stagnation of urine	20	66.6		
leakage of urine	12	40.0		
Insertion of catheter	14	46.6		
Poor perineal hygiene	19	63.3		
*Loss of appetite	7	23.3		
Multiple sex partner	11	36.6		

* Negative Response ('No is Correct Answer) Multiple Responses

The majorities (73.3%) of the caretakers knew inadequate fluid intake, 66% knew stagnation of urine, 63.3% knew poor perineal hygiene and 40.0% of the caretakers knew leakage of urine & 36.6% knew multiple sex partner are contributing factors of UTI. The mean score on knowledge about contributing factors of UTI was found 3.50 with the standard deviations of 2.25.

Table 4: Caretakers' Knowledge on UTI: Signs/Symptoms

Signs/Symptoms	Number	Percent	Mean	Standard Deviation
Burning urination	22	73.3		
Milky & cloudy urine	16	53.3	4.90	3.33
Frequent urination with less urinary output	12	40		
Red & swollen urinary passage	17	56.6		
Fever with shivering	13	43.3		
Urgency of urination	14	46.6		
Blood in urine	15	50.0		
Lower abdomen pain	16	53.3		
*Heart burn	7	23.3		
Loin pain	7	23.3		
Nausea & vomiting	8	26.6		

* *Negative Response ('No' is Correct Answer) Multiple Responses*

Table 4 reveals that the majorities (73.3%) of the caretakers knew burning urination, 56.6% knew red swollen urinary passage and 43.3% knew increased urination with less urinary output are the signs & symptoms of UTI. Similarly, 53.3% of the caretakers' verbalized lower abdomen pain and milky/cloudy urine, 46.6% urgency of urination, 43.3% fever with shivering, 26.6% nausea/vomiting and 23.3% loin pain are also the signs and symptoms of urinary tract infection. The mean score on knowledge about signs and symptoms of UTI were found 4.90 with the standard deviations of 3.27.

Table 5: Caretakers' Knowledge on UTI: Consequences

Consequences	Number	Percent	Mean	Standard Deviation
Individual & family stress	22	73.3	2.56	1.73
Prolong hospitalization	21	70.0		
Renal failure	16	53.3		
Anemia	6	20.0		
Financial overload	12	40		

Multiple Responses

Regarding consequence of UTI, the majorities (73.3%) of the

caretakers said individual and family stress, 70% said prolong hospitalization, 53.3% said renal failure, 40% said financial overload and only 20% of the caretakers said anemia as the consequences of UTI. The mean score on knowledge about consequences of UTI was found 2.56 with the standard deviations of 1.73.

Table 6: Caretakers' Knowledge on UTI: Preventive Measures

Preventive Measures	Number	Percent	Mean	Standard Deviation
Drink plenty of fluid	24	80	7.43	4.62
Allow to drink fruit juice	18	60		
Allow to drink water	23	76.6		
Drink 2-3 liter of water per day	4	13.3		
Avoid bladder irritating fluid intake				
• alcohol	21	70		
• coffee	7	23.3		
• citrus juice	7	23.3		
Wiping from front to back after defecation	11	36.6		
Using clean & dry urinal/bedpan	20	66.6		
Hanging urinary bag below the level of urinary bladder of the patient	19	63.3		
Changing urinary bag every three days	0	0.0		
Changing urinary catheter once a week	2	6.6		
Doing catheter care once a day	11	36.6		
Voiding at least 2-3 hours interval	17	56.6		
Changing the position of the patient every 2-3 hours interval	13	43.3		
Connecting the urinary catheter with urinary bag safely.	20	66.6		
Know the meaning of kegel's exercise	4	13.3		
Doing kegel's exercise	2	6.6		
Doing kegel's exercise 26 times per day	0	0.0		
Do kegal exercise 8-10 times per day	0	0.0		

Multiple Responses

Regarding preventive measures of UTI, 80% caretakers reported that plenty of fluids need to drink but only 13.3% reported 2-3 liters of water drinking per day as the measures to prevent UTI. Likewise, 66.6% of caretakers knew using clean & dry urinal/bedpan, 63.3% knew hanging urinary bag below the level of urinary bladder of the patient and 56.6% knew voiding at least 2-3 hours interval are the measures to prevent UTI. None of the 30 caretakers knew that changing the urine collecting bag every three days and doing Kegel's exercise (exact frequency) as a preventive measure of UTI. The mean score on knowledge about preventive measures of UTI was found 7.43 with standard deviations of 4.62.

Table 7: Level of Knowledge on UTI as a whole

Level of Knowledge	Frequency	Percentage	Total score	Mean	Standard Deviation
High (>80%)	0	0.0%	52	20.66	12.67
Moderate (50-80%)	14	46.6%			
Low (<50%)	16	53.3%			

The total knowledge score on urinary tract infection as a whole (meaning, risk factors, contributing factors, signs & symptoms, consequences and preventive measures) were 52. Based on score obtained by the caretakers on knowledge about UTI was categorized in three levels; high, moderate and low knowledge. Out of 30 caretakers, no one scored as high (>80%) knowledge, 46.6% of the caretakers scored as average (50-80%) and 53.3% scored as low (<50%) knowledge. The mean score on knowledge as a whole was found 20.66 with standard deviations of 12.67.

Table 8: Caretakers' Practice to Prevent UTI

Practices of Respondents to Prevent Urinary Tract Infection (30)	Number	Percent
Encourage the patient for drinking 2-3 liters of water per day	23	76.6
Avoid bladder irritating fluids	2	6.6
Wipe the perineal area from front to back after defecation	1	3.3
Use clean and dry urinal/ bedpan	14	46.6
Encourage to void 2-3 hours interval (n=19)	3	15.7
Practice of Respondents' whose Patient were with Foleys Catheter (n=11)		
Hang the urinary bag below the bladder level of the patient	1	3.3
Change the urinary catheter once a week	0	0.0
Get the urinary bag replaced every three days	0	0.0
Do perineal care once a day	0	0.0
Encourage to do kegel's exercise	0	0.0

Out of 30 caretakers, majorities (76.6%) were encouraged their patient for drinking 2-3 liter of water to flush out the micro-organism from urinary passage. Similarly, 3.3% the caretakers cleaned their patients' perineal area from front to back after defecation, 6.6 % of them avoid to drink bladder irritating fluids like, coffee, alcohol and citreous juice and only 46.6% used clean and dry urinal/bedpan. Furthermore, 19 caretakers whose patients were not with Foley's catheter, 15.7% of them encouraged their patients for voiding within 2-3 hours interval. Likewise, 11 caretakers whose patient were with Foley's catheter, only 3.3% (1) were hung the urine collecting bag below the bladder level of the patient and none

of them changed the urinary catheter once a week, urine collecting bag every three days, perineal care once a day and encouraged to do kegel's exercise.

DISCUSSION AND CONCLUSION

This study revealed that majority (60%) of the caretakers were female, this may be due to the caring role of Nepalese women in the society. Generally, family member found to be the caretaker during sick in the Nepalese society but this study showed that 13.3% caretakers were hired for long term care. It indicates caring role is changing from family member to paid caretakers in Nepalese society too.

People must know about the definition, risk factors, signs & symptoms and preventive measures of UTI. If people have adequate knowledge, then only they can use their knowledge to prevent catheter related UTI. This study found that no one of the caretakers had adequate knowledge about definition, risk factors, signs & symptoms, complications and preventive measures of UTI. Similar findings was found in one study conducted by Wilde⁷ in the community with the people having indwelling catheter and almost all of them were unaware about risk factors, symptoms and preventive measures of UTI.

The Escherichia coli (E.coli), gram-negative bacteria are responsible for 80% to 85% of cystitis and stool is a common and major source of UTI. Therefore, bowel incontinent patients developed UTI almost three times more than bowel continent patients.³ In this study, it is found that 66.6% of caretakers knew using clean & dry urinal/bedpan and 36.6% wiping from front to back after defecation as the preventive measures of UTI but in practice 46.6% were using clean & dry urinal/bedpan and only 3.3% wiping from front to back after defecation.

The risk of UTI rises from 19% for 5 days long catheterization to 50% for 14 days.⁴ In this study it is found that only 2.2% of caretakers knew that urinary catheter should be changed once a week but no one changed the catheter once a week.

Urinary blockage is one of the contributing factors for UTI. To increase fluid intake is one of the measures to prevent urinary blockage. This study showed that 80% of caretakers knew that plenty of fluids intake is one of the preventive measures of UTI and 76.6% caretakers encouraged their patient to drink 2-3 liters of water per day. A study was carried out by Wilde⁸ with 24 patients having an indwelling urinary catheter for at least 3 months. Among them 13 experienced blockage. Those who experienced blockage, 6 developed UTI during the 6 months

of the review. Therefore, the nurses or caretakers encouraged or taught their patients to increase fluid intake to prevent urinary blockage.

CONCLUSION

UTI is a second most common infection among the nosocomial infections and brings many undesirable complications including death. Infection can be prevented if appropriate preventive measures are adopted by the high risk patient and care takers or providers. This study was conducted to find out the level of knowledge and practices of caretakers on UTI and its preventive measures among bedridden patient.

Out of 30 caretakers, no one (0%) had adequate knowledge and 46.6% had average level knowledge and 53.3% had low level of knowledge on preventive measures of UTI. Mean score of overall knowledge score was 52 and based on obtained score by the caretakers, mean score was calculated and found 20.66 with standard deviation 12.67 on different aspect of preventive measures of UTI. It indicates that the majorities of the caretakers had less knowledge about the meaning, high-risk group, contributing factors, signs & symptoms, consequences and preventive measures of UTI.

Similarly, this study revealed that practices of caretakers, 76.6% were encouraged to drink 2-3 liter of water and 46.6% used clean and dry urinal/bedpan but other practices like, avoid drinking bladder irritating fluids like, coffee, alcohol and citreous juice, cleaning patients' perineal area from front to back after defecation and other catheter related activities were not satisfactory. From this finding it can be concluded that knowledge and practice increasing programme should be organized specially for caretakers on preventive measures of UTI.

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