Research Article

Point Prevalence of Indwelling Catheterized Patients Admitted in a Tertiary Care Hospital and Related Nursing Care Practices

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Abstract

Urinary catheterization facilitates the drainage of urinary bladder. The current study was carried out to assess the point prevalence of indwelling catheterized patients admitted in a tertiary care hospital and to assess the related practices of nurses. A descriptive cross-sectional design was employed. Sampling technique was purposive. Survey of all the admitted patients was carried out in a single day to assess the point prevalence of catheterized patients. Tools for data collection comprised of sociodemographic profile and clinical profile of the catheterized patients. A checklist was used to assess the self-expressed practices of nurses regarding insertion, care and removal of catheter. The total number of admitted patients on the day of survey was 1718. 317 (18.5%) patients were found to be catheterized. Majority of the patients were in Intensive Care Unit followed by Emergency areas and were suffering from neurological disorders. Most of the self-expressed practices of nurses regarding catheterization were adequate other than documentation of the procedure; providing perineal care at the time of catheterization, catheter care and removing the catheter; and clamping the catheter before its removal.

Keywords: Point prevalence, Urinary catheterization, Nursing practices

Introduction

Out of all the admitted patients, around one-quarter of patients had indwelling urinary catheters inserted. It is estimated that about 25% of hospitalized patients have an indwelling urinary catheter in place at some time during the course of their hospitalization. Various indications for catheterization reported are patients having urinary retention; bladder outlet obstruction; for accurate measurement of urinary output in critically ill patients; patients undergoing urologic surgery; anticipated long duration of surgery; assisting in healing of open sacral or perineal wounds in incontinent patients; multiple traumatic injuries; paralysis of lower part of the body; and improving the comfort at the end of life. Depending upon the indications, the catheter may be used for long term or for a short time.

The catheterized patients are at risk of catheter-related urinary tract infection (UTI). Various risk factors for infection include longer duration of catheterization, colonization of drainage bag, diarrhea, diabetes, absence of antibiotics, female gender, renal insufficiency, error in catheter care, and immune compromised states of the patients. Around 80% of urinary tract infection is because of the use of indwelling urinary catheters. Significant association of the role of duration of catheterization and length of hospital stay on the rate of catheter-related hospital-acquired urinary tract infection has been documented. In one of the studies, three patients had UTIs out of 1,2,3,4,5 Nursing Students, 6 Clinical Instructor, 7 Lecturer, National Institute of Nursing Education, PGIMER, Chandigarh.

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How to cite this article: Kaur A, Bhatia S, Devi U et al. Point Prevalence of Indwelling Catheterized Patients Admitted in a Tertiary Care Hospital and Related Nursing Care Practices. Int J Nurs Midwif Res 2017; 4(4): 49-56.

Digital Object Identifier (DOI): https://doi.org/10.24321/2455.9318.201744

ISSN: 2455-9318

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37 catheterized patients (8%) at 10 days length of stay, and 42 patients had UTI out of 49 patients catheterized (85.5%) at 18 days length of stay. Reduction of duration of catheterization and length of stay of patients have a positive impact on reduction of catheter-related urinary tract infection. So catheter should be removed as early as possible. Urinary catheter reminders and stop orders have also been beneficial to remove the urinary catheter and consequently the reduction in the infection. These should be used to improve the patient safety.

Nurses are generally responsible initially for catheterizing the patients and then providing care to the catheterized patients in order to prevent the catheter-associated UTI. They need to follow appropriate and safe practices while performing procedures related to urinary catheter. The current study was carried out to assess the point prevalence of indwelling catheter amongst the patients admitted in a tertiary care hospital and its related self-expressed practices among the nursing personnel.

Materials and Methods
This cross-sectional study was conducted at a tertiary care hospital in the month of March 2017. Survey of all the admitted patients in various wards was carried out in a single day. Purposive sampling technique was used to enroll all the catheterized patients in the study. A prevalidated tool comprising the sociodemographic profile, clinical profile of the patients including diagnosis, reason and duration of catheterization, date of catheter change and the order for catheter insertion and removal was used to collect the data. A checklist was used to assess the self-expressed practices of nursing personnel regarding insertion and care and removal of indwelling catheter among the admitted patients. The study was approved by the Ethical Committee of Nursing Institute. Data was analyzed using descriptive statistics.

Results
The total number of patients admitted on the day of survey were 1718. 317 (18.5%) patients were found to be catheterized. Majority of patients were found to be in ICUs followed by emergency wards, surgical wards, and medical wards. Most of the catheterized patients were having neurologic and neurosurgical disorder (Fig. 1 and Table 1).
Table 2. Sociodemographic Profile of the Catheterized Patients

| Variables                  | n(%)    |
|----------------------------|---------|
| **Age (yrs)**              |         |
| 1–20                       | 27(8.6) |
| 21–40                      | 113(35.6)|
| 41–60                      | 109(34.4)|
| 61–80                      | 60(18.9) |
| >80                        | 8(2.5)  |
| **Sex**                    |         |
| Male                       | 198(62.5)|
| Female                     | 119(37.5)|
| **Marital status**         |         |
| Married                    | 248(78.4)|
| Single                     | 62(19.5) |
| Widow                      | 4(1.2)  |
| Divorced                   | 3(0.9)  |
| **Educational status**     |         |
| Just literate              | 84(26.5) |
| Matric                     | 109(34.3)|
| High school                | 78(24.7) |
| Graduate and above         | 46(14.5) |
| **Occupational status**    |         |
| Unemployed                 | 119(37.5)|
| Private job                | 75(23.6) |
| Business                   | 64(20.2) |
| Skilled                    | 26(8.3)  |
| Govt. job                  | 19(6.0)  |
| Unskilled                  | 14(4.4)  |

Mean ± S.D= 44.61±18.29; Range (yrs)=1-90; R

Table 2 depicts the sociodemographic profile of patients who were catheterized. The patients’ age was in the range of 1–90 years with mean age of 44.6±18.3 years. Around one-third of the patients were in the age group of 21–40(36%), while 27(8.6%) were aged less than 20 years. Majority (63%) was male. 248(78%) were married, 60.8% were just literate or matric pass and 119(38%) were unemployed.
Table 3. Distribution of the Catheterized Patients as per Diagnosis, Reasons and Duration of Catheterization

| Variables                      | n(%)  |
|-------------------------------|-------|
| **Diagnosis**                 |       |
| Neurology & neurosurgery patients | 103(32.5) |
| Orthopedics                   | 90(28.4) |
| Gastroenterology              | 47(14.8) |
| Urology                       | 42(13.2) |
| Obstetrics                    | 13(4.1) |
| Endocrinology                 | 9(2.8)  |
| Burns                         | 4(1.3)  |
| Musculoskeletal               | 3(0.9)  |
| ENT                           | 2(0.6)  |
| Hematology                    | 2(0.6)  |
| Respiratory                   | 2(0.6)  |
| **Reason for catheterization**|       |
| Post-op                       | 93(29.4) |
| Incontinence                  | 90(28.4) |
| Intubated                     | 87(27.4) |
| Retention                     | 47(14.8) |
| **Duration of catheterization**|       |
| 1–10 days                     | 200(63.1) |
| 11–20 days                    | 77(24.3) |
| 21–30 days                    | 40(12.6) |

Table 3 depicts the distribution of patients as per diagnosis, reasons and duration of catheterization. Around one-third (33%) patients were from neurology and neurosurgery unit followed by orthopedics and gastroenterology. 93(29%) were catheterized because of post-op condition followed by incontinence (28%) and intubation (27%). For 200(63.1%) patients, the duration of catheterization was between 1 and 10 days and for 40(13%), the duration of catheterization was maximum of 21–30 days.
Table 4. Information Profile of Nursing Personnel

| Variables                      | n(%)  |
|-------------------------------|-------|
| **Age (yrs)**                 |       |
| 20–30                         | 135(75.8) |
| 31–40                         | 39(21.9)  |
| >41                           | 4(2.3)   |
| **Gender**                    |       |
| Male                          | 31(17.4) |
| Female                        | 147(82.6) |
| **Marital status**            |       |
| Married                       | 92(51.7) |
| Unmarried                     | 86(48.3) |
| **Professional qualification**|       |
| Degree                        | 132(74.2) |
| Diploma                       | 30(16.9) |
| Post-graduation and above     | 16(8.9)  |
| **Working experience**        |       |
| <5                            | 111(62.4) |
| 5−10                          | 50(28.1)  |
| 10−15                         | 10(5.6)   |
| >10                           | 7(3.9)    |
| **Current area of working**   |       |
| Surgical ward                 | 54(30.3) |
| Emergency ward                | 54(30.3) |
| ICU                           | 30(16.9) |
| Obs & Gynae                   | 17(9.6)  |
| Medical Ward                  | 17(9.6)  |
| EMOPD                         | 2(1.1)   |
| AUC                           | 4(2.2)   |

Table 4 depicts the information profile of nursing personnel who expressed their practices on a checklist regarding catheter insertion, care and removal. The mean age of the participants was 28.2±5.4 years with range of 20–48 years. Majority was in the age group of 20–30 years and were female (83%). 92(52%) were married. 132(74%) were degree holders as per professional qualification. 111(62%) had working experience of less than 5 years.
Table 5. Self-Expressed Practices of Nursing Personnel regarding Urinary Catheterization, Care and Removal of Indwelling Catheter

| Items regarding insertion | Yes (n%) | Gap from Ideal Practices (n%) |
|---------------------------|---------|-----------------------------|
| Uses all articles, i.e., saline, povidone-iodine solution, gloves, additional pack, indwelling catheter, lubricating jelly, syringe (10 mL), drape sheet and screen | 176(98.8) | 1.2 |
| Uses catheter set for catheterization | 131(73.5) | 26.6 |
| Explains procedure to the patient | 178(100) | 0.0 |
| Maintains privacy during catheterization | 178(100) | 0.0 |
| Gives proper position (supine position with legs flexed) to the patient | 178(100) | 0.0 |
| Performs hand hygiene before catheterization | 178(100) | 0.0 |
| Uses gloves and drape | 178(100) | 0.0 |
| Provides perineal care before insertion of catheter using povidone iodine solution | 134(75.2) | 24.8 |
| Uses both povidone iodine and saline for perineal care | 155(87.0) | 13.0 |
| Takes assistance for catheterization | 135(75.8) | 24.2 |
| Inflates the balloon of the catheter using normal saline (10 mL) | 178(100) | 0.0 |
| Hangs uro-bag after catheterization at lower side of bed or trolley | 178(100) | 0.0 |
| Observes the uro-bag after catheterization for urine | 177(99.4) | 0.6 |
| Documents the procedure | 142(79.7) | 20.3 |

| Items regarding catheter care | Yes (n%) | Gap from Ideal Practices (n%) |
|-----------------------------|---------|-----------------------------|
| Uses all articles, i.e., saline, povidone-iodine solution, gloves, additional pack, spirit swabs and screen. | 170(95.5) | 4.5 |
| Performs hand hygiene before catheter care. | 178(100) | 0.0 |
| Explains procedure to the patient. | 178(100) | 0.0 |
| Maintains privacy during catheter care. | 176(98.8) | 1.2 |
| Provides proper position (supine position with legs flexed) to the patient. | 173(97.1) | 2.9 |
| Uses aseptic (hand washing, gloving, draping) technique during catheter care. | 169(94.9) | 5.1 |
| Uses both povidone iodine and saline for perineal care. | 163(91.5) | 8.5 |
| Takes assistance for catheter care. | 108(60.6) | 39.4 |
| Cleans the exposed part of catheter with betadine. | 128(71.9) | 28.1 |
| Cleans uro-bag tubing with spirit swabs. | 107(60.1) | 39.9 |
| Secures catheter with micropore. | 167(93.8) | 6.2 |
| Maintains record of urine output. | 176(98.8) | 1.2 |
| Documents procedure. | 108(60.6) | 39.4 |

| Items regarding removal of catheter | Yes (n%) | Gap from Ideal Practices (n%) |
|-----------------------------|---------|-----------------------------|
| Checks removal orders. | 178(100) | 0.0 |
| Clamps catheter before 30 minutes of removal. | 90(50.5) | 49.5 |
| Uses articles (additional pack, gloves, normal saline, povidone iodine, syringe 10 mL and screen) for removal of catheter. | 163(91.5) | 8.5 |
| Performs hand hygiene before catheter removal. | 178(100) | 0.0 |
| Explains procedure to the patient. | 178(100) | 0.0 |
| Maintains privacy. | 178(100) | 0.0 |
| Provides proper position (supine position with legs flexed) to the patient. | 176(98.8) | 1.2 |
| Withdraws the fluid with syringe before catheter removal. | 178(100) | 0.0 |
| Removes catheter after deflating the balloon. | 178(100) | 0.0 |
| Provides perineal care with povidone iodine and saline after removal. | 125(70.2) | 29.8 |
| Observes for passage of urine after removal of catheter. | 162(91.0) | 0.9 |
| Discards catheter according to biomedical waste management after its removal. | 177(99.4) | 0.6 |
| Documents procedure. | 112(62.9) | 37.1 |

Table 5 depicts the self-expressed practices of nurses regarding catheter insertion, care and removal. During catheter insertion, everyone expressed that they maintained privacy of patient, explained procedure to
the patient, maintained proper position of the patient, and hung uro-bag at the bed or the trolley at a lower level than the patient. More than 90% subjects expressed that they observed uro-bag for urine after catheterization. Around three-fourths of the subjects reported that they used catheter set for catheterization, provided perineal care using povidone iodine solution and took assistance while doing the procedure. Majority (80%) did documentation of the procedure. During catheter care, everyone expressed that they explained the procedure to the patient and performed hand washing before care. More than 90% reported that they maintained privacy and recorded the urine output. Around 60% took assistance, did documentation and cleaned uro-bag tubings with spirit swabs. At the time of removal, everyone reported that they performed handwashing, explained procedure to the patient and maintained privacy. More than 90% provided proper position, used various articles, observed passing of urine by the patient, and discarded catheter according to biomedical waste management. Around half of the nurses clamped the catheter before removal. 63% documented the procedure. Gap from ideal practices in certain steps of the procedure varied from 1% to around 50%.

**Discussion**

The present study aimed to assess the prevalence of patients with indwelling catheters admitted in a tertiary care hospital. The self-expressed practices of nurses regarding insertion, care and removal of catheter were also explored. In the current study, 18.5% patients were found to be catheterized. The study findings are consistent with the prevalence, reported to be 66 European hospitals (17.5%) and 23.6% in 183 US hospitals. The prevalence of catheterized patients has also been reported to be amongst one-quarter of the patients and as high as 31%. In the present study, the duration of catheterization was 1–10 days, though a few patients were catheterized even for 30 days. Duration of urinary catheterization is often inappropriately prolonged because physicians forget that their patients have catheters in place. The study findings are similar to one of the studies in which most catheters had been reported to be in situ for less than 28 days. Indwelling urinary catheters are generally considered to be short term if they are in situ for less than 30 days and chronic or long term when in situ for 30 days or more. According to a recent study conducted in a university hospital, the average duration of catheterization was 7.8 days. It was shorter in surgical departments and indications were perioperative (17%), diuresis monitoring (12%) and strict immobilization (4%). The unnecessary indications and comfort of staff has also been reported in 4% of cases. In the current study, the indications were post-op period, intubation, incontinence and retention of urine.

In the present study, majority of the catheterized patients were from intensive care units and emergency units. The patients admitted in these units are usually the sickest of all other units. Maximum number of catheterized patients were suffering with neurological disorders, followed by orthopedics and gastroenterology. It is generally observed that the patients with neurological and orthopedic problems are immobile and are to be catheterized. However, the patients admitted in private wards are comparatively less sick. So, very few patients were found to be catheterized in private wards in the current study. As per Carrouget et al., the overall prevalence of urinary catheterization was 12%. Prevalence was higher in surgical (88%) and medical (87%) intensive care which is consistent with the findings of the current study.

Catheter-associated urinary tract infection causes substantial morbidity and mortality in the hospitalized patients. Often the procedure of initiation of urinary catheterization, the care of the patient with indwelling urinary catheter and the removal of urinary catheter, especially in female patients, is performed by the nurses. Thus, it is very important for them to be knowledgeable and skilled enough to do these procedures in order to prevent unnecessary complications for the patients. In the current study, regarding the practices, all the nurses expressed that they explained the procedure to the patient, maintained privacy, performed hand hygiene during insertion, while performing care of the catheter and at the time of removal of catheter. Majority of the self-expressed practices were found to be adequate in all the three procedures related to catheterization under study. However, the practices related to documentation, clamping of catheter and perineal care showed the maximum gap from the ideal practices. Documentation is an integral part of patient care. It reflects the standard of care we provide to our patients. So, it is the prime responsibility of nurses to document each and every activity being done for the patients. Clamping prior to removal of urinary catheters is not necessary in short-term catheter patients. It may be required in certain patients on long-term urinary catheter for bladder reconditioning. Cleaning the area with certain antiseptic solution is very important in order to prevent catheter-related UTI amongst these patients.

**Conclusion**

The point prevalence of urinary catheterization was quite high in the present study. It is very important to follow the adequate practices related to catheterization in order to prevent infection. Periodical sensitization of nurses is recommended.

**Conflict of Interest:** None
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Date of Submission: 2017-10-22
Date of Acceptance: 2018-01-04