



A Study to Assess the Prevalence of Catheter-Associated Urinary Tract Infection among Catheterized Patients Admitted in Tertiary Care Hospital, Bathinda (Punjab)

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ABSTRACT

Urinary Tract Infections (UTI) associated with urinary catheters is the leading cause of secondary nosocomial bacteremia. Approximately 20 percent of hospital-acquired bacteremias are acquired due to catheter-associated urinary tract infection and the mortality associated with this condition is about 10%. Thus the present study was planned to assess the prevalence of catheter-associated urinary tract infection among patients admitted in tertiary care hospital, Bathinda (Punjab) **Objectives:** 1. To assess the Prevalence of Catheter-Associated Urinary Tract Infection among Male and Female patients 2. To find out the association between the prevalence of CAUTI (Catheter-Associated Urinary Tract Infection) among male and female patients with their clinical variables. 3. To find out the association between the prevalence of CAUTI among male and female patients with their clinical signs and symptoms. A descriptive survey design was used. A quantitative non-experimental approach was adopted to conduct the Study. 200 patients (111 males and 89 females) were selected using the non-probability purposive Sampling Technique in Adesh Hospital of Bathinda, Punjab. Clinical variables from the catheterized patients were collected daily and scrutinized for the signs and symptoms as per CDC criteria for confirmation as CAUTI. The present study included 200 patients admitted to intensive care units, cardiac care unit, surgery, orthopedic and gynecological, and obstetrical wards in the hospital. The urine from the catheter is collected from each patient and subjected to culture. Patients were assessed for the presence of CAUTI or CA-ASB (Catheter-Associated Asymptomatic Bacteriuria) using a CAUTI assessment checklist and urine culture report. **Results:** The prevalence of CAUTI in hospitals is about (36) 18% and CA-ASB is (16) 8%. Out of the 52 diagnosed CAUTI cases, 19 (9.5%) were males and 17 (8.5%) were females. The common pathogens found in this study are *Escherichia coli* (46.2%), *Klebsiella* (19.3%), *Enterobacter* (11.5%), *Pseudomonas* (9.6%), *Staph. aureus* (5.8%), *Enterococcus* (3.8%), *Candida sps.* (1.9%) and *proteus* (1.9%). There was a statistically significant association found between indications of catheterization, days of catheter used, and co-morbid illness. **Conclusion:** In the present study the prevalence of CAUTI is much higher which needs to be rectified by continuous monitoring and training of the staff in the implementation of infection control practices in a proactive manner. The patients present mainly as asymptomatic bacterial colonization and the risk of CAUTI increases with a longer duration of catheterization. All patients who had a catheter for more than 6 days, aged 60 and above, should be checked for UTI symptoms. And their urine should be cultured regularly to diagnose and prevent CAUTI and its complications which are very dangerous and difficult to treat.

Keywords: UTI, Catheter, CAUTI, CA-ASB

INTRODUCTION

Catheter-associated urinary tract infection is an important cause of morbidity and mortality in Indian subjects, affecting all age groups [1]. CAUTI is the most frequent nosocomial infection with the daily risk of developing CAUTI being 3%-7% in the acute care settings [2]. Apart from increasing hospital stay and cost, CAUTI is associated with increased

morbidity and mortality [3]. More importantly, these patients become a reservoir of multidrug-resistant organisms that can result in more serious HAI [4]. An indwelling catheter offers a conduit to bacterial entry along its external and internal surface and provides a surface on which bacteria can multiply at least partially shielded from the humoral and cellular mechanisms [5,6].

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 [7].

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 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 [8].

Nurses are generally responsible initially for catheterizing the patients and then providing care to the catheterized patients to prevent catheter-associated UTI. They need to follow appropriate and safe practices while performing procedures related to a urinary catheter.

With this background, authors undertook this study to provide an insight regarding the prevalence of CAUTI and its etiologic agents in ICU, CCU, surgery, orthopedic and gynecological, and obstetrical wards patients in a tertiary care hospital. It will also provide a scope for determining any non-compliance with the preventive recommendations and also improvising the infection control policy of the hospital.

Statement

To assess the prevalence of catheter-associated urinary tract infection among male and female patients admitted in tertiary care hospital, Bathinda (Punjab).

Objectives

1. To assess the Prevalence of Catheter-Associated Urinary Tract Infection among Male and Female patients.
2. To find out the association between Prevalence of CAUTI among Male and Female patients with their clinical variables.

MATERIALS AND METHODS

This descriptive survey study was conducted at a tertiary care hospital in March 2020. A purposive sampling technique was used to enroll all the catheterized patients in the study. A prevalidated tool comprising clinical variables (gender, diagnosis, indication for catheterization, presence of co-morbid illness, any previous catheterization, any previous history of UTI, total days of catheter, administration of antibiotics) CAUTI assessment checklist, consists of the assessment of the following mentioned physical signs and symptoms as per CDC guidelines i.e. fever ($>38^{\circ}\text{C}$), suprapubic tenderness, costovertebral angle pain or tenderness, pus discharge, bad odor urine, cloudy urine, dysuria and rigors related to the presence of signs and symptoms in the catheterized patients and the presence of at least one of these signs or symptoms for the occurrence of symptomatic CAUTI is required as per CDC guidelines. Another tool consists of 4 items i.e. pus cells, epithelial cells, bacteria, and casts. The study was approved by the ethical committee of the university. Data were analyzed using descriptive and inferential statistics.

RESULTS

The present study was carried out from March 2020 to March 2021 in different wards of the hospital. A total of 200 patients admitted in ICU, CCU surgery, Orthopaedic, Gynaecological and obstetrical wards were included in the study. The prevalence among patients is shown in Table 1.

Table 1 Frequency and percentage of male and female inpatients with a prevalence of CAUTI (N=200)

Gender	CAUTI	CA-ASB	NON CAUTI	χ^2	df	p-value
Female (n=89)	17 (47.2%)	8 (50.0%)	64 (43.20%)	0.399	2	0.819
Male (n=111)	19 (52.8%)	8 (50.0%)	84 (56.8%)			
Total	36 (100%)	16 (100%)	148 (100%)			

Table 1 depicts that out of 89 female inpatients 47% of females were having CAUTI followed by 50% with CA-ASB and 43% develops no infection. However, 52% of male inpatients were having CAUTI followed by 56% with no CAUTI.

200 urine samples were collected and sent to the lab, out of which 27 reported positive urine cultures for CAUTI for male patients and 25 CAUTI cases for female patients. Both males and females were having *Escherichia coli* growth i.e. 44.4% and 48% respectively followed by *Klebsiella* i.e. 22% and 16%. The remaining bacteria were identified around *Enterobacter* 11%, *Pseudomonas aeruginosa* 7% and 12%, *Staphylococcus aureus* 3% and 8%, *Enterococcus* 4%, *Candida* 1% for only female patients, and 3% *Proteus* growth in male patients (Table 2).

Table 2 Frequency and percentage distribution of the micro-organisms in CAUTI male and female inpatients

Category of bacteria	CAUTI and CA-ASB (Positive urine culture)			χ^2	p-value
	Males (n=27) f (%)	Females (n=25) f (%)	Total (n=52) f (%)		
<i>Escherichia coli</i>	12 (44.4)	12 (48)	24 (46.2)	21.134*	0.011
<i>Klebsiella pneumoniae</i>	06 (22)	04 (16)	10 (19.3)		
<i>Enterobacter</i>	03 (11)	03 (12)	6 (11.5)		
<i>Pseudomonas aeruginosa</i>	02 (7)	03 (12)	5 (9.6)		
<i>Staphylococcus aureus</i>	01 (3)	02 (8)	3 (5.8)		
<i>Enterococcus</i>	01 (3)	01 (4)	2 (3.8)		
<i>Candida</i>	00 (0)	01 (4)	1 (1.9)		
<i>Proteus</i>	01 (3)	00 (0)	1 (1.9)		

df=7; *: significant at 0.05 level

Figure 1 shows the overall percentage of growth obtained from the culture with *E. coli* being the highest followed by *Klebsiella*.

Overall % of micro-organisms(n=52)

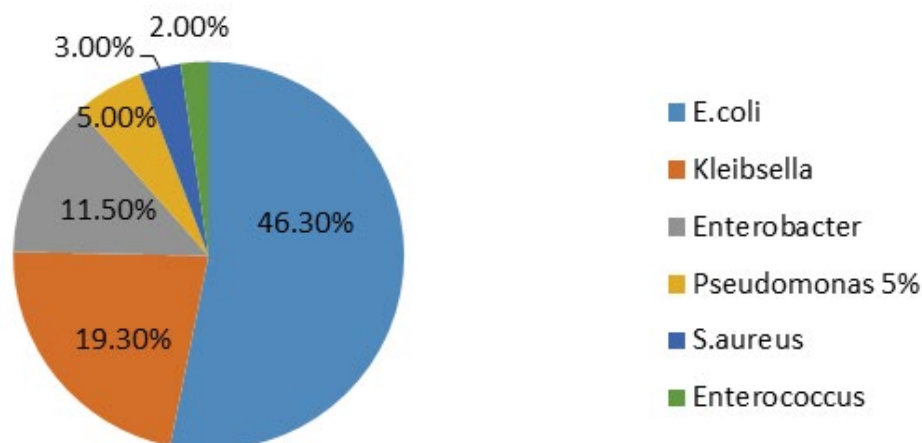


Figure 1 The overall percentage of growth obtained from the culture with *E. coli* being highest followed by *Klebsiella*

Table 3 depicts the clinical variable of male and female patients who were catheterized. Around half of the male patients (37%) were admitted with a diagnosis of the neurological problem and (42%) females were admitted in Gynae and Obstetrics ward. Most male patients were catheterized for monitoring intake output (41%) and females for post

operate reasons (40%). Both male and female patients were not having any previous experience of catheterization. Most male and female patients were not having complaints of previous urinary tract infections. Around half of male patients (52%) were catheterized for 7 days followed by 39% females. 55% of male patients were having no co-morbid illness whereas 45% of females were suffering from hypertension. 64% of male patients were on antibiotics followed by 50% females.

Table 3 Frequency and percentage distribution of male and female inpatients according to the selected clinical variables

Clinical variable	Gender		Total	χ^2	df	p-value
	Male (N=111)	Female (N=89)				
Diagnosis						
Cardiac problem	32 (28.8%)	18 (20.2%)	50 (25.0%)	68.273**	4	0.001
Gynae and Obstretics	00 (0.0%)	42 (47.2%)	42 (21.0%)			
Neurologic	41 (36.9%)	13 (14.6%)	54 (27.0%)			
Orthopaedic	16 (14.4%)	5 (5.6%)	21 (10.5%)			
Surgical problem	22 (19.8%)	11 (12.4%)	33 (16.5%)			
Indication for Catheterization						
For monitoring intake output	46 (41.40%)	29 (32.6%)	75 (37.5%)	5.099	5	0.404
For post operate	37 (33.3%)	35 (39.3%)	72 (36.0%)			
Prolonged immobilization	13 (11.7%)	14 (15.7%)	27 (13.5%)			
Urinary incontinence	10 (9.0%)	4 (4.5%)	14 (7.0%)			
Urinary retention	5 (4.5%)	7 (7.9%)	12 (6.0%)			
Previous experience of Catheterization						
Yes	42 (37.8%)	22 (24.7%)	64 (32.0%)	3.907*	1	0.048
No	69 (62.2%)	67 (75.3%)	136 (68.0%)			
Previous history of Urinary Tract Infection						
Yes	26 (23.4%)	20 (22.5%)	46 (23.0%)	0.025	1	0.874
No	85 (76.6%)	69 (77.5%)	154 (77.0%)			
Total days of catheter used						
5 days	40 (36.0%)	37 (41.6%)	77 (38.5%)	1.436	2	0.488
6 days	13 (11.7%)	13 (14.6%)	26 (13.0%)			
7 days	58 (52.3%)	39 (43.8%)	97 (48.5%)			
Comorbid illness						
Diabetes	6 (5.4%)	11 (12.4%)	17 (8.5%)	8.052*	3	0.045
Hypertension	38 (34.2%)	40 (44.9%)	78 (39.0%)			
No Comorbid	62 (55.9%)	33 (37.1%)	95 (47.5%)			
Others	5 (4.5%)	5 (5.6%)	10 (5.0%)			
Administration of antibiotics						
Yes	64 (57.7%)	50 (56.2%)	114 (57.0%)	0.044	1	0.834
No	47 (42.3%)	39 (43.8%)	86 (43.0%)			

*: significant value

Data presented in Table 4 depicts that about 79% of the male patients and about 84% of females were having fevers. About 33% of the male patients and about 18% of females were having supra-pubic tenderness. About 36% of the male patients and about 22% of females were having cloudy urine. About 25% of the male patients and about 15% female were having cloudy urine. About 27% of the male patients and about 15% female were having dysuria. About 38% of the male patients and about 56% female were having tenderness or pain in the costovertebral angle. About 27% of both male patients female were having rigors.

Table 4 Frequency and percentage of male and female inpatients with a prevalence of CAUTI according to clinical signs and symptoms

Clinical signs and symptoms	Gender		Total	χ^2	df	p-value
	Male (N=111)	Female (N=89)				
Temperature						
Above 100°F	23 (20.7%)	14 (15.7%)	37 (18.5%)	0.816	1	0.366
Up to 100°F	88 (79.3%)	75 (84.3%)	163 (81.5%)			
Suprapubic tenderness						
Present	37 (33.3%)	16 (18.0%)	53 (26.5%)	5.980*	1	0.014
Absent	74 (66.7%)	73 (82.0%)	147 (73.5%)			
Cloudy urine						
Present	40 (36.0%)	20 (22.5%)	60 (30.0%)	4.328*	1	0.037
Absent	71 (64.0%)	69 (77.5%)	140 (70.0%)			
Bad odor urine						
Present	28 (25.2%)	14 (15.7%)	42 (21.0%)	2.684	1	0.101
Absent	83 (74.8%)	75 (84.3%)	158 (79.0%)			
Dysuria						
Present	31 (27.9%)	14 (15.7%)	45 (22.5%)	4.215*	1	0.04
Absent	80 (72.1%)	75 (84.3%)	155 (77.5%)			
Tenderness or pain in the costovertebral angle						
Present	43 (38.7%)	50 (56.2%)	93 (46.5%)	6.040*	1	0.014
Absent	68 (61.3%)	39 (43.8%)	107 (53.5%)			
Rigors						
Present	32 (28.8%)	24 (27.0%)	56 (28.0%)	0.085	1	0.771
Absent	79 (71.2%)	65 (73.0%)	144 (72.0%)			

*: Significant value

The data presented in Table 5, depicts that there is no significant association of prevalence of CAUTI with diagnosis ($\chi^2=7.75$, $p=0.25$), an indication of catheterization ($\chi^2=7.49$, $p=0.48$), previous experience of catheterization ($\chi^2=0.011$, $p=0.99$), previous history of UTI ($\chi^2=0.130$, $p=0.937$), administration of antibiotics ($\chi^2=0.208$, $p=0.90$). However, there is a significant association of the total number of days catheter used ($\chi^2=10.6$, $p=0.03$) and co-morbid illness ($\chi^2=32.3$, $p=0.001$).

Table 5 Association of the prevalence of CAUTI among male patients with selected clinical variable, N=200

Clinical variable	CAUTI (N=19)	CA-ASB (N=8)	Non-CAUTI (N=84)	Total	χ^2	df	p-value
Diagnosis							
Cardiac problem	8 (42.1%)	2 (25.0%)	22 (26.2%)	32 (28.8%)	7.753	6	0.257
Neurologic	7 (36.8%)	3 (37.5%)	31 (36.9%)	41 (36.9%)			
Orthopaedic	2 (10.5%)	3 (37.5%)	11 (13.1%)	16 (14.4%)			
Surgical problem	2 (10.5%)	0 (0.0%)	20 (23.8%)	22 (19.8%)			
Indication for Catheterization							

For monitoring intake output	4 (21.1%)	3 (37.5%)	39 (46.4%)	46 (41.4%)	7.496	8	0.484
For post operate	9 (47.4%)	3 (37.5%)	25 (29.8%)	37 (33.3%)			
Prolonged immobilization	4 (21.1%)	1 (12.5%)	8 (9.5%)	13 (11.7%)			
Urinary incontinence	2 (10.5%)	1 (12.5%)	7 (8.3%)	10 (9.0%)			
Urinary retention	0 (0.0%)	0 (0.0%)	5 (6.0%)	5 (4.5%)			
Previous experience of Catheterization							
Yes	7 (36.8%)	3 (37.5%)	32 (38.1%)	42 (37.8%)	0.011	2	0.995
No	12 (63.2%)	5 (62.5%)	52 (61.9%)	69 (62.2%)			
Previous history of Urinary Tract Infection							
Yes	5 (26.3%)	2 (25.0%)	19 (22.6%)	26 (23.4%)	0.13	2	0.937
No	14 (73.7%)	6 (75.0%)	65 (77.4%)	85 (76.6%)			
Total days of catheter used							
5 days	4 (21.1%)	0 (0.0%)	36 (42.9%)	40 (36.0%)	10.622*	4	0.031
6 days	1 (5.3%)	1 (12.5%)	11 (13.1%)	13 (11.7%)			
7 days	14 (73.7%)	7 (87.5%)	37 (44.0%)	58 (52.3%)			
Comorbid illness							
Diabetes	1 (5.3%)	2 (25.0%)	3 (3.6%)	6 (5.4%)	32.342**	6	0.001
Hypertension	12 (63.2%)	4 (50.0%)	22 (26.2%)	38 (34.2%)			
No Comorbid	3 (15.8%)	1 (12.5%)	58 (69.0%)	62 (55.9%)			
Others	3 (15.8%)	1 (12.5%)	1 (1.2%)	5 (4.5%)			
Administration of antibiotics							
Yes	11 (57.9%)	4 (50.0%)	49 (58.3%)	64 (57.7%)	0.208	2	0.901
No	8 (42.1%)	4 (50.0%)	35 (41.7%)	47 (42.3%)			
NS: Not Significant (p>0.05) *: Significant (p<0.05)							

The data presented in Table 6, depicts that there is no significant association of prevalence of CAUTI with diagnosis ($\chi^2=9.72$, $p=0.28$), an indication of catheterization ($\chi^2=4.46$, $p=0.81$), previous experience of catheterization ($\chi^2=1.93$, $p=0.38$), previous history of UTI ($\chi^2=3.95$, $p=0.13$), administration of antibiotics ($\chi^2=0.202$, $p=0.90$). However, there is a significant association of the total number of days catheter used ($\chi^2=16.6$, $p=0.002$) and co-morbid illness ($\chi^2=34.5$, $p=0.001$).

Table 6 Association of the prevalence of CAUTI among female patients with selected clinical variable, N=200

Clinical variable	CAUTI (N=17)	CA-ASB (N=8)	Non-CAUTI (N=64)	Total	χ^2	df	p-value
Diagnosis							
Cardiac problem	2 (11.8%)	1 (12.5%)	15 (23.4%)	18 (20.2%)	9.702	8	0.287
Gyane and obstretics	11 (64.7%)	6 (75.0%)	25 (39.1%)	42 (47.2%)			
Neurologic	1 (5.9%)	0 (0.0%)	12 (18.8%)	13 (14.6%)			
Orthopaedic	2 (11.8%)	0 (0.0%)	3 (4.7%)	5 (5.6%)			
Surgical problem	1 (5.9%)	1 (12.5%)	9 (14.1%)	11 (12.4%)			
Indication for Catheterization							
For monitoring intake output	4 (23.5%)	2 (25.0%)	23 (35.9%)	29 (32.6%)	4.469	8	0.812
For post operate	8 (47.1%)	4 (50.0%)	23 (35.9%)	35 (39.3%)			
Prolonged immobilization	4 (23.5%)	1 (12.5%)	9 (14.1%)	14 (15.7%)			
Urinary incontinence	1 (5.9%)	0 (0.0%)	3 (4.7%)	4 (4.5%)			
Urinary retention	0 (0.0%)	1 (12.5%)	6 (9.4%)	7 (7.9%)			

Previous experience of Catheterization							
Yes	2 (11.8%)	2 (25.0%)	18 (28.1%)	22 (24.7%)	1.932	2	0.381
No	15 (88.2%)	6 (75.0%)	46 (71.9%)	67 (75.3%)			
Previous history of Urinary Tract Infection							
Yes	1 (5.9%)	3 (37.5%)	16 (25.0%)	20 (22.5%)	3.957	2	0.138
No	16 (94.1%)	5 (62.5%)	48 (75.0%)	69 (77.5%)			
Total days of catheter used							
5 days	2 (11.8%)	2 (25.0%)	33 (51.6%)	37 (41.6%)	16.603**	4	0.002
6 days	1 (5.9%)	3 (37.5%)	9 (14.1%)	13 (14.6%)			
7 days	14 (82.4%)	3 (37.5%)	22 (34.4%)	39 (43.8%)			
Comorbid illness							
Diabetes	1 (5.9%)	5 (62.5%)	5 (7.8%)	11 (12.4%)	34.569**	6	0.001
Hypertension	13 (76.5%)	3 (37.5%)	24 (37.5%)	40 (44.9%)			
No Comorbid	1 (5.9%)	0 (0.0%)	32 (50.0%)	33 (37.1%)			
Others	2 (11.8%)	0 (0.0%)	3 (4.7%)	5 (5.6%)			
Administration of antibiotics							
Yes	9 (52.9%)	5 (62.5%)	36 (56.3%)	50 (56.2%)	0.202	2	0.904
No	8 (47.1%)	3 (37.5%)	28 (43.8%)	39 (43.8%)			
NS: Not Significant (p>0.05) *: Significant (p<0.05)							

DISCUSSION

Catheter-associated Urinary Tract Infections (CAUTIs) remain the most common nosocomial infection, accounting for more than 15% of infections reported by acute care hospitals [9]. The present study aims at finding the prevalence of CAUTI while comparing the bacterial isolates from the urine of such infected patients.

In the present study, out of a total of 111 male patients, 27 (24.3%) have developed CAUTI while out of a total of 89 female patients, 25 (28.0%) have developed CAUTI. The number of CAUTI cases was recorded in both sexes in the present study. Such results are also documented by the studies conducted by Leelakrishna P, et al. and Gordon, et al. [10,11]. Increased risk in women is likely to be due to easier access of the perineal flora to the bladder along the outside of the catheter as it traverses the shorter female urethra. In addition to this women's urethra is closer to the anus in comparison to men's urethra [12].

Studies such as Stacy Podkovik, et al. evaluated 146 patients that had urine cultures obtained in the presence of an indwelling urinary catheter found two out of 42 febrile patients that had a positive urine culture, which may have attributed to a UTI these results are not consistent with present study [13].

Another study conducted by Dr. Jagadish B. Hedawoo, et al. where Out of 400 patients with a male to female ratio of 1.23:1, 65 developed CAUTI (16.25%) and 22 patients had symptomatic bacteriuria (non-CAUTI-5.5 %). CAUTI rate was 23.06 per 1000 catheter days. The infection rate among males was 13.12% while that in females was 20.11%. 19 and 46 patients developed CAUTI after 48 hours and 120 hours of indwelling urinary catheters respectively. The most common organism was found to be *E. coli* [14]. These results consistent with our study where CAUTI was found in 26% of patients, and significantly associated with both gender at a p-value of 0.05. The presence of other associated diseases or comorbidity could be a risk factor for CAUTI where the p-value was 0.001.

The CAUTI rate in the present study was found to be 26%. It is high when compared to studies conducted by Kazi, et al. (4.59), Devendra, et al. and Hanumantha, et al. (3.65) [14-16]. Whereas it was which was more compared to the study done in Abant Izzet Baysal University Hospital in Turkey where the prevalence of CAUTI among 143 catheterized inpatients was 13% [17]. The prevalence of catheter-associated urinary tract infection in our hospital is about 20% and asymptomatic bacterial colonization is 50% which is near equal to Danchaivijitr S, et al. study [18].

The common pathogens found in this study are *Escherichia coli* (46%), *Klebsiella* (19%), *Enterobacter* (11%), *Pseudomonas* (9%), *S. aureus* (5%), *Enterococcus* (3%), *Candida* (1%) and *Proteus* (1%). This finding is similar to the study conducted by NHSN which also shown *Escherichia coli* (21%) to be the common pathogen [19]. This data strongly proves that CAUTI is one of the important nosocomial infections. The NHSN data also shows *Escherichia coli* as the major culpable pathogen, accounting for 70% of the total isolates [20]. Laupland, et al. also demonstrated *Escherichia coli* as the most common etiological agent of CAUTI [21].

The finding in this study was also similar to the study done in India, by Sandhu, where they found that associated comorbid diseases increase the risk for CAUTI, but unlike in this study, they found that CAUTI was more among patients with a previous history of UTI and patients with the previous history of urinary catheter insertion [22]. A study conducted by Tambyah PA and Maki DG shows 90% of patients positive for culture were asymptomatic [23]. Inconsistently, in our study 16% of patients are asymptomatic. Males are affected more (55%) than females (44%) because many are affected by benign prostatic hypertrophy which contrary to other studies which show females are affected more may due to the lesser sample size in our study [24,25].

CONCLUSION

CAUTI has a low prevalence of 18% and asymptomatic colonization of 8% in hospitals with the common pathogen being *Escherichia coli*. It is one of the important notable pathogens causing nosocomial infection among admitted patients. The patients present mainly as asymptomatic bacterial colonization and the risk of CAUTI increases with longer duration of catheterizations. All patients who had a catheter for more than 6 days, aged 60 and above, should be checked for UTI symptoms. Clinical variables for CAUTI were both male and female gender, associated disease or comorbidity, and longer duration of stay in hospital. While the history of UTI or previous history of Foley catheter insertion had no significant association with CAUTI. And their urine should be cultured regularly to diagnose and prevent CAUTI and its complications which are very dangerous and difficult to treat. This study provides scope for similar studies to be undertaken in this institute taking a larger sample size so that a clearer picture can be obtained regarding the true prevalence of CAUTI.

DECLARATIONS

Conflicts of Interest

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

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