Nosocomial infections pose substantial risk to patients receiving care in hospitals. In this study, we investigated the prevalence and antibiotic resistance profiles of nosocomial urinary tract infections in general surgery wards of Dhaka Medical College Hospital. A total of 52 urine specimens were collected from catheterized patients admitted to the hospital. The predominant organisms isolated were Escherichia coli (54.28%), followed by Pseudomonas aeruginosa (2.86%). These isolates were resistant to most commonly used antimicrobials.

Conclusion: The emergence of multi-drug resistant (MDR) bacteria poses a difficult task in the management of nosocomial infections. It is crucial to monitor and control the spread of these infections, particularly in hospitals with high patient turnover and resource constraints. Further research is needed to develop effective interventions to control MDR bacterial infections.
Urinary-tract infections (UTIs) represent the frequent incidence of infection in intensive care units (ICUs) while in developing countries like Bangladesh no emphasis has been given on medical care in hospitals, particularly for patients with postoperative wound infections and urinary infections. The emergence of multi-drug resistant (MDR) bacteria poses a difficult task on medical care in hospitals, particularly for patients who had prolonged hospital stay. This might be due to the production of extended-spectrum beta-lactamases causing the nosocomial urinary tract infections.

In the present study it was observed that more than 80% of the UTI patients (54.28%) were in the age group of 21–40 years (31.43%). ESBL producers were the most predominant pathogenic bacteria followed by Pseudomonas aeruginosa (17.14%), Klebsiella pneumoniae (8.57%), and Acinetobacter spp. were resistant to most of the commonly used antibiotics and adhering to quality control (QC) norms. The study was carried out at the surgical ward of a teaching hospital in Bangladesh.

The aim of this study was to describe the prevalence of urinary tract infections (UTIs) in surgical ward with aetiological clinical factors. The samples were collected from catheterized patients from general wards. All the samples were inoculated with bacterial inoculum (corresponding to 0.5 McFarland tube) using the conventional method and inoculated on blood agar plate, MacConkey’s agar plate, and Hektoen Enteric agar plate. The isolates were confirmed by biochemical reactions and identification techniques. The Kirby-Bauer disk diffusion method was selected to determine the susceptibilities of isolates against various antibiotics as per CLSI standards. The Kirby-Bauer disk diffusion method could be useful to determine the best possible therapy for the MDR isolates.

The data were presented in tables and analyzed using Microsoft Excel. All the statistical analysis was performed using the chi-square test at 95% confidence level. The sensitivity of the isolates against antibiotics is shown in Table 1. In the present study, 28.57% ESBL producers were observed that the most common infective organism was Pseudomonas aeruginosa followed by Escherichia coli.

Discussion

In the developed countries, it has been reported to affect patients in the age group of 21–40 years (31.43%). ESBL producing uropathogens were the most predominant pathogenic bacteria followed by Pseudomonas aeruginosa (17.14%), Klebsiella pneumoniae (8.57%), and Acinetobacter spp. were resistant to most of the commonly used antibiotics and adhering to QC norms. The study was carried out at the surgical ward of a teaching hospital in Bangladesh.

Acknowledgement

The authors acknowledge the support received from the Deputy Director of Dhaka Medical College. The research was approved by the Institutional Review Committee of Dhaka Medical College.

Prevalence and antibiotic sensitivity pattern of bacteria affecting the quality of healthcare, and these constitute a difficult task on medical care in hospitals, particularly for patients who had prolonged hospital stay. This might be due to the production of extended-spectrum beta-lactamases causing the nosocomial urinary tract infections. The urinary tract infections (UTIs) represent the frequent incidence of infection in intensive care units (ICUs) while in developing countries like Bangladesh no emphasis has been given on medical care in hospitals, particularly for patients who had prolonged hospital stay. This might be due to the production of extended-spectrum beta-lactamases causing the nosocomial urinary tract infections.
Hospital-acquired infections (HAI) have been an increasing concern globally across all healthcare settings. The emergence of multidrug-resistant bacteria (MDRB) has further complicated the landscape of infection control. In the developed countries, it has been reported to affect 10% to 15% of hospitalized patients in regular wards. In 2012, a total of 52 urine specimens were collected from catheterized patients admitted to the surgery ward at a hospital in Bangladesh, over a period of 12 months from July 2011 to June 2012. The aim of this study was to determine the frequency of bacterial pathogens, their antimicrobial susceptibility patterns, and to look into the significance of extended spectrum beta-lactamase (ESBL) producers.

**Background**

Urine collection

Urine specimens were collected from catheterized patients from the general ward of a tertiary care hospital over a period of 12 months from July 2011 to June 2012. The specimens were collected aseptically using femoral catheterization. The patients were enrolled in the study after obtaining written informed consent from the patient or the patient's legal guardian. Pathological studies were done to rule out other causes of infection. The study was conducted in accordance with the principles of the Declaration of Helsinki and the national and institutional guidelines for ethical research.

**Methods**

**Urine collection**

Urine collection was performed at the time of admission to the hospital. The urine samples were collected aseptically using femoral catheterization. The specimens were collected in sterile urine collection containers and transported immediately to the laboratory. The samples were processed within 2 hours of collection.

**Antimicrobial susceptibility testing**

The urine samples were inoculated on Mueller-Hinton agar plates. The plates were incubated at 37°C for 24 hours. The bacterial isolates were identified using standard biochemical tests. The antimicrobial susceptibility patterns of the isolates were determined using the disk diffusion method according to the Clinical and Laboratory Standards Institute (CLSI) guidelines.

**ESBL testing**

The ESBL producers were further confirmed using the double disk synergy test as per the CLSI guidelines.

**Results**

Out of the 52 urine specimens, Gram-negative bacilli were isolated from 35 (67.31%) of which 10 (28.57%) were ESBL producers. The isolates were resistant to most of the commonly used antibiotics and the isolates followed the ESBL pattern as per the Clinical and Laboratory Standards Institute (CLSI) guidelines. The isolates were resistant to various antibiotics as follows: ceftriaxone (30 µg), ceftazidime (30 µg), imipenem (10 µg), azithromycin (30 µg), amoxiclav (20+10 µg), and co-trimoxazole (20+100 µg).

**Discussion**

The prevalence of ESBL producers among the uropathogens isolated from the catheterized patients in this study was 28.57%, which is similar to the findings of previous studies in Bangladesh and Iran. The ESBL producers were resistant to most of the commonly used antibiotics. The isolates were resistant to various antibiotics as follows: cephalosporins (ceftriaxone, ceftazidime, and imipenem), azithromycin, amoxiclav, and co-trimoxazole.

**Conclusion**

The results of this study highlight the importance of performing routine antimicrobial susceptibility testing to monitor the resistance patterns of uropathogens. The outbreak of ESBL producers in hospital settings underscores the need for infection control measures to prevent further spread of these pathogens. Future studies should focus on the identification of the genetic determinants responsible for ESBL production and the development of innovative strategies to combat multidrug-resistant infections.
A major source of adverse healthcare outcomes. The objective of this study was to determine the organisms responsible for urinary tract infections (UTIs) and antibiotic resistance profiles for isolates from patients of Dhaka Medical College Hospital (DMCH). UTIs are among the most common nosocomial infections and multi-resistant pathogens necessitate urgent comprehensive interventions of infection control measures.

Methods: Bacteria were isolated from catheterized patients from general surgery ward of Dhaka Medical College Hospital (DMCH) and incubated in blood agar, on blood agar and MacConkey agar media and incubated at 37ºC aerobically for 24 hours. The incubated plates were examined for bacterial growth. Identification of the bacteria was done by their colony characteristics and biochemical tests such as oxidase test, catalase test, nitrate test, and glucose fermentation test. A sample of the isolated organism of the E. coli was sent to the Center for Disease Control, USA for confirmation and antibiotic susceptibility test. The antimicrobial susceptibility test was done by Kirby Bauer disk-diffusion method on Mueller-Hinton agar using commercially available antibiotic discs (Oxiod, Hampshire, UK). The zone of inhibition was measured and interpreted according to CLSI guidelines. ESBL producers were further screened by disk-sensitivity test (10 µg).

Results: A total of 35 patients suffering from UTI were selected. A total of 70 bacterial isolates were obtained from the selected patients. Bacteria were isolated from 29 (82.86%) cases and the most prevalent isolates were E. coli, 13 (18.57%), Pseudomonas aeruginosa, 6 (17.14%), Klebsiella pneumoniae, 3 (8.57%), Acinetobacter species, 3 (8.57%), Staphylococcus aureus, 2 (5.71%), and Proteus species, 2 (5.71%). The antimicrobial susceptibility test revealed that more than 80% of the isolated bacteria were ESBL producers, with a resistance pattern of Escherichia coli 10 (28.57%), and Proteus mirabilis 10 (28.57%). The highest resistance was to amoxiclav followed by gentamicin. In the present study it was observed that more than 80% of the isolated bacteria were ESBL producers, with a resistance pattern of Escherichia coli 10 (28.57%), and Proteus mirabilis 10 (28.57%). The highest resistance was to amoxiclav followed by gentamicin. In the present study it was observed that more than 80% of the isolated bacteria were ESBL producers, with a resistance pattern of Escherichia coli 10 (28.57%), and Proteus mirabilis 10 (28.57%). The highest resistance was to amoxiclav followed by gentamicin.

Discussion: The results of this study are similar with the findings of a study done in Bangladesh. In our study, 100% of the isolated bacteria were ESBL producers, and all the isolated bacterial strains were 100% sensitive to gentamicin. The antimicrobial susceptibility test revealed that more than 80% of the isolated bacteria were ESBL producers, with a resistance pattern of Escherichia coli 10 (28.57%), and Proteus mirabilis 10 (28.57%). The highest resistance was to amoxiclav followed by gentamicin.

Acknowledgement: This study was supported by the University of Dhaka, Bangladesh.
affecting the quality of healthcare, and these constitute Hospital-acquired infections (HAI) have been

**Materials and Methods**

The study was conducted in a 500-bed general medical and surgical hospital in Dhaka, Bangladesh from August to December 2014, and included patients admitted to the surgery ward. The hospital is a tertiary care facility and serves a population of approximately 20 million people, many of whom are from a low-income background. A total of 100 urine samples were collected from catheterized patients from general wards. The isolates were identified using standard microbiological techniques, and their identity confirmed using the Vitek 2 system (bioMe"¦rieux, Marcy-l"¦Etoile, France). The MICs of the isolates were determined using the broth microdilution method, following the Clinical and Laboratory Standards Institute (CLSI) guidelines. The isolates were resistant to most of the commonly used antibiotics and ESBL producers were detected and the highest ESBL production was observed in Pseudomonas aeruginosa and Proteus vulgaris respectively. Among the isolates, 10% were ESBL producers. Isolation rate of Pseudomonas aeruginosa, Klebsiella pneumoniae, and Esch. coli was 8.26, 5.72, and 2.86% respectively. The isolated isolates were sensitive to imipenem.

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Resistance Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>82.61%</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>78.26%</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>60.86%</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td>66.67%</td>
</tr>
<tr>
<td>Imipenem</td>
<td>50.00%</td>
</tr>
</tbody>
</table>

Results:

In the present study, the prevalence of ESBL producers in hospital acquired infections was 28.57%. The ESBL producers were distributed across different age groups, with the highest prevalence in the age group of 41–60 years (54.28%). The prevalence of ESBL producers with time as well as the prevalence of ESBL producers with respect to duration of hospital stay were also noted. The prevalence of ESBL producers was highest in patients admitted for more than 41 days (60%). The prevalence of ESBL producers in diabetic patients was also noted, and was found to be higher than in non-diabetic patients. The prevalence of ESBL producers was highest in patients admitted for more than 41 days (60%). The prevalence of ESBL producers in diabetic patients was also noted, and was found to be higher than in non-diabetic patients. The prevalence of ESBL producers was highest in patients admitted for more than 41 days (60%).

**References**