

Short Communication

COST DIFFERENTIALS BETWEEN PRIVATE AND PUBLIC HOSPITALS FOR ANTIMICROBIAL TREATMENT OF ADMITTED PATIENTS SUFFERING FROM PNEUMONIA AND DIARRHOEA

Seikh Farid Uddin Akter¹, MA Jabbar², Saroj Kumar Mazumder³,
Abdul Mazid Mia⁴ and Afia Fazlul⁵

¹Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM),
²Department of Community Medicine, Dhaka Medical College, ³Department of Community Medicine,
Chittagong Medical College, ⁴Department of Community Medicine, Sylhet MAG Osmani Medical College,
⁵Bangladesh Rural Advancement Committee, Dhaka

Abstract

This study was undertaken to estimate cost differentials between private and public hospitals for antimicrobial treatment of the admitted paediatric patients who were suffering from pneumonia or diarrhoea – the two most common infectious paediatric problems in Bangladesh. The study was conducted between August 2002 and January 2003 in paediatric wards of two selected medical college hospitals—one public and the other private. The treatment charts of 107 admitted paediatric patients who received antimicrobial agent(s) for the treatment of pneumonia (88) or diarrhoea (19) were reviewed daily from the day of admission of the patients till their discharge from the hospitals. The total costs of antimicrobial agents per patient were based on the current market price of these agents. The average cost of antimicrobial course(s) per patient of pneumonia were for great in private hospital while that of diarrhoea was higher in public hospital.

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Key Words: Antimicrobial therapy, cost differentials, pneumonia, diarrhoea.

Introduction

Pneumonia and diarrhoea are two major paediatric health problems in developing countries including Bangladesh.¹⁻³ It has been calculated that the average individual ingests about 8 microorganisms per minute or 10,000 per day.⁴ The respiratory and gastro intestinal tracts are the most common sites for infection by pathogens, often requiring antimicrobial therapy.

The World Health Organization estimates that up to 40% of the total health care cost in developing countries may be for drugs.⁵ Several studies in developing countries such as India, Thailand and Tanzania estimate that from 24 to 50% of the total pharmaceutical budget are spent on antimicrobial agents in these countries.⁶⁻⁸

The present study was undertaken to estimate the cost differentials between private and public hospital for antimicrobial treatment of admitted paediatric patients suffering from pneumonia and diarrhoea. These two clinical conditions have been identified as the most common infections diseases of children in Bangladesh.

Materials and Methods

This study was conducted in the paediatric wards of two randomly selected medical college hospitals in Bangladesh - one public and another private. The data collection procedure was prospective in nature. The treatment charts of 107 admitted paediatric patients who received antimicrobial agent(s) for the treatment of pneumonia (88) or diarrhoea (19) were reviewed

Address for Correspondence:

Dr. Seikh Farid Uddin Akter, Assistant Professor, Department of Community Health & Family Medicine, International Islamic University of Malaysia (IIUM), Malaysia

daily from the day of admission of the patients till their discharge. There were 18 pneumonia patients in the public and 70 in the private hospital. These figure were 7 and 12 respectively for the diarrhoea cases. The total cost of antimicrobial agents per patient was based on the current market price of these agents.

Estimation of the cost per patient: $C_{TIAM} = \sum (\text{Unit price of each antimicrobial agent} \times \text{'quantity used per day'} \times \text{duration of hospital treatment})$.

The calculated total cost was determined by summing up costs of all antimicrobial agents given to individual patients.

Results

A total of 157 courses of different antimicrobial agents were used to treat 88 admitted paediatric patients who were suffering from pneumonia. The five most commonly used antimicrobial agents were in order of: amoxicillin, gentamicin, ceftriaxone, cephradine and ceftazidime. Table 1 shows the percentages of courses of the five most commonly used antimicrobial agents, which accounted for 80.89% of the total antimicrobial courses. The highest percentage of amoxicillin (38.46%) was used to treat pneumonia in private hospital and that of Ceftriaxone (34.78%) in the public hospital. The difference in proportions of different antimicrobial agents used to treat pneumonia by hospitals was noticeably different between hospitals.

There were 19 antimicrobial courses with different antimicrobial agents used for the treatment of 19 admitted paediatric patients who were suffering from diarrhoea in the two selected medical college hospitals. However, the five most frequently used antimicrobial agents for the treatment of these patients were ceftriaxone, cephradine, amoxicillin, metronidazole and ampicillin. Table 2 displays the percentages of courses of the five most commonly used antimicrobial agents, which accounted for 73.68% of the total antimicrobial courses used to treat diarrhoea among admitted paediatric patients. The difference in proportions of antimicrobial courses of different antimicrobial agents used between hospitals was remarkable. For example, the highest percentage of ceftriaxone (22.22%) was used to treat diarrhoea in private hospital and the lowest percentage of this agent (20%) was in public hospital, while the highest

Table-1: Distribution of antimicrobial agents used for the treatment of pneumonia (*n = 127)

Antimicrobial agents	Medical College Hospitals		Total No.(%)
	Public No.(%)	Private No.(%)	
Amoxicillin	7 (30.44)	40 (38.46)	47 (37.01)
Gentamicin	3 (13.04)	40 (38.46)	43 (33.86)
Ceftriaxone	8 (34.78)	8 (7.69)	16 (12.59)
Cephradine	5 (21.74)	10 (9.62)	15 (11.82)
Ceftazidime	0 (0)	6 (5.77)	6 (4.72)
Total	23 (100)	104 (100)	127 (100)

*n=number of courses of commonest five antimicrobial agents.

and lowest percentages of metronidazole were 40% and 11.11% in public and private hospitals respectively.

Pneumonia: The antimicrobial treatment costs were calculated for a total of 88 admitted paediatric patients in two selected medical college hospitals who were suffering from pneumonia. The average cost (AC_{TI}) of antimicrobial agents per patient was Taka 218.77 across the hospitals while it was Taka 280.81 and Taka 173.6 in private and public hospital respectively.

Diarrhoea: The average cost of antimicrobial agents per patient suffering from diarrhoea was Taka 221.45 across the hospitals while it was Taka 199.31 and Taka 279.00 in private and public hospital respectively (Table-3).

Table 3 shows that the average costs of antimicrobial agents used for both pneumonia and diarrhoea varied among hospitals. The average costs for antimicrobial treatment of pneumonia were far greater in the private

Table-2: Distribution of antimicrobial agents used for the treatment of diarrhoea (*n = 14)

Antimicrobial agents	Medical College Hospitals		Total No.(%)
	Public No.(%)	Private No.(%)	
Ceftriaxone	1 (20.00)	2 (22.22)	3 (21.43)
Cephradine	1 (20.00)	2 (22.22)	3 (21.43)
Amoxicillin	1 (20.00)	2 (22.22)	3 (21.43)
Metronidazole	2 (40.00)	1 (11.12)	3 (21.43)
Ampicillin	0 (0)	2 (22.22)	2 (14.28)
Total	5 (100)	9 (100)	14 (100)

*n=number of courses of five most commonly used antimicrobial agents.

Table-3: Average costs of antimicrobials used for the treatment of admitted paediatric patients

Diseases	Hospitals	
	Public	Private
Pneumonia		
Average costs in Taka	173.76	280.81
Diarrhoea		
Average costs in Taka	279.00	199.31

hospital. The average cost of antimicrobial treatment of diarrhoea was surprisingly higher in the public hospital.

Discussion

It is evident that the difference in the average cost of antimicrobial agents used for the treatment of pneumonia and diarrhoea was noticeable across the hospitals. These variations could be a reflection of the choice of different antimicrobial agents by hospital physicians for the treatment of similar patients in different hospitals.⁹⁻¹² The antimicrobial treatment of the two most common infectious diseases, pneumonia and diarrhoea, appeared to be higher in the hospitals studied when judged by comparing with the recommended antimicrobial treatment of these diseases in the consensus-based Standard Treatment Guidelines available in the country reflecting the low compliance with the expected norms. Other studies in public and private health facilities in Bangladesh have also shown similar low compliance with the specific standard treatment norms.¹³⁻¹⁷

In both conditions, there was a great potential for saving hospitals' and patients' treatment cost if appropriate intervention(s) are made and/or strategies improved for antimicrobial prescribing practices in hospitals of Bangladesh.

The hospital-physicians prescribed newer varieties of antimicrobial agents in excessive number of courses to treat the most common infectious diseases: pneumonia and diarrhoea and led to unwarranted increase in treatment cost.

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