

Average Length of Stay (ALS) of under Five Years Hospitalized Children: A Study on Bangladesh

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Abstract This paper aim was to measure Average Length of Stay (ALS) of under five years child to ensure proper utilization of hospitals resource and to facilitate quality health care. Parents of children had to face daunting experience as if most of the hospitals are not concern about the vulnerability of child health. Children under five years old are usually more prone to various infectious diseases leading to frequent hospitalization that causes high mortality and morbidity. To conduct this study, a total 880 records of the discharged patient of targeted population has taken into consideration and data was analyzed by both descriptive and inferential statistics. Average Length of Stay in the hospital was found 4.62 days, 4.53 days and 2.7 days for govt., private and autonomous hospital respectively. Findings of the study will help hospital administration to increase their efficiency, to find out patients inflow and disease pattern with the average length of stay period which will also help the health sector policymaker to take corrective actions to improve service.

Keywords Average Length of Stay (ALS), under five year's child, Healthcare efficiency, Bangladesh

1. Introduction

The average length of stay (ALS) refers to the average number of days that patient's spend in the hospital. It is measured by dividing the total number of days stayed by all inpatients during a period by the number of admissions or discharges during the same period. The health status of developing countries of the world is far from acceptable. In developing countries, a large segment of the population is deprived of access to basic health care, and medical service provider is not conscious about the clients perception and need. Bangladesh is the 9th largest populated country in the world with more than 16 core people on which nearly 80% of total population lives in rural areas, and a majority of them are poor. Unfortunately, it has no notable achievement for child care. No-one wants to be hospitalized their child for illness and any injury. It is a big concern for all parents, carers, and relatives if any of their child having to attend hospital as a patient. Most of the time we have nothing to do with the concern, but we can improve the way of childcare of hospital by improving the service of hospitals. That means designing the service by prioritizing child care as if children are not the same as adults. That is why we need to establish the Children's National Service Framework standard for hospital services [1].

If we can reduce the factors influencing the average length of hospital stay of under 5-year child, it will reduce the health care costs as well as enhance the efficiency of healthcare providers. Hospitals are the most important hospitals for all people to get treatment and medical services. However, only a few percentage of G.N.P is spent on local health services. Out of total 20800 functioning Govt. hospital beds 8230. So, there is a misallocation of both funds and health facilities between the district and national or metropolitan areas [2]. All hospital beds should typically be counted; including for the acute care and for the chronic/long-term care; in both the public and private sectors. The reported for ALS are for the average length of stay for the acute care only. This refers to the number of days (with an overnight stay) that patients spend in an acute-care inpatient institution. It is generally measured by dividing the total number of days stayed by all patients in acute-care inpatient institutions during a year by the number of admissions or discharges [3]. Hospital stay terminated by death is a vital outcome event, with death usually reflecting the severity and burden of disease. Hospital ALS has been the subject of investigation over the past few decades. Previous studies showed that a significant number of factors influence ALS, mainly patient demographics such as age and socioeconomic status, and hospital characteristics [4, 5]. Some studies have reported that low socioeconomic condition can be used to predict longer ALS (on average, longer by 5.9 days in a study by Stelianides et al.) [6]. However, ALS is influenced to varying degrees by various other factors, such as clinicians' style of practice, the size of the hospital, hospital ownership,

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teaching status and other hospital characteristics [7, 8]. A patient's ALS is also highly correlated with their injury or illness severity. The ALS is high for many diseases including cancer, mental diseases, renal diseases and others [9].

1.1. Objectives of the Study

The specific objectives of the study are outlined below-

- ✓ Measuring Average Length of Stay (ALS) of under five years hospitalized children.
- ✓ Find out the way of admission and discharge pattern with duration of hospital stay of Under 5 children treated in the study hospitals during the study period.
- ✓ Explore the pattern of sickness of the admitted patients
- ✓ To find out the demographic characteristics of the admitted patients

2. Justification of the Study

Under five years age is a sensitive period and more prone to various infections. Child sickness put the parents in severe emotional distress and staying more in hospitals aggravates their distress. The reductions of time spent in the hospital will reduce costs without compromising patient outcomes quality of care. If we can reduce the factors influencing the average length of hospital stay of under 5-year child, it will reduce the health care costs as well as enhance the efficiency of healthcare providers. Hospital beds are most costly out of all facilities in the hospital. In Bangladesh, the doctor population ratio is 1:4869 and estimated populations per hospital bed are 3500 which is inadequate as compared to the standard of developed countries. In this study, researcher tried to find out the way of admission and discharge pattern with duration of hospital stay of under five years children treated in the study hospitals during the study period.

3. Methodology

This study was conducted based on retrospective cross-sectional analysis and carried out from three types of hospitals (government, private & autonomous). The average length of stay (ALOS) is calculated by dividing the number of days stayed (from the date of admission to a hospital or other in-patient institution) by the number of discharges during the year in a quantitative form. The total number of days divided by the number of admissions and discharges during a specified period, which results in an average number of days in the hospital for each person admitted. Primary data of this study were collected from pediatric department of selected three hospitals where 880 records of discharged patients of under five years were taken as samples, and the samples considered for the study were the documents of three months from January to March 2013. The secondary data of the study were collected from different international medical journals and scholarly articles. Researcher uses purposive sampling technique for the study.

For the analysis, a descriptive statistical test was applied by using Microsoft Excel by presenting the result in simple and compound tables.

4. Results and Analysis

A retrospective cross-sectional study was conducted among under five-year child in three hospitals (one government, one autonomous and one private). The data were collected from record office & registered documents. A total 880 records of discharged under five years child patients were reviewed. The findings are presented as follows---

Table 1. Demography of competence of the selected hospitals

Ways	Hospital		
	Government	Private	Autonomous
No. Bed	1300	175	1486
Doctor	580	150	1212
Nurse	450	275	1000

Table-1 shows the competence of the selected hospitals. In Government Hospital the number of bed is 1300 where, Doctor= 580, Nurse = 450; In Private Hospital Number of Bed= 175, Doctor= 150, Nurse= 275 and In the Autonomous Hospital- Number of Bed= 1486, Doctor=1212, Nurse=1000.

Table 2. Total Number of the admitted patient's (under five years)

Type of Hospital	Total Number of Patients	Percent (%)
Government Hospital	419	47.6
Private Hospital	168	19.1
Autonomous Hospital	293	33.3
Total	880	100

Table-2 shows admitted patients of under five years children during the study period. In total 880 patients were admitted. Our demographic information demonstrates that, In Government hospital total 419(47.6%), In Private hospital total 168(19.1%) and the Autonomous hospital total 193 (33.3%) patients have admitted whose age was below five.

Table 3. Age of admitted patients by category (years)

Age	Hospital			Total
	Government	Private	Autonomous	
0 - 1 year	190	66	133	389
1 - 2 years	94	38	68	200
2 - 3 years	67	33	44	144
3 - 4 years	32	15	31	78
4 - 5 years	36	16	17	79
Total	419	168	293	880

Table-3 shows the distribution of hospitals by the age of treated patients. A total 880 patients of under five years admitted to the hospitals. In Government hospital, the age of

under five years patient were as- 0 to 1 year -190, 1 to 2 years -94, 2 to 3 year- 67, 3 to 4 years-32 and 4 to 5 years -36. In the Private hospital patients were as; 0 to 1 year - 66, 1 to 2 years -38, 2 to 3 year-33,3 to 4 years-15 and 4 to 5 years -16. In the Autonomous hospital the age of the under 5-year patient was as 0 to 1 year -133, 1 to 2 years -68, 2 to 3 year-44, 3 to 4 years-31 and 4 to 5 years -17.

Table 4. Demographic information about the sex of the admitted patients

Sex	Hospital			Total
	Government	Private	Autonomous	
Female	190	71	164	425
Male	229	97	129	455
Total	419	168	293	880

Table-4 shows that distribution of hospitals by the sex of the admitted patients. In government hospital among the patients- Female was 190 and Male was 229; in the Private hospital 71 were female, and 97 were male, and in the autonomous hospital 164 were female, and 129 were male.

Table 5. Distribution of hospitals by number of patients admitted, discharged and dead

Indices	Government Hospital	Autonomous Hospital	Private Hospital
Total Discharge	366	260	169
Total Death	62	36	5
Total Admission	419	293	168
Total Bed Days	1939	791	762
ALS	4.62	2.7	4.53

In this table ALS (average length of stay) of the hospital is calculated by using following formula:

$$ALS = \frac{\text{Total no of bed days in a specific period}}{\text{No of discharge + death in that specified period}}$$

Table-5 shows the distribution of hospital by the number of the patient admitted, discharged and dead. It has found that in Government Hospital the number of the patient

admitted was 419, discharged 366 and dead 62. In Autonomous Hospital, the number of the patient admitted 293, discharged 260 and dead 36. In the Private Hospital, the number of the patient admitted 168, discharged 169 and dead 5. Be noted that, the total number of bed days was calculated by manual counting from the record of the selected hospitals. The total bed days in Government Hospital was 1932 while Average Length of Stay was 4.62 days. In the same way, total bed days in the Autonomous hospital as 791 and Average Length of Stay was 2.7 days and total bed days in Private Hospital was 762 days, and Average Length of Stay was 4.53 days respectively.

Table-6 shows the distribution of patients by the pattern of discharged and death from the Pediatric ward during the study period. It was in Government Hospital 419 (with advice 357 and 62 were died), in Private Hospital 168 (with advice 154, DORB-9 and 5 died) and in Autonomous Hospital 293 (with advice (D/A)-254, DORB-3 &36 died). From the study of selected hospitals out of total 880 patients, Death-103 (11.7%), Discharge with Advice-765 (86.9) and 12 (1.4%) DORB.

For better elucidation, ALS (Average Length of Stay) on the hospital of particular disease was calculated on this table. To calculate ALS; here, the total number of stayed on hospitals was divided by the number of individual disease frequency. The above table shows that- in the three selected hospitals a total 880 under 5 years children were admitted with their ailment. Among them 18 were admitted with Cardiac problem, and stayed a total 88 days (ALS – 4.9 days); admitted with cancer stayed total 95 days (ALS- 3.8 days); admitted with Nervous System Problem stayed 195 days (ALS-3.6 days); admitted with Urological problem stayed 219 days (ALS-3.8 days); admitted with Febrile Convulsion stayed 319 (ALS-4.9 days); admitted with poisoning 331 (ALS- 4.7 Days). Moreover, admitted with fever 399 (ALS- 3.5 days), admitted with Gastro-enterological problem stayed 672 (ALS-4.3 days). Additionally, admitted with Respiratory tract problem 729 (ALS-3.9 days); Not diagnosed case 111 (ALS- 2.3 days), and admitted others disease stayed 344 (ALS-3.8 days).

Table 6. Distribution of patients as per death and discharge type

Type of discharge	Government Hospital	Private Hospital	Autonomous Hospital	Total Frequency	Percent
Death	62	5	36	103	11.7
Discharge with advice (D/A)	357	154	254	765	86.9
Discharge with risk bond (DORB)	0	9	3	12	1.4
Total	419	168	293	880	100

Table 7. Distribution of different types of disease of the admitted patients and average length of stay

Diagnosis	Frequency	Total days stayed in hospital	ALS
Cardiac Problem	18	88	4.9
Cancer	25	95	3.8
Nervous System Problem	54	195	3.6
Urological Problem	57	219	3.8
Febrile Convulsion/convulsion	65	319	4.9
Poisoning	70	331	4.7
Enteric Fever/ Fever	113	399	3.5
Gastro-enterological problem	156	672	4.3
Respiratory Tract Problem	184	729	3.9
Not diagnosed	48	111	2.3
Others disease	90	344	3.8
Total	880		

5. Limitation of the Study

In this study, the main constrain faced by the researcher is the unavailability of data due to inadequate health information system of hospitals. Additionally, the records of patients are kept in the handwritten document that is really difficult to understand. Data were taken from only Dhaka city. To get the more exact scenario, further study can be done by considering all divisional private, autonomous and govt. medical college hospitals.

6. Recommendations

The length of stay is frequently used as an indicator of efficiency which can be explained by determining the relationship between input and output. From a perspective, a measure of stay reduction may increase efficiency by increasing the output or decreasing the inputs. Both may be realized by reducing waiting days during a hospital stay or by minimizing the time between consultations, examinations, and procedures. If the reduction of lengths of stay results in increased intensity of care, the efficiency improvement may be smaller. Also, the reduction of hospital days will mainly be a reduction of 'low care' days. The more intensive and expensive patients remain in the hospital. From the health system perspective, efficiency also depends on the effectiveness of other sectors and the clinical outcomes. When ALS reduction is realized by quicker transfer to follow-up care, the costs of care may be passed.

More Instantaneous discharge may increase the pressure on the healthcare sectors, and consequently, the efficiency of the health care system may not improve. Additionally, more insight into the relationship between ALS and quality of care in the hospital needed. If quality improvement leads to shorter ALS and shorter ALS have better outcomes than hospitals with a longer of stay. The connection between ALS

and quality of work needs to be investigated. Researchers on clinical epidemiology regarding the disease pattern and average length of stay should be conducted not only in the study hospitals but also all the hospitals in Bangladesh.

7. Conclusions

Health is a fundamental human right and basic human need. The government should be responsible for providing health care to all people in equal measures and to ensure the fulfillment of the health requirements of the population. Under 5 years age is a sensitive period and more amenable to various infections. Child sickness put the parents in severe emotional distress and staying more in hospitals aggravates their distress. In the study, Average Length of Stay (ALS) was found among the under 5 year's child patients in Government Hospital was 4.62 days, and in the autonomous hospital, 2.7 days and Private hospitals were 4.53 days respectively. Children admitted in hospital shows that patients mostly admitted with Respiratory Tract Problem, Gastro-entomological problem, Enteric Fever/Fever, Poisoning and Febrile Convulsion/convulsion. The average length of stay was more of the patients with Febrile Convulsion/convulsion, Cardiac Problem, Poisoning, Gastro-enterological problem and Respiratory Tract Problem. Hospital beds are more costly rather than out of all facilities in the hospital. In Bangladesh, the doctor population ratio is 1:4869 and estimated populations per hospital bed are 3500 which is inadequate as compared to the standard of developed countries. If we can reduce the factors influencing the average length of hospital stay of under 5-year child, it will reduce the health care costs as well as enhance the efficiency of healthcare providers. Declines of time spent in the hospital will reduce costs without compromising patient outcomes quality of care.

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REFERENCES

- [1] Das, AM., (1992). An assessment of quality of patient care in three Govt. Health facilities, JOPSOM, 11(2): 49.
- [2] Ministry of Health and Family Welfare, Govt. of the People's Republic of Bangladesh Dhaka: Bangladesh Health Sector, Fourth Five Year Plan, 1990-95, February: 20, 21, 22 and 202.
- [3] Ashrafun, L., & Uddin, M. (2011). Factors Determining Inpatient Satisfaction with Hospital Care in Bangladesh.

Asian Social Science, 7(6).

<http://dx.doi.org/10.5539/ass.v7n6p15>.

- [4] Clarke A. (2002). Length of in-hospital stay and its relationship to quality of care, *Quality Safety Health Care*, 11: 209-10.
- [5] McMullan R., Silke B., Bennett K., Callachand S., (2004). Resource utilization length of hospital stay and pattern of investigation during acute medical hospital admission. *Postgraduate Medical Journal*, 80(939): 23-6.
- [6] Stelianides S., Golmard J.L., Carbon C., Fantin B., (1999). Influence of socioeconomic status on features and outcome of community-acquired pneumonia. *European Journal of Clinical Microbiology and Infectious Diseases*, 18: 704-8.
- [7] Lim A., Tongkumchum P., (2009). Methods for analyzing hospital length of stay with application to inpatients dying in Southern Thailand. *Global Journal of Health Science*, 1(1): 27-38.
- [8] McGregor MJ., Reid RJ., Schulzer M., Fitzgerald JM., Levy AR., Cox MB., (2006). Socioeconomic status and hospital utilization among younger adult pneumonia admissions at a Canadian hospital, *BMC Health Services Research*, 6: 152.
- [9] Candrilli S., Bell T., Irish W., Morris E., Goldman S., Cairo MS., (2008). A comparison of inpatient length of stay and costs among patients with hematologic malignancies (excluding Hodgkin disease) associated with and without acute renal failure. *Clinical Lymphoma and Myeloma*, 8(1): 44-45.