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Causes and Economic Consequences of Differential Waiting Time: A Case Study on Gall-Stone Surgery (Cholecystectomy)

The Thesis is Submitted As a Partial Fulfillment of the Requirements for the Degree of Master of Philosophy at the Institute of Health Economics, the University of Dhaka

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I hereby humbly declare that this thesis entitled "Causes and Economic Consequences of Differential Waiting Time: A Case Study on Gall-Stone Surgery (Cholecystectomy)" is based on work carried out by me and no part of it has been presented previously for any higher degree. The research work was carried out under the guidance of honorable Prof Shamsuddin Ahmad, Professor and Director, Institute of Health Economics, University of Dhaka

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Certified that **A.K.M. Zahirul Haq** has completed his thesis entitled **"Causes and Economic Consequences of Differential Waiting Time: A Case Study on Gall-Stone Surgery (Cholecystectomy)"** at the Institute of Health Economics under my guidance.

His work is genuine and up to my full satisfaction.

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Abstract

Research work observes that the patients waiting time is an important parameter for price of health care as well as patients satisfaction. When patients come to hospital for treatment, they loss their working day and time which ultimately causes monetary loss of attending patient. So increasing waiting time increases the cost of health care. With an opportunity cost to time, a focus on money costs of health care ignores a substantial portion of the economic cost. So incorporating all direct and indirect cost of waiting time, an attempt has been made here to find out the causes and economic consequences of waiting time in public and private hospitals in case of gall-stone surgery (Cholecystectomy) in Bangladesh.

This cross-sectional study considers a total of 140 (70 from public hospitals and 70 from private hospitals) randomly selected postoperative patients of gall stone surgery in Dhaka city. The logistic regression model has been applied to find out the factors affecting the choice of place of operation. Mean test is performed to determine any significant difference between the variables. To observe the features, cross tabulation technique is used and also the statistical significance of the results is tested through chi-square test.

The study reveals that public hospitals take significantly higher hospital days (22.95 days) for operation than private hospitals (5.77 days) and preoperative stay in public hospitals is very high (16.12 days) than private hospitals (1.79 days). The average waiting times due to operation serial are 188.88 hours (7.87 days) and 16.87 hours for the patients of public hospitals and private hospitals respectively.

Long operation serial is the main cause of waiting time in doing operation in public hospitals and managing money is the main cause for the patients of private hospitals. Low cost of treatment and the advice of doctors are the main reasons for selecting public hospitals. On the other hand getting quality care and less time to take treatment are the main reasons behind selecting private hospitals.

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The average losses of opportunity cost are Tk. 2905.6 and Tk. 951.05 for the patients of public and private hospitals respectively. The mean direct cost of patient of private hospitals for operation was Tk. 26258.0, which is about double of the similar cost of public hospitals (Tk. 13955.0). The mean indirect costs were Tk. 6143.5 and Tk. 4422.3 in public and private hospitals respectively and the difference was statistically significant. The averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively.

The averages cost of waiting time were Tk. 5188.5 and Tk. 1547.98 for public and private hospitals respectively. Waiting time increases on average, total operation cost by 25.8 percent for the patients of public hospitals and by 5.0 percent for private hospitals. Waiting time also increases dissatisfaction as a significant negative relationship is obtained between waiting time and satisfaction of the patients i.e. less waiting time causes the patients satisfied and more waiting time makes them unsatisfied.

However, Logistic regression model shows that family income, education, days of sufferings before admission and advice of doctors have significantly influenced to choose the place of operation.

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List of acronyms

BBS	: Bangladesh Bureau of Statistics
BMJ	: British Medical Journal
CMH	: Combined Military Hospital
DMCH	: Dhaka Medical College Hospital
ED	: Emergency Department
HSR	: Health Service Research
NIPSOM	: National Institute of Preventive and Social Medicine
OPD	: Outdoor Patient Department
P	: P – Value (Probability Value)
PWT	: Physician Waiting Time
SD	: Standard Deviation
SPSS	: Statistical Package for Social Sciences
TWT	: Total Waiting Times
WHO	: World Health Organization

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CHAPTER 1

Introduction

1.1 Background

Every moment is time. Time is the scarcest and nonrenewable resources and unless it is managed, nothing can be managed. Resource can differ from country to country and even different places within the same country. But there is only one resource in the world, which is exactly the same amount each of us that is time. If we look over globally, it will be clear to us that most of the developed countries achieved their best productivity at every sector including health sectors due to best use of time.

A hospital is a human services organization, the objective of which is to help people retain and maintain health. It provides care and services such that people can regain health and remain healthy improving the quality of life (Francis, 1991:1). A hospital should be flexible institution capable of adapting its resources to the total health care needs of the community. Dr. Rene Sand has said that the right patient should receive the right care at the right time in the right place at right cost (Park, 1991:41).

For health and diseases or injury need immediate medical care. But our health system has not yet developed in such a way due to some constraints. There is always a rush of patients in private or public hospitals. So patients have to wait to avail treatment. It is widely acknowledged that, to get health service, waiting time occurs all over the world as well as Bangladesh. Patient's waiting time is the period of time expressed in minutes, hours or days which is required for an individual patient from the time of arrival in the hospital and the time of starting treatment (here operation). In our study we measure waiting time by days.

In a developing country like Bangladesh where the resources for providing medical care are limited, the optimum utilization of available resources assumes a greater significance. Time is one of the most important measures of resource use in

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providing health care delivery services by a hospital. Time taken in providing services determines how effectively and efficiently the resources were utilized in attaining the stated goals by a health care delivery institution.

Provision of surgical care involves a series of professional and administrative steps and interactions starting from the admission of the patient to his or her discharge with certain outcome. The outcome is greatly dependent on how, when and by whom those steps are taken and how efficiently and effectively necessary coordination takes place among different activities involved in the process. The evaluation of the steps is of prime importance in improving the quality of surgical care as well as utilization of time.

It is thought that most of the patients attending hospitals or clinics is to spend major portion of their time to receive the services. If delay is occurred in holding operation then patient loss their working time and productivity, need to pay medicine cost, food cost and bed charge, and also occurred some indirect cost by their accompany such as travel cost, food cost and opportunity cost. Thus the economic cost of health care is larger than the apparent money cost. Here we try to measure this economic loss of waiting time. Concept of patient's waiting time differs among different persons. From various studies it is revealed that there is significant difference, between the patient and physicians view of patient's waiting time in out-patient care and perspective to improve it. Here we define waiting time by days and hours, which is required for an individual patient from the time of arrival in the hospital and the time of starting operation.

Patients waiting time depend upon the various factors e.g. efficiency, sincerity and punctuality of the doctors, nurses, paramedics and other health personnel. In this study it has been tried to ascertain whether patient lost their time unnecessarily or not. Waiting time is not same in all types of health care delivery center. It may vary among public, autonomous and private health care delivery center. So the value of waiting time also varies. Here the objective of the study is to find out an estimate and comparison of waiting time as well as the causes and economic consequences of prolong waiting time in public health care facilities vis-à-vis the pattern of waiting time in private health care facilities.

Hospital medical staff has long been charged with the responsibility for the quality of professional care rendered in the hospital. By total waiting time of the patient,

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functional efficiency of the hospital or clinic could be known i.e. waiting time of patients could be taken as measurement of functional efficiency of the hospital or clinic.

The patient bed ratio is quite low in all countries compared to the demand and the spectrum of facilities to undertake treatment of certain kinds and types are restricted to certain levels of hospitals of the Bangladesh Health Services System. At present the bed-population ratio is 1: 2801 (BBS, 2004:369). Under such a situation the demand for hospital bed would be no doubt very high. Such a situation calls for optimization of the time factor in managing patients, which would provide more use of a particular bed with a higher turnover ratio. If the time factor involved in providing health care could be standardized in terms of some norms, it might be then possible to locate any delay or slack time at certain steps involved in providing services. Instances are not uncommon where in the absence of any norm or standard for services a patient's stay in the hospital has lengthened more than usual one. With shorter preoperative period through speedier completion of investigations, diagnosis and careful postoperative management for avoiding complications and infections the average length of stay of a surgical patient can be shortened to a certain minimum.

Cholelithiasis (Gall Stone) is one of the common surgical problems. It has been reported that about 10-20% of adult population have cholelithiasis in developed countries (Alam, 1993:75-76). There was a 5 fold increase in gall stone operation during the period 1980-92, whereas total number of operation increased by 1.3 fold in Rajshahi Medical College Hospital (Alam, 1993:75-76) in Bangladesh. Such a common operation is selected in our study to assess the waiting time required for an operation. Waiting time is a common factor to getting health services which causes multidimensional losses like opportunity losses, increases cost of operation, patients dissatisfaction etc. Public hospitals take more time to provide services than private hospitals. So hazards of waiting time are more common in public hospitals.

1.2 Research questions

The research questions in the study are:

a) Is there any significant delay in starting operation of a patient in public and private hospitals?

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b) Is there any significant difference between public and private hospital on preoperative waiting time?
c) Whether this delay has any significant economic effect or not.
d) Why this delay occurs and how this delay can be minimized.
e) Whether the factors causing delay are same for the public and private hospitals?
f) What are the factors influencing patients to choose private and public hospitals?

We seek to answer these questions undertaking a case study of gall stone surgery in the public and private hospitals of the Dhaka city in Bangladesh.

1.3 Objectives

The overall objective of the study is to find out the causes and economic consequences of waiting time in public and private hospitals in case of gall stone surgery (Cholecystectomy) in Bangladesh.

Specific objectives of the study are given below.

a) To estimate the average duration of hospital stay before surgical intervention.
b) To compare the difference in patients waiting time in public and private hospitals.
c) To identify the causes for increased waiting time in public sector and less waiting time in private sector.
d) To compare the total cost, direct cost and indirect cost of gall stone surgery in public and private hospitals.
e) To assess the consequences of longer waiting time in terms of cost (direct, indirect and opportunity cost).
f) To identity the factors influencing patients of gallstone operation to choose private and public hospitals.

1.4 Justifications

Worldwide research work observes that the patients waiting time is an important parameter for price of health care as well as patients satisfaction. As 60% of our population is moderately poor, they are engaged in different activities for their livelihood. When patients come to hospital for treatment, they loss their working

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day and time which ultimately causes monetary loss of attending patient. So increasing waiting time increases the cost of health care.

With an opportunity cost to time, a focus on money costs of health care ignores a substantial portion of the economic cost. The money costs for health care will be especially large for high waiting time place like public health care delivery (although low-priced services) and for a patient with a high opportunity cost of time. To minimize economic loss a patient with a high opportunity cost of time prefers private hospital than public hospital.

In many instances, as patients wait, their health deteriorates leading to poorer outcomes when they are eventually treated. To evaluate policies affecting waiting times then, understanding the relationship between waiting time and patient outcomes is important. It will increase functional efficiency of the hospital, shorten total time taken for an activity or service and thus optimize the utilization of resources.

Also the amount of economic loss for waiting time considering both direct and indirect costs is important. Again a comparison of waiting time, causes and cost of waiting time will help the planners and policy makers to increase the efficiency of management as well as patient's satisfaction.

1.5 Plan of the study

Chapter 1 is an introductory one, which gives the background of the study and also highlights the objectives of the study with research questions and justifications of the study. Literature is reviewed in chapter 2. Chapter 3 discusses the aspects of research methodology. In this chapter list of variables, operational terms and definitions, questionnaire preparation and finalization, framework for determination of cost of waiting time, mathematical model and design of the study are also discussed. Chapter 4 discusses the background characteristics of the patients. Duration of stay in hospitals and number of diagnostic tests are discussed in Chapter 5. Detailed waiting time in hospitals is presented in Chapter 6. Chapter 7 describes reasons behind the waiting time in the hospitals. Cost estimation of Gall-stone surgery including direct, indirect and total costs are contained in Chapter 8. Consequences of waiting time in terms of cost and satisfaction are described in Chapter 9. In chapter 10 factors determining the choice of hospitals are presented through estimation of logistic regression model. Finally in Chapter 11 the conclusion, recommendation and limitation of the study are included.

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CHAPTER 2

Literature Review

2.1 Introduction

Time is an important variable in the demand for health. So better health care providers have been trying to minimize their patient's waiting time. Economic analysis suggests that people value their time. A waiting list is created either through over crowding of patients at the outpatient clinics as well as due to the ineffective utilization of resources. There is limited number of studies on the duration of waiting time but the study on economic consequences of waiting time is little in our country. In this study we try to evaluate the principal determinant and economic consequences of patient's waiting time. Now we would like to present a review on some existing results and findings of related literature on waiting time.

2.2 Literature review

Hasan (1992:23-34) considered 25 patients who underwent surgical intervention for the treatment and cure of Gall Bladder ailments in the surgical unit-1 of DMCH. The study revealed that the average length of stay for all patients was 26.6 days, average length of waiting period before surgery was much longer than the postoperative care days. Twenty cases (80%) required more than 10 days for their preoperative management and only 5 cases (20%) required less than 10 days. Sixty percent cases had taken more than two weeks for postoperative care and only 40% cases were discharged within two weeks from the date of surgery. It was observed that unusually long time was taken for completing investigations in some cases during the preoperative stay. The study showed that more than 7 days were taken to complete the investigation procedures in 75% cases.

Siddique (1995:7-38) conducted a study with the objective to estimate the time taken to provide surgical care to patients with gall bladder ailments by cholecystectomy operation. A total of fifty patients were studied in CMH between the period

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November 1994 and April 1995. From the study, it revealed that the average length of stay for all patients was 14.98 days, average preoperative stay was 4.78 days and the postoperative stay was 9.2 days on average. In 60% cases preoperative investigations were completed before routine admission. In 28% cases out of remaining 40% patients it took less than 7 days to complete preoperative investigations. Postoperative stay in 74% cases was less than 10 days. Average length of stay was only 11.7 days in those cases where patient was routinely admitted after completion of preoperative investigations in the OPD, while the same was 19.95 days in those cases, where investigations were completed after admission.

Khan (1981) has shown that the average waiting time required by each client of Mohammadpur Fertility Services and Training Center was 166.3 minutes. Time was noted from the entrance of the patient in the clinic to the conclusion of the service. It is the summation of time: 16.4 minutes for consultation, (81 minutes with receptionist 8.3 minutes for counselor), 96.4 minutes for waiting, (22.6 minutes before the reception and 33.7 minutes between receptionist and counselor, 40.7 minutes between counselor and clinical service). The study also found that actual service time was 3.5 minutes. It seems that there was potential scope for improving clinic efficiency by reducing waiting time.

Begum (1999:36-80) carried out a study on waiting time of the patients attending in emergency department of Dhaka Medical College Hospital (DMCH). A total of 95 cases were taken as sample where sample size was not estimated by using statistical formula. The study revealed that the mean waiting time was 3.60 minutes with standard deviations ±.5, 27.97% of the patients required waiting time of less than 2 minutes. The majority (34.74%) of the patients required waiting time of 2 - 4 minutes, and the remaining (37.29%) required waiting time more than 6 minutes in the emergency department of. DMCH.

Rahman (1987:18-24) showed that the mean waiting time of each Diabetic patient attending at BIRDEM. was 186.80 minutes. 168 patients of different age groups and both sex were taken without any statistical formula for determining a representative sample size and they belonged to all socio-economic classes. Waiting time of 90 patients remained within 178-200 minutes, 40 patients remained within 151-175 minutes, and 36 patients

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remained within 201-225 minutes. He showed that waiting time depends upon various factors, such as efficiency of the doctors, nurses, paramedics as well as other hospital staff. Patients also should maintain certain rules and regulations of the hospital. In that study it was concluded that the waiting time of each patient was long.

Kaiser (1996) considered 405 OPD respondents of DMCH. Most of the respondents 326 (80.5%) said that they were not satisfied with OPD services, among the reasons for dissatisfaction, waiting time (52.5%), behaviour of doctor (34.9%), management problem (29.1%), full course of medicine not supplied (16.6%) were important.

Howard (2000:1117-1134) took the observations on all patients receiving transplants between 1995 and 1997 collected by the United Network for Organ Sharing. The study used a two-stage probit algorithm. He found that waiting time had a statistically and clinically significant effect on the probability of graft failure following transplantation. Waiting 50 additional days for a transplant increased the probability of grift failure at one year by between one and two percentage points.

Blundell (2000:465-474) utilized the differences in average waiting times to identify the determinants of demand for health services. They considered the specification and estimation of a statistical model for health care utilization. In the model, waiting time acts as a hassle cost to treatment and in equilibrium the waiting time cost will be just sufficient to reduce demand to equal the supply of services. Their model was based on a regression specification for normalized level of health care utilization. The study result showed that it was critically important to account for rationing by waiting time when identifying needs from care utilization data.

In the study by Bowman (1996:1244), patients' details who are referred by general practitioners for hospital appointments, were prospectively entered into a database during the 10 month study period. They found the mean waiting time for the first appointment was 70.6 days (SD 38.8). The minimum waiting time was 22 days and the maximum 392 days. They also obtained that attendance in both social groups (less deprived and more deprived) was reduced with increasing waiting time. Stepwise logistic regression analysis showed a highly significant negative relation

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between attendance and waiting time. They also investigated that social class had influenced attendance rates at paediatric clinics. They concluded that reduced waiting times for first hospital appointments include compliance with the patient's charter and the possibility of treating amblypia at an earlier stage. A potential additional benefit of reduced waiting times might be improved attendance rates at the first appointment.

Thompson (1996a: 657-65) administered a questionnaire by telephone to a random sample of patients who had presented to a suburban community hospital emergency department during the preceding 2 to 4 weeks. There were 1,631 respondents. Respondents were asked several questions concerning waiting times (ie, time from triage until examination by the emergency physician and time from triage until discharge from the Emergency Department), information delivery (eg, explanations of procedures and delays), expressive quality (eg, courteousness, friendliness), and overall patient satisfaction. The perception that waiting times were less than expected was associated with a positive overall satisfaction rating for the Emergency Department (ED) encounter (P<.001). Satisfaction with information delivery and with ED staff expressive quality were also positively associated with overall satisfaction during the ED encounter (P<.001). Actual waiting times were not predictive of overall patient satisfaction (P=NS). Perceptions regarding waiting time, information delivery, and expressive quality predict overall patient satisfaction, but actual waiting times do not. Providing information, projecting expressive quality, and managing waiting time perceptions and expectations may be a more effective strategy to achieve improved patient satisfaction in the ED than decreasing actual waiting time.

A prospective convenience sample study done by Waseem (2003: 880-83), in which the on-duty emergency physicians randomly administered a questionnaire at the time of the emergency department (ED) visit was used. During a 3-week period from December 15, 1999, through January 7, 2000, 500 parents or legal guardians of children who visited our ED were questioned about their perceived waiting time, and the responses were compared with the actual waiting time. The parents or guardians were also asked if they were satisfied with the waiting time. The majority (84%) of parents overestimated waiting time in the ED (median difference, 26 min;

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interquartile range, 9-50 min). Parents with perceived or actual waiting times that exceeded 2 hours were significantly more likely to be dissatisfied than parents with actual or perceived waiting times that were 1 hour or less (P<0.001). Satisfaction was not related to the age (P=0.35), sex (P=0.30), race/ethnicity (P=0.90), or mode of arrival (P=0.28). Parents tend to overestimate waiting time. Both perceived and actual waiting times that exceed 2 hours were associated with parental dissatisfaction. ED administrators may need to keep this in mind when arranging ED staffing patterns to match peak patient hours to achieve optimal parental satisfaction.

Thompson (1996b) carried out a study to assess the ability of patients to accurately estimate specific waiting times in the emergency department. A questionnaire was administered by telephone to a random sample of 776 patients (or parents or responsible caretakers, if appropriate) who had been treated within the previous 2 to 4 weeks in the Emergency Department (ED) of a suburban hospital. Respondents were asked their perceptions of two particular time frames: (1) the time elapsed from triage until initial examination by the emergency physician (physician waiting time [PWT]), and (2) the time elapsed from triage until departure from the ED (total waiting time [TWT]). Corresponding actual times were extracted from a computerized database. Time frames were divided into discrete periods for comparison. The correspondence between actual and perceived times was assessed by optimal data analysis. Only 22.3% of the respondents accurately estimated PWT. Although this level of accuracy is statistically accuracy beyond chance. More respondents overestimated than underestimated PWT(49.9% versus 27.8% respectively). In contrast, TWT was accurately estimated by 36.6% of the respondents (P<.0001), reflecting 18% of the theoretically possible improvement in accuracy beyond chance. Fewer respondents overestimated than underestimated TWT (24.5% versus 38.9% respectively). Patients are not very accurate in their estimation of actual waiting times. Although less than one fourth of the respondents overestimated the TWT spent in the ED, almost half the respondents overestimated the PWT.

Hoel (2003: 599-616) showed that although patients with low waiting costs choose public treatment, they may be better off with waiting time than without. The reason

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is that waiting time induces patients with high waiting costs to choose private treatment, thus reducing the cost of public health care that everyone pays for. Even if higher quality (i.e. zero waiting time) can be achieved at no cost, the self-selection induced redistribution may imply that it is socially optimal to provide health care publicly and at an inferior quality level. Notice that the study considers an economy where most of the health care is publicly provided and where there is waiting time for several types of treatments. Private health care without waiting time is an option for the patients in the public health queue.

The issue of the study by Farnworth (2003:47-60) is the role of prices charged to patients as a policy instrument for altering waiting times. A game theoretic model is used to examine the determinants of waiting times. The conclusion of the study is under certain circumstances an increase in the price charged to patients at some institutions will lower the waiting times at all institutions. The results provide a set of policy implications and testable predictions that arise under certain set of assumptions. Alternative assumptions as well as the policy implications and testable predictions associated with them are also examined.

2.3 Discussion

Reviewing of the literature reveals that waiting time occurs in our country as well as other countries, which is a major cause of patient's dissatisfaction. So it is important to measure the waiting time as well as its economic consequences and also to find out the reasons for waiting time. Again it is observed that public health care facilities have more waiting time than private health care facilities. So a comparison is needed for both types of facilities. We shall make a comparison both public and private hospitals waiting time and try to find out why this discrepancy of waiting time occurs between public and private hospital.

Most of the studies reviewed did not follow any statistical reasoning to determine the sample size and they used purposive sample. In this study a representative sample size is used which is determined by a statistical formulae.

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CHAPTER 3

Methodology

3.1 Introduction

When patients come to hospital for treatment they loss their working days and time and hence an opportunity cost of time causes direct economic losses. Again waiting time increases other costs such as hotel cost, medicine cost, diet cost, unofficial cost for patient and travel & opportunity costs of relatives. So there are a number of factors determining the cost of waiting time for operation patient. Personal, socioeconomic, disease, care seeking behavior and cost variables are important factors. Personal factors include age, sex, religion and behavior of patients before and during hospitalization. Socioeconomic factors include marital status, education, occupation, number of family members, family income and personal income. Disease related factors include duration of sufferings before admit in hospital, types of sufferings, total diagnosis tests required for operation and total hospital days. Cost related factor include broadly direct, indirect and total cost. So a number of variables were considered in our study.

3.2 List of variables:

Keeping the study objectives in mind the variables used in this study are as follows:

a. Types of place
b. Types of operation
c. Age
d. Sex
e. Family size
f. Educational qualifications
g. Occupation
h. Monthly income
i. Number of earning persons
j. Family Income

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k. Types of sufferings
l. Duration of sufferings
m. Hospital days
n. Waiting time
o. Cost of diagnostic test
p. Bed cost
q. Medicine cost
r. Diet cost
s. Unofficial cost
t. Operation cost
u. Number of relatives come
v. Travel cost of each relative
w. Opportunity cost of patient
x. Opportunity cost of accompany
y. Indirect cost
z. Satisfaction of patients

3.3 Operational terms and definitions:

Some terms used in this study are defined here clearly for better understanding.

Bed/lodging cost: bed charge and lodging cost of a patient in the hospital during hospital days.

Cost for waiting time: hotel cost, medicine cost, food cost, indirect cost and opportunity cost of patient during the waiting time together are considered as cost of waiting time.

Direct cost of operation: direct cost contains the explicit cost like doctor's fee, OT charge, cost of diagnostic test, drug cost, food cost, bed cost etc. and the implicit cost like opportunity cost of patient.

Education: number of years passed in education.

Family income: total income per month of the patient's family from any source is considered.

Food cost: total cost of food for a patient during the hospital days.

Hospital days: number of days stayed in hospital from admit to release.

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Indirect cost: travel cost, food cost and opportunity cost of accompanies are together considered as indirect cost. In case of temporary accompany opportunity cost for half of a day is considered.

Medicine/ drug cost: cost of medicine for the patient during the hospital days.

Number of relatives comes: total numbers of relatives come to accompany, nurse or observe the patient during the patient's hospital days.

Opportunity cost of patient: monthly income of each patient is divided by 30 days to obtain the opportunity cost per day for each Patient. Then opportunity cost of each patient is obtained in Taka by multiplying opportunity cost per day with total number of days s/he loss due to hospitalization.

Opportunity cost of relatives: monthly income of each relative is divided by 30 days to obtain the opportunity cost per day for each relative. Then opportunity cost of each relative is obtained in Taka by multiplying opportunity cost per day with total number of days s/he loss due to the accompany in hospital days. In case of house wife we consider her opportunity cost worth TK. 500 per month (according to WHO) as the replacement cost of the house wife for her explicit work. In case of student, the monthly average student fees taken as TK.210 (Habib, 2008:61).

Patient's income: we consider the monthly income of patient if he/she is an earning person.

Preoperative stay and postoperative stay: hospital stay before operation is called preoperative stay and after operation is called postoperative stay.

Respondents: postoperative patients irrespective of age and sex of Cholelithiasis (Gall-stone) operation in public hospitals (Dhaka Medical College Hospital, Solimullah Medical College Hospital and Showrowarthy Hospital) and private hospitals in Dhaka city are considered as sampling unit during the scheduled period of data collection.

Travel cost of relatives: cost of travel from each relative's home to hospital is added up to total number of relatives during the patient's hospital days.

Waiting time: waiting time is the period of time expressed in hours or days, which is required for an individual patient (not caused by physical fitness or doctor's advice) from the time of arrival in the hospital, and the time of starting operation

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3.4 Relation between variables and sources of information:

The researcher himself with four pre-trained investigators collected data from the hospitals in Dhaka city with a well-defined questionnaire. The information was collected from the patient or their relatives. The relationship between the variables and sources of information are shown in the following table.

Variable	Indication/ Proxy	Reference/ coverage of variable	Sources of Information	Instruments for data collection
Types of place	Public or private	Patient	Observation	Questionnaire
Types of operation	Laparoscopy or Laporatomy	Patient	Interview	Questionnaire
Age	Year	Patient	Interview	Questionnaire
Sex	Gender	Patient	Observation	Questionnaire
Family size	Number of persons	Patient	Interview	Questionnaire
Educational Qualification	Class Passed	Patient	Interview	Questionnaire
Occupation	Service, Business etc.	Patient	Interview	Questionnaire
Monthly Income	Amount in TK.	Patient	Interview	Questionnaire
Number of earning persons	Number	Patient	Interview	Questionnaire
Types of sufferings	Pain, Vomiting etc.	Patient	Interview	Questionnaire
Duration of sufferings	Number of days	Patient	Interview	Questionnaire
Hospital days	Number of days	Patient	Interview	Questionnaire
Number of diagnostic tests	Number	Patient	Interview	Questionnaire
Waiting time	Number of hours	Patient	Interview	Questionnaire
Reasons for waiting time	Long operation serial, Crowd of patients etc.	Patient	Interview	Questionnaire
Remedial measures for waiting time	More personnel More equipments etc.	Patient	Interview	Questionnaire
Cost of diagnostic test	Amount in TK.	Patient	Interview	Questionnaire
Bed/lodging cost	Amount in TK.	Patient	Interview	Questionnaire
Medicine/drug cost	Amount in TK	Patient	Interview	Questionnaire
Diet/food cost	Amount in TK	Patient	Interview	Questionnaire

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Variable	Indication/ Proxy	Reference/ coverage of variable	Sources of Information	Instruments for data collection
Unofficial payment	Amount in TK	Patient/ Relative	Interview	Questionnaire
Operation cost	Amount in TK.	Patient	Interview	Questionnaire
Number of relatives come	Number	Patient/ Relative	Interview	Questionnaire
Travel cost of each relative	Amount in TK	Patient/ Relative	Interview	Questionnaire
Opportunity cost of accompany	Amount in TK	Patient/ Relative	Interview	Questionnaire
Opportunity cost of patients	Amount in TK	Patient	Interview	Questionnaire
Indirect cost	Amount in TK	Patient/ Relative	Interview	Questionnaire
Satisfaction of patients	Satisfied and not satisfied	Patient	Interview	Questionnaire

3.5 Questionnaire preparation and finalization

Data were collected for the study through semi-structured questionnaire having six sections including

- Place of operation
- Background characteristics of the patients;
- Disease related information;
- Waiting time related information;
- Cost related information; and
- Satisfaction related information.

Place of operation contains types of place, name of place, types of operation etc.

Background characteristics like gender, religion, marital status, age, family size, education, occupation, monthly income, number of earning persons of patient's family etc of postoperative patients of gall stone surgery were included in this section.

Disease related information includes types of sufferings from Cholelithiasis (Gall-Stone), duration of sufferings of patients before admission in hospital, number of days stayed in hospital before operation and after operation, duration of total hospital

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days, number of diagnostic test required before admission and after admission, total diagnostic test required for operation etc. of the patients of public and private hospitals

The section 'waiting time related information' comprise of waiting time in doing diagnostic tests, waiting time for recovering physical fitness, waiting time for getting operation, reasons for waiting time and remedial measures for waiting time.

Cost related information contains bed cost, medicine cost, diet cost, cost of diagnostic test, total operation cost, opportunity cost of patients, opportunity cost of accompany and other indirect cost.

Satisfaction related information contains the behaviours of doctors and service personnel, and satisfaction of patients with the service of the hospitals.

The questionnaire was pretested on ten patients of five hospitals. The purposes of pretesting were to ascertain the suitability, flow and sequence of questions. The pretest revealed that an average of 40 minutes was required to complete a single questionnaire. Following experience of the pretests, the questionnaire was reviewed, modified and finalized.

3.6 Framework for determination of cost of waiting time

Here we shall try to assess the amount of economic loss for waiting time considering both direct and indirect costs. To assess the direct economic losses we can use opportunity cost of waiting time by the patient's income level which is implicit and the explicit cost of waiting time includes drug cost, food cost, bed cost ant other unofficial cost due to waiting time. To assess the indirect economic loss other costs due to waiting time such as accompanying transport cost, food cost and opportunity cost for time loss will be added. There also occurred some internal cost for waiting time by the government, which are capital cost, bed cost, drug cost and logistic cost. These are given free by the government in public hospital. The frame of different type of cost occurred due to waiting time during their preoperative hospital days is given below.

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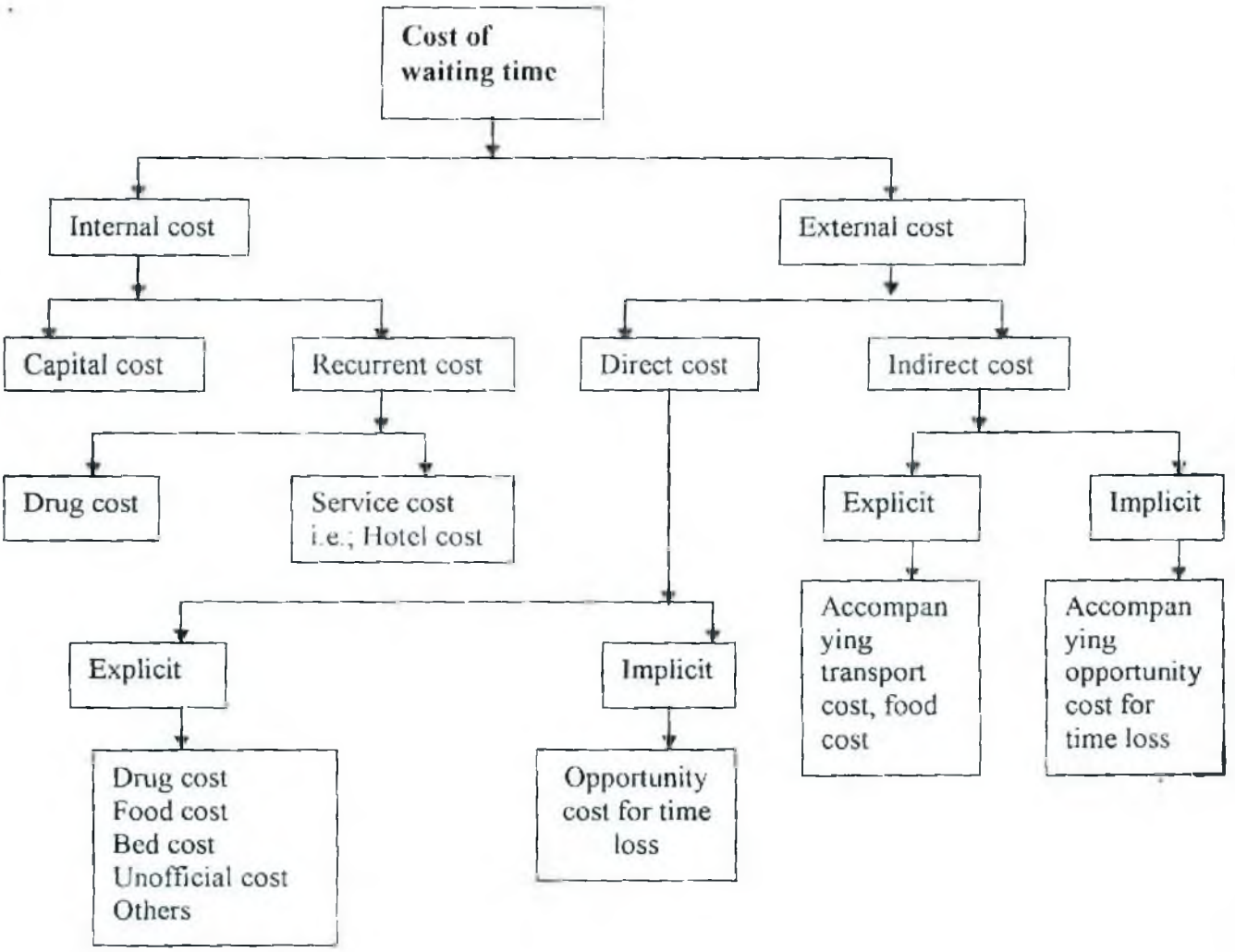

Figure: 3.1 Different sources of cost of waiting time during preoperative hospital days

3.7 Mathematical model

Reviewing some literature and considering several types of information about waiting time it is observed that public hospital has more waiting time than private hospital but the expenditure on public hospital is much lesser than private hospital. So those with high income can reduce waiting time by taking health care facilities from private hospitals. Thus it can be inferred that waiting time has negative relationship with income, operation cost, hotel cost and with unofficial payment, as evidence shows that unofficial payment reduces waiting time.

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A comparison of waiting time is needed for the patients of public hospitals and private hospitals. This is done by mean-test. Again the behavior of the patients with the two types of hospitals can be measured by Logistic regression model. Since in our study choice of place is a dichotomous variable we use logistic regression model. Let choice of public hospitals is denoted by 0 and that of private hospitals is denoted by 1. According to logistic model:

$$p_1 = E(Y = 1/X) = \frac{1}{1+e^{-(\beta_0+\beta_1 x_1+\beta_2 x_2+\beta_3 x_3)}}$$

$$P_1 = \frac{1}{1+e^{-Z}} \qquad (3.1)$$

where, $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$

Here X_1= family income, X_2 = education X_3 = days of sufferings.

If p_1, the probability of going to private hospitals, is given by (3.1), then (1- p_1), the probability of going to public hospitals, is

$$1 - P_1 = \frac{1}{1+e^{Z}}$$

Therefore, we can write

$$\frac{p_1}{1-p_1} = \frac{1+e^{Z}}{1+e^{-Z}} = e^{z} \qquad (3.2)$$

Now $p_1/(1-p_1)$ is simply the odds ratio in favor of going to private hospitals – the ratio of the probability that a patient will go to private hospital to that it will go to public hospitals.

If we take the natural log of (3.2) we obtain

$$L = \ln\left(\frac{p_1}{1-p_1}\right) = Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

that is, L is the log of the odds ratio.

In this study statistical software SPSS was used to run the regression model.

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3.8 Study design

This was a cross-sectional study and retrospective in nature. The study design was chosen to examine and compare at a given time a cross-section of patients who underwent surgical intervention due to gall stone ailments, at different public and private hospitals in Dhaka city during the period January 01, 2008 to April 30, 2008.

3.9 Place of study

The study area includes the Public hospitals (like Dhaka Medical College Hospital, Solimullah Medical College Hospital and Showrowarthy Hospital) and different private hospitals (namely Central Hospital, Islami Bank Hospital, Asian Hospital, R.M.C. Hospital, Fortune General Hospital, Abeda Memorial Hospital, Well care Hospital, Badda General Hospital, Aichi Hospital, The Barakah General Hospital, Al-Rashid General Hospital Pvt. Lt., Salauddin General Hospital, Latika General Hospital, Proshanti Hospital Ltd.) at Dhaka city in Bangladesh. Capital city Dhaka was chosen due to a number of reasons. Firstly, a number of public hospitals situated in Dhaka city, which was rare in other districts. Secondly, huge number of private hospitals and clinics were available in Dhaka city. Thirdly, as the hospitals and clinics were mostly Dhaka based in the country, specialized doctors required for such operation were also mostly available in Dhaka. Finally, required number of patients could be easily available in Dhaka city as patients of all over the country usually came to get treatment in Dhaka city.

3.10 Study population

The population of the study included the patients of all ages and both sexes who underwent surgical intervention for the treatment of gall stone ailments in the study place during four months study period.

3.11 Study period

The study was conducted for the period of four months with effect from 1st January to 30th April 2008.

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3.12 Sample size

The standard formula of sample size estimation (Betty R. Kirkwood) was used to calculate the adequate sample size.

$$n = z^2 pq / d^2$$

Where z at 95% significance level is 1.96, p = Probability of cholelithiasis = 10% since, it has been reported that about 10-20% of adult population have cholelithiasis in developed countries, Alam (1993:75-76). q = 1-p i.e. 90% and d = desired degree of accuracy, here 5%. Then the sample size would be:

$$n = z^2 pq / d^2$$

$$n = (1.96)^2 (.1)(.9) / (.05)^2$$

$$n = 138.2976 \approx 140$$

A total of 140 postoperative patients of gall stone ailments were considered as sample size out of which 70 patients considered from public hospitals and 70 patients considered from private hospitals.

3.13 Respondents selection procedure

All available patients who underwent Gall-Stone operation in the selected hospitals during the study period were considered until the required number of patients were interviewed. Interviewers usually went to the selected hospitals daily for postoperative patients of gall stone surgery and if available then they were informed about the objectives of the survey. After hearing the objectives and while they agreed to fill up the questionnaire, then they were included in the sample. One questionnaire was used for each patient for data collection. It was filled up by the patients / relatives immediately before release of the hospital.

3.14 Method of data collection

The researcher himself with four pre-trained investigators administered the questionnaire and collected data from the postoperative patients or their relatives at

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the hospitals in Dhaka city. One questionnaire was used for each patient for data collection.

3.15 Data management

The collected data were checked, verified and subjected to editing for consistency. In this study the entire analysis have been done in author's personal computer. For this study we used SPSS, MS-EXCEL and MS-WORD. SPSS was used to run the logistic regressions, to test the equality of means and chi-square test. MS-WORD and MS-EXCEL were used for various purposes like report writing and for graphical representation.

3.16 Testing procedure

The procedure of hypothesis testing used in the present study was the two mean tests of different variables for making comparison between public and private hospitals. To observe the features, cross tabulation technique was used and also the statistical significance of the results was tested through chi-square test. Logistic regression lines were also fitted and the significance of the regression coefficients were tested through Wald test.

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CHAPTER 4

Background Characteristics of Patients

4.1 Introduction

Background characteristics of patients like gender, religion, marital status, age, family size, education, occupation, monthly income, number of earning persons of patient's family, types of sufferings from Cholelithiasis, duration of sufferings etc were collected from the postoperative patients of gall stone surgery. A comparison is made with the above characteristics for the patients of public and private hospitals. It would enable us to identify the factors that were likely to influence the choice of the public and private hospitals for gall-stone surgery.

4.2 Empirical findings

Background characteristics of patients are discussed and presented in the following pages.

4.2.1 Distribution of patients according to gender, religion and marital status

The data revealed that female suffered more in Cholelithiasis (gall-stone) than male (Table-4.1). Among the total patients of gallstone surgery, 61.4 percent were female and 38.6 percent were male. Gender wise distribution shows that male patients were treated more in private hospitals (55.6%) than in public hospitals (44.4%). On the other hand, female patients were treated more (53.4%) in public hospitals than in private hospitals (46.6%). Among the patients of public hospitals, two third were female but in private hospitals 42.9% were male and 57.1% were female. It is observed that 95% of patients were Muslims and rest 5% were Hindus. Religion had no effects on choosing the public or private hospitals as almost half of the patients of both the religion chose public and private hospitals equally. Marital status showed that 82.1% of total patients were married, 10.0% were widow and 7.1% were unmarried. Here 80% of unmarried patients were treated in private hospitals.

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Table: 4.1 Distribution of patients according to gender, religion and marital status

Indicators	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
Gender							
Male	24	44.4	34.3	30	55.6	42.9	54(38.6)
Female	46	53.4	65.7	40	46.6	57.1	86(61.4)
Religion							
Muslim	66	49.6	94.3	67	50.4	95.7	133(95.0)
Hindu	4	57.1	5.7	3	42.9	4.3	7(5.0)
Marital status							
Unmarried	2	20.0	2.9	8	80.0	11.4	10(7.1)
Married	61	53.0	87.1	54	47.0	77.1	115(82.1)
Widow	6	42.9	8.6	8	57.1	11.4	14(10.0)
Separated	1	100.0	1.4	0	0.0	0.0	1(.7)
Total	70		100.0	70		100.0	140(100.0)

4.2.2 Age distribution of patients

Age distribution of gall-stone patients showed that above half (58.6%) of the patients were in age group 31 to 50 years and about one fourth patients of private hospitals were in 50-60 aged group. No patients were in age less than 10 years and only 2.9 % patients were in age group 11 – 20 years (Figure: 4.1). The means age of the patients were 40.7 years and 44.4 years for public and private hospitals respectively and overall mean age was 42.56 years. The mean test shows insignificant difference at 5% level of significance between the two mean ages of public and private hospitals. The minimum and maximum ages of the patients were 19 years and 85 years respectively (Table 4.2).

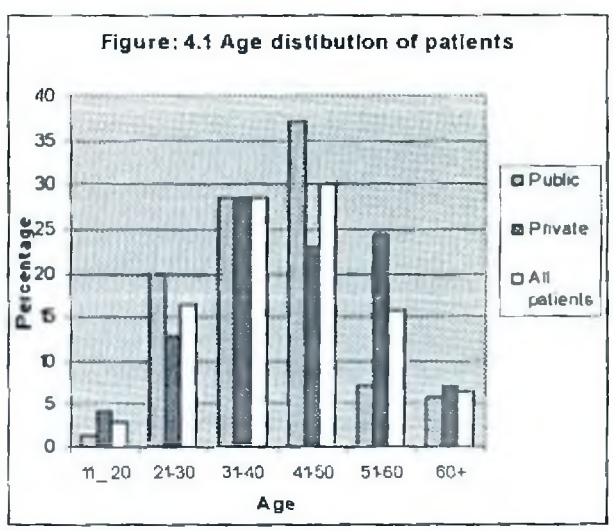

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Table: 4.2 Age distribution of patients

Age Group	Frequency (Percentage)		Total
	Public	Private	
≤ 10 years	0	0	0
11-20	1(1.4)	3(4.3)	4(2.9)
21-30	14(20.0)	9(12.9)	23(16.4)
31-40	20(28.6)	20(28.6)	40(28.6)
41-50	26(37.1)	16(22.9)	42(30.0)
51-60	5(7.1)	17(24.3)	22(15.7)
60+	4(5.7)	5(7.1)	9(6.4)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	40.7	44.4	42.56
Minimum	19.0	20.0	19
Maximum	70.0	85.0	85
Mean test	*t-value = -1.742, P-value = .084, Comment: Insignificant*		

4.2.3 Distribution of patients according to family size

Above half (56.4%) of all patients belonged to the family size of 4-5 members followed by 18.6% of those having family size of 6-7 members. In private hospitals, 21.4 % of patients had the family size more than 9 persons. The average family size of the patients was 5.64 members which is higher than national average family size 4.8 members (BBS, 2004). In public hospitals the average family size was 4.9 and in private hospitals it was found to be 6.37. The mean family size of the patients of private hospitals was significantly (p=.000) higher than that of public hospitals. The maximum family size of patients was found to be 15 in private hospitals (Table 4.3).

Table: 4.3 Family size of patients

Family size	Frequency (Percentage)		Total
	Public	Private	
1-3 persons	6 (8.6)	7(10.0)	13(9.3)
4-5 persons	47(67.1)	32(45.7)	79(56.4)
6-7 persons	15(21.4)	11(15.7)	26(18.6)
8-9 persons	1(1.4)	5(7.1)	6(4.3)
9+ persons	1(1.4)	15(21.4)	16(11.4)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	4.9	6.37	5.64
Minimum	2	2	02
Maximum	11	15	15
Mean test	*t-value = -3.623, P-value = .000, Comment: Significant*		

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4.2.4 Distribution of patients according to educational status

About one fourth (25.7%) of the total patients completed the class VI – IX and 15.7% of total patients were masters pass and another 15.7% patients belonged to class I – V. Illiterate and below primary educated patients treated more in public hospitals (71.4%, 57.1% and 65.2%) than in private hospitals. Among the patients of masters pass, 63.6% treated in private hospitals and rest 36.4% treated in public hospitals. About half of the patients in private hospitals were SSC and above educated; and 20% patients in private hospitals were masters pass. In public hospitals SSC and above educated were 37.1% (Table 4.4). So less educated people comparatively treated more in public hospitals and more educated people comparatively treated more in private hospitals.

Table: 4.4 Educational status of patients

Educational status	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
Illiterate	5	71.4	7.1	2	28.6	2.9	7(5.0)
Can sign only	8	57.1	11.4	6	42.9	8.6	14(10.0)
Class I-V	15	65.2	21.4	7	34.8	10.0	21(15.7)
Class VI-IX	16	44.5	22.9	20	55.5	28.6	36(25.7)
SSC	9	60.0	12.9	6	40.0	8.6	15(10.7)
HSC	4	40.0	5.7	6	60.0	8.6	10(7.1)
Degree	4	40.0	5.7	6	60.0	8.6	10(7.1)
Masters	8	36.4	11.4	14	63.6	20.0	22(15.7)
Madrasa education	1	25.0	1.4	3	75.0	4.3	4(2.9)
Total	70		100.0	70		100.0	140(100.0)

4.2.5 Distribution of patients according to occupation

The highest 45.0 percent of total patients were housewife followed by service holders (16.4) and then business (10.0%). Among the professional patients, 83.3 percent treated in private hospitals and rest 16.7 percent treated in public hospitals. Also 66.7 percent of agricultural professional treated in private hospitals. On the other hand all day labour patients and 71.4 percent of retired / old man treated in public hospitals. The chi-square test shows that there was significant (p=.040) relationship between occupation and place (Table 4.5).

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Table: 4.5 Occupation of patients

Occupation	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
Agriculture	3	33.3	4.3	6	66.7	8.6	9(6.4)
Housewife	34	54.0	48.6	29	46.0	41.4	63(45.0)
Service	12	52.2	17.1	11	47.8	15.7	23(16.4)
Professional	2	16.7	2.9	10	83.3	14.3	12(8.6)
Business	6	42.9	8.6	8	57.1	11.4	14(10.0)
Student	1	33.3	1.4	2	66.7	2.9	3(2.1)
Day labour	4	100.0	5.7	0	0.0	0.0	4(2.9)
Retired / Old man	5	71.4	7.1	2	28.6	2.9	7(5.0)
Others	3	60.0	4.3	2	40.0	2.9	5(3.6)
Total	70		100.0	70		100.0	140(100.0)
Test	*x^2 (chi-square) = 25.783, P-value = .000, Comment: Significant*						

4.2.6 Monthly income distribution of the patient

Almost half of the total patients were not involved with earning and 21.4 percent of the patients had earning of Tk. 5001 – 10000. Only 5 percent of total patients had earning more than Tk.15000 and almost all of them treated in private hospitals. Among the patients having income 10001 - 15000, mostly (64.3%) treated in private hospitals. On the other hand patients having no income treated more (54.9%) in public hospitals. The mean incomes per month were Tk. 7816.1 and Tk. 11692.1 for the patients of public and private hospitals respectively (Table 4.6). The mean test shows significant (p=.029) difference between the two means. The overall mean income per month of the patients was Tk. 9950.70.

Table: 4.6 Monthly income distribution of the patient

Income	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
No income	39	54.9	55.7	32	45.1	45.7	71(50.7)
1000-5000	8	44.4	11.5	10	55.6	14.3	18(12.9)
5001-10000	17	56.7	24.3	13	43.3	18.6	30(21.4)
10001-15000	5	35.7	7.1	9	64.3	12.9	14(10.0)
15001-20000	0	0.0	0.0	1	100.0	1.4	1(0.7)
20001-30000	1	16.7	1.4	5	83.3	7.1	6(4.3)
Total	70		100.0	70		100.0	140(100.0)
Mean	7816.1			11692.1			9950.7
Mean test	*t-value = -2.226, P-value = .029, Comment: Significant*						

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4.2.7 Number of earning persons of patient's family

It is observed from table 4.7 that patients had highest five number of earning persons in their family. Above half (52.9%) of the total patients had one earning person in their family and 32.9% patients had two earning persons. Only 14.2% patients had earning persons more than two. Patients having earning person(s) one or two mostly treated in public hospitals (54.1% and 52.2% respectively). On the other hand patients having earning persons more than two mostly treated in private hospitals (70.0%, 57.1% and 100% respectively).

Table: 4.7 Number of earning persons of patient's family

Earning Person	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
1	40	54.1	57.1	34	45.9	48.6	74(52.9)
2	24	52.2	34.3	22	47.8	31.4	46(32.9)
3	3	30.0	4.3	7	70.0	10.0	10(7.1)
4	3	42.9	4.3	4	57.1	5.7	7(5.0)
5	0	0.0	0.0	3	100.0	4.3	3(2.1)
Total	70		100.0	70		100.0	140(100.0)

4.2.8 Monthly income distribution of patient's family

Table 4.8 shows that 28.6 percent patient's family had the income of Tk. 10001-15000 followed by 27.9 percent had Tk. 5001-10000 and 12.9 percent had Tk. 20001-30000. It is observed from figure: 4.2 that two third of the patients family had income less than Tk.15000 and they mostly treated in public hospitals (85.7%, 64.1% and 50.0% respectively). On the other hand one third of the patient's family had income more than Tk.15000 and they mostly treated in private hospitals except the income group Tk. 20001-30000. The mean incomes of patient's family per month were Tk. 11700.0 and Tk. 23857.1 for public and private hospitals respectively showing significant (p=.002) difference between the two means. The overall mean family income per months was Tk. 17778.6.

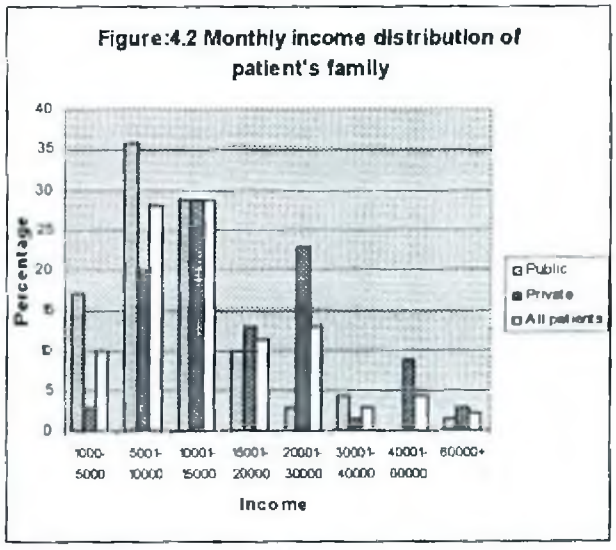

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Table: 4.8 Monthly income distribution of patient's family

Income	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
1000-5000	12	85.7	17.1	2	14.3	2.9	14(10.0)
5001-10000	25	64.1	35.7	14	35.9	20.0	39(27.9)
10001-15000	20	50.0	28.6	20	50.0	28.6	40(28.6)
15001-20000	7	43.8	10.0	9	56.2	12.9	16(11.4)
20001-30000	2	11.1	2.9	16	88.9	22.9	18(12.9)
30001-40000	3	75.0	4.3	1	25.0	1.4	4(2.9)
40001-60000	0	0.0	0.0	6	100.0	8.6	6(4.3)
60000+	1	33.3	1.4	2	66.7	2.9	3(2.1)
Total	70		100.0	70		100.0	140(100.0)
Mean	11700.0			23857.1			17778.6
Minimum	1500.0			4500.0			1500.0
Maximum	65000.0			250000.0			250000.0
Mean test	*t-value = -3.191, P-value = .002, Comment: Significant*						

4.2.9 Types of sufferings from Cholelithiasis

Table 4.9 presents types of sufferings from Cholelithiasis i.e. gall stone ailment. Highest 87.9 percent of all patients suffered from abdominal pain, followed by 47.1 percent suffered from vomiting, 35.0 percent informed about chest pain, 25.0 percent informed about body ache, 23.6 percent suffered from backache and 20.0 percent suffered from fever. Other also informed about the sufferings of constipation, suffocation and swelling in the face.

Table: 4.9 Types of sufferings from Cholelithiasis (multiple)

Types of sufferings	Frequency (percentage)		Total
	Public	Private	
Chest pain / Heart burn	21(30.0)	28(40.0)	49(35.0)
Suffocation	7(10.0)	12(17.1)	19(13.6)
Abdominal pain	61(87.1)	62(88.6)	123(87.9)
Vomiting / Nausea	23(32.9)	43(61.4)	66(47.1)
Swelling in the face	2(2.9)	2(2.9)	4(2.9)
Fever	11(15.7)	17(24.3)	28(20.0)
Backache	17(24.3)	16(22.9)	33(23.6)
Body ache	9(12.9)	26(37.1)	35(25.0)
constipation	8(11.4)	12(17.1)	20(14.3)
Total	70	70	140

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4.2.10 Duration of sufferings of patients before admission in hospital

Regarding the duration of sufferings before admission in hospital, patients of gall stone surgery concentrated more in 3 – 6 months (25.0%), followed by 1-2 years (20.0%) and 1-3 months (17.9%) of sufferings (Table – 4.10). About 13.6 percent of total patients suffered less than one month and most of them (89.5%) treated in private hospitals. On the other hand, patients whom suffered more than one month to one year, mostly treated in public hospitals (56.0%, 74.3% and 83.3% respectively). Interestingly, patients whom suffered more than one year got treatment more from private hospitals (60.7%, 57.1% and 75.0% respectively). The average day of sufferings of patients before admission in hospital was 370.43 days but it was higher in private hospitals (421.04) than in public hospitals (319.81) although the difference was insignificant. The maximum and minimum days of sufferings of patients before admission in hospital were 3285.0 days (9 years) and 9.0 days respectively.

Table: 4.10 Duration (days) of sufferings of patients before admission in hospital

Duration	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
≤1 month	2	10.5	2.9	17	89.5	24.3	19(13.6)
1-3 months	14	56.0	20.0	11	44.0	15.7	25(17.9)
3-6 months	26	74.3	37.1	9	25.7	12.9	35(25.0)
6-9 months	5	83.3	7.1	1	16.7	1.4	6(4.3)
9-12 months	8	50.0	11.4	8	50.0	11.4	16(11.4)
1-2 year	11	39.3	15.7	17	60.7	24.3	28(20.0)
2-5 years	3	42.9	4.3	4	57.1	5.7	7(5.0)
5+ years	1	25.0	1.4	3	75.0	4.3	4(2.9)
Total	70		100.0	70		100.0	140(100.0)
Mean	319.81 days			421.04 days			370.43 days
Mode	120.0 days			365.0 days			365.0 days
Minimum	12.0 days			9.0 days			9.0 days
Maximum	3285.0 days			3285.0 days			3285.0 days
Mean test	*t-value = -1.084, P-value = .280, Comment: Insignificant*						

4.2.11 Distribution of family income and duration of sufferings

It is observed from table 4.11 that around one-fourth percent patients of lower and middle income group (22.6% and 28.6%) suffered less than 3 months before admission and rest three-fourth suffered more than 3 months. In contrast, about half (51.6%) of higher income group suffered less than 3 months before admission and rest half suffered more than 3 months. Chi-Square test shows that there was

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significant (p=.034) relationship (considering 5% level of significance) between family income and duration of sufferings i.e. duration of suffering of patients before admission was high in lower and middle income group and low in higher income group.

Table: 4.11 Cross table of family income and duration of sufferings

Sufferings / Family Income	Less than 3 months	3 months to 1 year	Above 1 year	Total
Lower income group	12(22.6)	27(50.9)	14(26.4)	53(100.0)
Middle income group	16(28.6)	24(42.9)	16(28.6)	56(100.0)
Higher income group	16(51.6)	6(19.4)	9(29.0)	31(100.0)
Total	44	57	39	140
Chi-Square test	*χ^2 (chi-square) = 10.430, P-value = .034, Comment: Significant*			

4.2.12 Distribution of types of operation with place

There are two types of surgical operation for Cholelithiasis, one is Laparoscopy i.e. pinhole surgery and another is Laporatomy i.e. open surgery. More cost and less suffering are involved in Laparoscopy and reversely less cost and more sufferings are involved in Laporatomy. About 18.6 percent patients of public hospitals and 71.4 percent patients of private hospitals got operation of Laparoscopy. On the other hand 73.0 percent patients of public hospitals and 28.6 percent patients of private hospitals got operation of Laporatomy. About 4.3 percent patients of public hospitals had been found who got both types of operation i.e. after performing Laparoscopy they had to do Laporatomy again due to not successful of first type of operation. Chi-Square test shows that there was significant (p=.000) relationship between types of operation and place (Table 4.12) i.e. public hospitals performed more Laporatomy and private hospitals performed more Laparoscopy for the ailment of Cholelithiasis.

Table: 4.12 Distribution of types of operation with place

Types of Operation	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
Laparoscopy	13	20.6	18.6	50	79.4	71.4	63(45.0)
Laporatomy	54	73.0	77.1	20	27.0	28.6	74(52.9)
Both	3	100.0	4.3	0	0.0	0.0	3(2.1)
Total	70		100.0	70		100.0	140(100.0)
Chi-Square test	*χ^2 (chi-square) = 40.352, P-value = .000, Comment: Significant*						

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4.3 Discussion

The data revealed that female suffered more in Cholelithiasis (Gall-Stone) than male (Table-4.1). Among the total patients of gall-stone surgery, 61.4 percent were female and 38.6 percent were male. Gender wise distribution shows that male patients were treated more in private hospitals (55.6%) and female patients were treated more (53.4%) in public hospitals. Religion had no effects on choosing the public or private hospitals as almost half of the patients of both the religion chose public and private hospitals equally. Marital status showed that 80% of unmarried patients were treated in private hospitals. The mean age of the patients was 42.56 years and more than half (58.6%) patients were in age group 31 to 50 years. So middle aged people suffered more in Cholelithiasis.

The mean family size of the patients of private hospitals (6.37) was significantly (p=.000) higher than that of public hospitals (4.9) and 21.4 percent patients of private hospitals had the family size more than 9 persons. Patients having earning person one or two mostly treated in public hospitals and more than two earning person patients mostly treated in private hospitals.

Illiterate and below primary educated patients treated more in public hospitals than in private hospitals. About half of the patients in private hospitals were SSC and above educated; and 20% patients in private hospitals were masters pass. In public hospitals SSC and above educated were 37.1%. Occupation had significant influence in selecting the place of operation. Among the professional patients, 83.3 percent treated in private hospitals and rest 16.7 percent treated in public hospitals. On the other hand all day labour patients and 71.4 percent patient of retired / old man treated in public hospitals.

About half of the total patients were not involved with earning and only 5 percent of total patients had earning more than Tk.15000 and almost all of them treated in private hospitals. Among the earning patients, the mean incomes per month were Tk. 7816.1 and Tk. 11692.1 for the patients of public and private hospitals respectively where the difference was statistically significant. It is observed that two third of the patients' family had income less than Tk.15000 and they mostly treated in public hospitals. On the other hand one third of the patients' family had income more than Tk.15000 and they mostly treated in private hospitals. The mean incomes of patient's family per month were Tk. 11700.0 and Tk. 23857.1 for

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public and private hospitals respectively showing significant (p=.002) difference between the two means.

The average day of sufferings of patients before admission in hospital was 370.43 days but it was higher in private hospitals (421.04) than in public hospitals (319.81) although the difference was insignificant. Patients whom suffered more than one month to one year, mostly treated in public hospitals and patients whom suffered more than one year got treatment more from private hospitals In reply the types of sufferings, highest 87.9 percent informed that they suffered from abdominal pain, followed by 47.1 percent suffered from vomiting and 35.0 percent informed about chest pain. Chi-Square test shows that there was significant (p=.034) relationship (considering 5% level of significance) between family income and duration of sufferings i.e. duration of suffering of patients before admission was high in lower and middle income group and low in higher income group.

About 18.6 percent patients of public hospitals and 71.4 percent patients of private hospitals got operation of Laparoscopy. On the other hand 73.0 percent patients of public hospitals and 28.6 percent patients of private hospitals got operation of Laporatomy. Chi-Square test shows that there was significant (p=.000) relationship between types of operation and place i.e. patients of public hospitals got more Laporatomy and patients of private hospitals performed more Laparoscopy for the ailment of Cholelithiasis.

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CHAPTER 5

Duration of Stay in Hospitals

5.1 Introduction

It is obvious that patients have to stay in hospital for getting surgical intervention. Hospital stay before operation is called preoperative stay and after operation is called postoperative stay. Waiting time usually occurs during the period of preoperative stay for doing diagnostic tests and getting operation serial. So duration of stay in hospital is an important parameter for getting information about waiting time. Also comparison of stay in hospitals will make the scenario clear and find out the gap of inefficiency and slack time in any components of hospital stay. In this chapter we present the discussion on number of days stayed in hospital before operation and after operation, duration of total hospital days, number of diagnostic test required before admission and after admission, total diagnostic test required for operation etc. of the patients of public and private hospitals.

5.2 Empirical findings

Duration of stay in hospitals along with other associated variables is discussed in the following subsections.

5.2.1 Number of days stayed in hospital before operation

It is observed from table 5.1 that the highest 24.3 percent of patients of public hospitals stayed 21–30 days before operation and the highest 41.4 percent of patients of private hospitals stayed half days (≤12 hours) before operation. About 94.3 percent of patients stayed more than 3 days in public hospitals before operation but it was only 13 percent, who stayed more than 3 days in private hospitals before operation. The average duration of days stayed before operation in public hospitals was 16.12 days and in private hospitals was 1.79 days. Here the

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two averages differ significantly (p=.000). The maximum number of days stayed before operation in public and private hospitals were 40.5 days and 8.5 days respectively.

Table: 5.1 Number of days stayed in hospital before operation

Duration	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
≤12 hours	2	6.5	2.9	29	93.5	41.4	31(22.1)
1days	1	.1	1.4	10	90.9	14.3	11(7.9)
2days	0	0	0	13	100.0	18.6	13(9.3)
3days	1	10.0	1.4	9	90.0	12.9	10(7.1)
4-5 days	5	62.5	7.1	3	37.5	4.3	8(5.7)
5-10 days	11	64.7	15.7	6	35.3	8.6	17(12.1)
11-15 days	16	100.0	22.9	0	0	0	16(11.4)
16-20 days	11	100.0	15.7	0	0	0	11(7.9)
21-30 days	17	100.0	24.3	0	0	0	17(12.1)
30+ days	6	100.0	8.6	0	0	0	6(4.3)
Total	70		100.0	70		100.0	140(100.0)
Mean	16.12 days			1.78 days			8.95 days
Mode	9.50			.50			.50
Minimum	.50			.50			.50
Maximum	40.50			8.50			40.50
Mean test	*t-value = 12.723, P-value = .000, Comment: Significant*						

5.2.2 Number of days stayed in hospital after operation

Patients have to be cared after operation and table 5.2 shows that highest 41.4 percent of all patients had to stay 5-6 days for post-operative care. In public hospitals post operative patients had to stay at least more than 2 days but in private hospitals 11.4 percent of the post operative patients were released within 2 days. About 42.8 percent of the post operative patients of public hospitals had to stay for more than 6 days and it was only 8.6 percent in private hospitals. The mean stay of post operative patients were 6.84 days and 3.99 days in public hospitals and private hospitals respectively, showing significantly (p=.000) higher average stay in public hospitals. Maximum numbers of days to stay for post operative patients in public and private hospitals were 24.0 days and 11.50 days respectively.

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Table: 5.2 Number of days stayed in hospital after operation

Duration	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
1-2 days	0	0.0	0	8	100.0	11.4	8(5.7)
3-4 days	10	26.3	14.3	28	73.7	40.0	38(27.1)
5-6 days	30	51.7	42.9	28	48.3	40.0	58(41.4)
7-8 days	17	77.27	24.3	5	22.73	7.1	22(15.7)
9-10 days	2	100.0	2.9	0	0.0	0	2(1.4)
11-15 days	9	90.0	12.9	1	10.0	1.4	10(7.1)
16-25 days	2	100.0	2.9	0	0.0	0	2(1.4)
Total	70		100.0	70		100.0	140(100.0)
Mean	6.84 days			3.99 days			5.42 days
Mode	5.5			2.5			2.5
Minimum	2.5			1.0			1.0
Maximum	24.0			11.50			24.0
Mean test	*t-value = 5.979, P-value = .000, Comment: Significant*						

5.2.3 Total hospital days for operation

It is observed from table 5.3 that highest 21.4 percent patients of public hospitals stayed in hospitals for more than a month followed by 20.0 percent stayed for 26 to 30 days and no patients stayed less than 5 days in public hospitals. In contrast, 42.9 percent patients of private hospitals stayed 2 to 4 days, another 42.9 percent patients stayed 5 to 7 days and rest 11.4 percent patients stayed utmost 11 to 15 days in private hospitals. The mean hospital days for operation were 22.95 days and 5.77 days in public and private hospitals respectively. The mean test shows the significant (p=.000) differences between the two means. So public hospitals take significantly higher hospital days for operation than private hospitals.

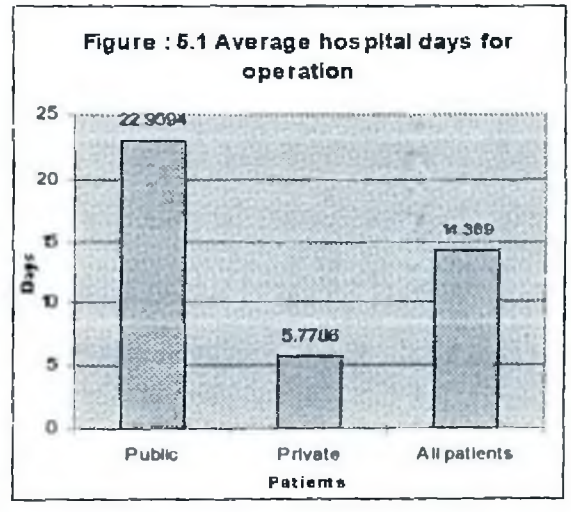

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Table: 5.3 Distribution of total hospital days

Total hospital days	Frequency (percentage)		Total
	Public	Private	
2-4	0	30(42.9)	30(21.4)
5-7	3(4.3)	30(42.9)	33(23.6)
8-10	6(8.6)	2(2.9)	8(5.7)
11-15	10(14.3)	8(11.4)	18(12.9)
16-20	11(15.7)	0	11(7.9)
21-25	11(15.7)	0	11(7.9)
26-30	14(20.0)	0	14(10.0)
30+	15(21.4)	0	15(10.7)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	22.9594	5.7786	14.3690
Mean test	*t-value = 13.901, P-value = .000, Comment: Significant*		

5.2.4 Number of diagnostic test required before admission

Diagnosis test is essential to do surgical operation and waiting time may occur due to the long queue of doing diagnostic test. So we consider here the number of diagnostic test required before and after the admission in both types of hospitals. Table 5.4 shows that 5.7 percent patients did not go through any diagnostic test before admission. About one third of the total patients needed 5 to 6 number of diagnostic tests and more than 6 numbers of diagnostic tests were needed for 20 percent patients of public hospitals and 45.7 percent patients of private hospitals before admission. The mean numbers of diagnostic test needed before admissions were 5.28 and 6.91 in public and private hospitals respectively where the test results shows significant (p=.031) difference between the two means. The modal numbers of diagnostic tests were 5 and 8 for public and private hospitals respectively. So patients of private hospitals needed more diagnostic tests than that of public hospitals before admission in the hospitals.

Table: 5.4 Number of diagnostic test required before admission

Number of Diagnostic test (before)	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
No	4	50.0	5.7	4	50.0	5.7	8(5.7)
0-2	5	35.7	7.1	9	64.3	12.9	14(10.0)
3-4	16	61.5	22.9	10	38.5	14.3	26(18.6)
5-6	31	67.4	44.3	15	32.6	21.4	46(32.9)
7-8	6	30.0	8.6	14	70.0	20.0	20(14.3)
9-10	6	33.3	8.6	12	66.7	17.1	18(12.8)
10+	2	25.0	2.8	6	75.0	8.6	8(5.7)
Total	70		100.0	70		100.0	140(100.0)

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Number of Diagnostic test (before)	Public	Private	Total
Mean	5.28	6.91	6.07
Mode	5	8	5
Minimum	0	1	0
Maximum	12	42	42
Mean test	*t-value = -2.187, P-value = .031, Comment: Significant*		

5.2.5 Number of diagnostic test required after admission

To minimize the lodging and other costs, patients of private hospitals usually complete their diagnostic tests before admission and it is observed in table 5.5 that 31.4 percent patients of private hospitals were not required any diagnostic tests after admission and 37.2 percent needed only 1 to 2 numbers of diagnostic tests. On the other hand highest 35.7 percent patients of public hospitals required 7 to 8 numbers of diagnostic tests followed by 22.8 percent required 5 to 6 numbers of diagnostic tests. Average numbers of diagnostic tests requires were 5.61 and 3.04 in public and private hospitals respectively and the mean difference was significant (p=.000). The modal numbers of diagnostic tests were 7 and 1 for public and private hospitals respectively indicating most of the patients of private hospitals did their diagnostic test before admission. So patients of public hospitals needed more diagnostic tests than that of private hospitals after admission in the hospitals and it causes more waiting time for the patients of public hospitals.

Table: 5.5 Number of diagnostic test required after admission

Number of Diagnostic test (after)	Public			Private			Total
	Frequency	Row %	Col %	Frequency	Row %	Col %	
No	-	0.0	0.0	22	100.0	31.4	22(15.7)
1-2	12	31.6	17.1	26	68.4	37.2	38(27.1)
3-4	13	59.1	18.7	9	40.9	12.9	22(15.7)
5-6	16	76.2	22.8	5	23.8	7.1	21(15.0)
7-8	25	75.8	35.7	8	24.2	11.4	33(23.6)
8+	4	100.0	5.7	0	0.0	0.0	4(2.9)
Total	70		100.0	70		100.0	140(100.0)
Mean	5.61			3.04			4.57
Mode	7			1			1
Minimum	1			1			1
Maximum	20			7			20
Mean test	*t-value = 4.983, P-value = .000, Comment: Significant*						

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5.2.6 Total diagnostic test required for operation

Although diagnostic tests may vary before and after admission in two types of hospitals but it is rational to assume that total number of diagnostic tests should not vary between two types of hospitals. Data on table 5.6 reveals that one-third patients of public hospitals required 12 to 14 numbers of diagnostic tests and 30.0 percent patients needed 9 to 11 numbers of diagnostic tests. On the other hand 41.2 percent patients of private hospitals needed 6 to 8 number of diagnostic tests and 24.3 percent patients needed 9 to 11 numbers of diagnostic tests. The mean numbers of diagnostic tests required for operation were 10.81 and 8.6 in public and private hospitals respectively, where mean test shows significant difference indicating that total number of diagnostic tests for operation were not equal between two types of hospitals.

Table: 5.6 Distribution of total diagnostic test required for operation

Total diagnostic test	Frequency (percentage)		Total
	Public	Private	
3-5	4(5.7)	14(20.0)	18(12.9)
6-8	16(22.9)	29(41.4)	45(32.1)
9-11	21(30.0)	17(24.3)	38(27.1)
12-14	23(32.9)	4(5.7)	27(19.3)
15-17	4(5.7)	4(5.7)	8(5.7)
18+	2(2.9)	2(2.9)	4(2.9)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	10.8143	8.6000	9.7071
Mean test	*t-value = 2.751, P-value = .007, Comment: Significant*		

5.3 Discussion

The average duration of days stayed before operation in public hospitals was 16.12 days and in private hospitals was 1.79 days. The mean stay of post operative patients were 6.84 days and 3.99 days in public hospitals and private hospitals respectively, showing significantly (p=.000) higher average stay i.e. higher post operative stay in public hospitals. The mean hospital days for operation were 22.95 days and 5.77 days in public and private hospitals respectively. The mean test shows the significant (p=.000) differences between the two means. So public hospitals take significantly higher hospital days for operation than private hospitals.

Diagnosis test is essential to do surgical operation and waiting time may occur due to the long queue of doing diagnostic test. So we consider here the number of

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diagnostic test required before and after the admission in both types of hospitals. The mean numbers of diagnostic test needed before admissions were 5.28 and 6.91 in public and private hospitals respectively where the test results shows significant (p=.031) difference between the two means. The modal numbers of diagnostic tests were 5 and 8 for public and private hospitals respectively. So patients of private hospitals did more diagnostic tests than that of public hospitals before admission in the hospitals. About one-third patients of private hospitals were not required any diagnostic tests after admission. Average numbers of diagnostic tests required after admission were 5.61 and 3.04 in public and private hospitals respectively and the mean difference was significant (p=.000). The modal numbers of diagnostic tests after admission were 7 and 1 for public and private hospitals respectively indicating most of the patients of private hospitals did their diagnostic test before admission. So patients of public hospitals needed more diagnostic tests than that of private hospitals after admission in the hospitals and it causes more waiting time for the patients of public hospitals. The mean numbers of total diagnostic tests required for operation were 10.81 and 8.6 in public and private hospitals respectively, where mean test shows significant difference indicating that total number of diagnostic tests for operation were not equal between two types of hospitals.

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CHAPTER 6

Waiting Time in Hospitals

6.1 Introduction

Waiting time is the most important variable of the study. Waiting time is the period of time expressed in hours or days, which is required for an individual patient (not caused by physical fitness or doctor's advice) from the time of arrival in the hospital, and the time of starting operation. Literature review supports that public hospitals has more waiting time than private hospitals. Patients have to wait for a number of causes like doing diagnostic tests, recovering physical fitness, getting operation serial, managing money for operation etc. But waiting time is defined only the time of long queue for doing diagnostic tests (other than physical fitness) and time for getting operation serial which are real waiting time, not caused by doctor's advice or patient's personal reasons. This Chapter considers comparative analysis of all sources of waiting time arise for the operation.

6.2 Empirical findings

Waiting time in hospitals is discussed in the following under different headings.

6.2.1 Waiting time to get the operation serial

Long operation serial occurs due to a number of causes such as crowd of patients, delayed test report, not availability of doctors, operation machine not running, shortage of operation theatre etc. Table 6.1 reveled that waiting time, arose from the cause of long operation serial, was low in private hospitals and high in public hospitals. It is observed that among the patients of private hospitals whom fall in operation serial, 43.8 percent had to wait for less than 6 hours and other 25.0 percent had to wait for 6 to 12 hours followed by 15.6 percent had to wait for 12 to 24 hours. On the other hand highest one third patients of operation serial of public hospitals had to wait for 6 to 10 days and 27 percent of such patients of public hospitals had to wait for 3 to 5 days. The mean waiting times due to

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operation serial were 188.88 hours (7.87 days) and 16.87 hours for the patients of public hospitals and private hospitals respectively and the difference was significantly (p=.000) higher for public hospitals. The maximum waiting times for operation serial were 30 days and 4 days for the patients of public hospitals and private hospitals respectively.

Table: 6.1 Waiting time to get the operation serial

Waiting time to get operation serial	Frequency (percentage)		Total
	Public	Private	
< 6 hours	1(1.6)	14(43.8)	15(15.8)
6 – 12 hours	0	8(25.0)	8(8.4)
12-24 hours	2(3.2)	5(15.6)	7(7.4)
1-2 days	8(12.7)	4(12.5)	12(12.6)
3-5 days	17(27.0)	1(3.1)	18(18.9)
6-10 days	21(33.3)	0	21(22.1)
11-15 days	9(14.3)	0	9(9.5)
15 + days	5(7.9)	0	5(5.3)
Total	63(100.0)	32(100.0)	95(100.0)
Mean	188.88 hours (7.87 days)	16.87 hours	5.42 days
Mode	2 days	6 hours	2 days
Minimum	5 hours	2 hours	2 hours
Maximum	30 days	4 days	30 days
Mean test	*t-value = 8.780, P-value = .000, Comment: Significant*		

6.2.2 Total waiting times for doing all diagnostic tests after admit

Patients were asked about their total waiting time needed for doing all diagnostic tests after admit and they informed that on average 4.16 hours needed for all the patients (Table 6.2). The average waiting times were 5.23 hours for public hospitals and 2.55 hours for private hospitals. That is waiting time for public hospitals were near about double than that of private hospitals for doing all diagnostic tests and the difference was statistically significant (p=.000). About 20.9 percent patients of private hospitals needed half hour waiting time for doing all diagnostic tests but in public hospitals minimum waiting time was 1 hour. The maximum waiting times for public hospitals was 15 hours and 12.3 percent patients needed more than 8 hours of waiting time but in private hospitals maximum waiting time was 7 hours.

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Table: 6.2 Total waiting times for doing all diagnostic tests after admit

Waiting time for all diagnostic test	Frequency (Percentage)		Total
	Public	Private	
Half hour	0	9(20.9)	9(8.3)
1 hours	3(4.6)	5(11.6)	8(7.4)
1-2 hours	8(12.3)	9(20.9)	17(15.7)
2-3 hours	7(10.8)	7(16.3)	14(13.0)
3-4 hours	13(20.0)	8(18.6)	21(19.4)
4-5 hours	10(15.4)	2(4.7)	12(11.1)
5-8 hours	16(24.6)	3(7.0)	19(17.6)
8+ hours	8(12.3)	0	8(7.4)
Total	65 (100.0)	43(100.0)	108(100.0)
Mean	5.23 hours	2.55 hours	4.16
Mode	4.0	.5	4.0
Minimum	1.00	.5	.5
Maximum	15.00	7.0	15.0
Mean test	*t-value = 6.033, P-value = .000, Comment: Significant*		

6.2.3 Waiting time for recovering physical fitness in doing diagnostic tests after admit

Some patients might have to be waited due to recovering physical fitness in doing diagnostic tests according to the advice of doctors. It happened only 17.9 percent of cases and most of them were the patients of public hospitals because patients of private hospitals usually got admitted after diagnostic tests (Table 6.3). Among such patients of public hospitals who needed to wait for physical fitness, highest 40.0 percent needed to wait for 5 to 6 days followed by 20.0 percent had to wait for 3 to 4 days. On the other hand among such patients of private hospitals who needed to wait for physical fitness, 60.0 percent needed to wait less than 2 days. The mean waiting time for physical fitness in doing diagnostic tests were 4.88 days and 3.4 days for public and private hospitals respectively. The difference of the two means was statistically insignificant (p=.305) at 5% level of significance indicating similar waiting time happened for physical fitness in doing diagnostic tests

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Table: 6.3 Waiting time for recovering physical fitness in doing diagnostic tests after admit

Indicators	Frequency (percentage)		Total
	Public	Private	
Wait for physical fitness			
Yes	20 (28.6)	5(7.1)	25(17.9)
No	50(71.4)	65(92.9)	115(82.1)
Total	70(100.0)	70(100.0)	140(100.0)
Waiting time for physical fitness			
< 2 days	3(15.0)	3(60.0)	6(24.0)
3-4 days	4(20.0)	0	4(16.0)
5-6 days	8(40.0)	0	8(32.0)
7-8 days	3(15.0)	2(40.0)	5(20.0)
8+ days	2(10.0)	0	2(8.0)
Total	20(100.0)	5(100.0)	25(100.0)
Mean	4.88	3.40	4.60
Mode	5	1	5
Minimum	1 hour	1 day	1 hour
Maximum	12	7	12
Mean test	*t-value = 1.049, P-value = .305, Comment: Insignificant*		

6.2.4 Waiting time due to physical fitness for doing operation

Usually physically unfit patients stay at home other than serious cases and got admitted later in private hospitals. So mean waiting time due to physical fitness in doing operation was less in private hospitals in comparison to public hospitals. On the other hand public hospitals often deals with serious cases and those patients had to be observed before operation for physical fitness and needed to wait. Doctor often advises patients to wait for physical fitness before operation and it happened for (40*100/140) 28.57 percent of cases (Table 6.4). About half of such physically unfit patients of private hospitals had to wait less than 6 hours and another 20.0 percent of such patients of private hospitals had to wait for 6 to 24 hours. On the other hand highest 44.0 percent of such physically unfit patients of public hospitals had to wait for 5 to 7 days and 16.0 percent of such public hospital patients had to wait more than 11 days. The mean waiting time due to physical fitness for doing operation were 7.1 days and 1.56 days for the patients of public and private hospitals respectively. The difference of the two means was statistically significant (p=.000). The maximum and minimum waiting time due to physical fitness before operation were 22 days and 2 days respectively for public hospital and the maximum and minimum waiting time were 7 days and 1 hours respectively for private hospitals.

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Table: 6.4 Waiting time due to physical fitness for doing operation

Waiting Time due to physical fitness for doing operation	Frequency		Total
	Public	Private	
< 6 hours	0	8(53.3)	8(20.0)
6-24 hours	0	3(20.0)	3(7.5)
2-4 days	5(20.0)	2(13.3)	7(17.5)
5-7 days	11(44.0)	0	11(27.5)
8-10 days	5(20.0)	2(13.3)	7(17.5)
11 + days	4(16.00)	0	4(10.0)
Total	25(100.0)	15(100.0)	40(100.0)
Mean	7.1 days	1.56 days	5.01 days
Mode	5 days	5 hours	5 days
Minimum	2 days	1 hours	1 hours
Maximum	22 days	7 days	22 days
Mean test	*t-value = 4.532, P-value = .000, Comment: Significant*		

6.2.5 Waiting time other than operation serial

Table 6.5 shows that (25*100/70) 35.7 percent patient of each category of hospitals had to wait other than operation serial which mainly includes the causes of physically unfitness, managing money for patients of private hospitals and other causes. Above half of such patients from private hospitals had to wait for less than 6 hours and 32.0 percent had to wait for 6 to 24 hours. On the other hand highest 44 percent of such patients from public hospitals had to wait for 4 to 5 days. The mean waiting times other than operation serial were 7.08 days and 1.08 days for public hospitals and private hospitals respectively. The mean test shows significant (p=.000) difference between the two means indicating higher waiting time other than operation serial occurred in public hospitals.

Table: 6.5 Waiting time other than operation serial

Waiting time other than operation serial	Frequency (percentage)		Total
	Public	Private	
< 6 hours	0	13(52.0)	13(26.0)
6-24 hours	0	8(32.0)	8(16.0)
2-3 days	5(20.0)	2(8.0)	7(14.0)
4-5 days	11(44.0)	0	11(22.0)
6-7 days	2(8.0)	2(8.0)	4(8.0)
7-10 days	3(12.0)	0	3(6.0)
10 + days	4(16.0)	0	4(8.0)
Total	25(100.0)	25(100.0)	50(100.0)
Mean	7.08 days	1.08 days	4.08 days
Mode	5 days	1 hours	5 days
Minimum	2 days	1 hours	1 hours
Maximum	22 days	7 days	22 days
Mean test	*t-value = 5.373, P-value = .000, Comment: Significant*		

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6.3 Discussion

Long operation serial was one of the main causes for waiting time. The mean waiting times due to operation serial were 188.88 hours (7.87 days) and 16.87 hours for the patients of public hospitals and private hospitals respectively and the difference was significantly (p=.000) higher for public hospitals than private hospitals. The average waiting times for doing all diagnostic tests after admit were 5.23 hours for public hospitals and 2.55 hours for private hospitals. That is waiting time for public hospitals were near about double than that of private hospitals for doing all diagnostic tests and the difference was statistically significant (p=.000).

Doctor often advises patients to wait for physical fitness before operation and it happened for 28.57 percent of cases (Table 6.4). The mean waiting time due to physical fitness for doing operation were 7.1 days and 1.56 days for the patients of public and private hospitals respectively. Usually physically unfit patients stay at home other than serious cases and got admitted later in private hospitals. So mean waiting time due to physical fitness in doing operation was less in private hospitals in comparison to public hospitals. On the other hand public hospitals often deals with serious cases and those patients had to be observed before operation for physical fitness and needed to wait.

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CHAPTER 7

Reasons of Waiting Time in Hospitals

7.1 Introduction

Waiting time arises from two main sources like doing diagnostic tests and getting operation serial. Accordingly reasons of waiting time due to the above two sources according to the opinion of patients have been discussed in this chapter. Also the comments on duration of total hospital days for operation and reasons for long hospital days in doing operation have been discussed here.

7.2 Empirical findings

Reasons of waiting time in hospitals and long hospital days are discussed in the following subsections.

7.2.1 Reasons for waiting in doing diagnostic tests

Rush of patients with limited number of instruments causes waiting time in doing diagnostic tests. Table 7.1 shows that 77.14 percent of all patients needed to wait in doing diagnostic tests and it happened highly in public hospitals (92.85%) than in private hospitals (61.42%). The query about the reasons for waiting time supplied multiple answers. Among all the patients, 71.3 percent mentioned rush of patients and it happened more in public hospitals (86.15%), less personnel mentioned by 24.1 percent, lack of instruments mentioned by 20.4 percent and other 8.3 percent patients did not mentioned any reasons.

Table: 7.1 Reasons for waiting in doing diagnostic tests (multiple)

Indicators	Frequency (Percentage)		Total
	Public	Private	
Wait for diagnostic test			
Yes	65 (92.85)	43(61.42)	108(77.14)
No	5(7.15)	27(38.52)	32(23.84)
Total	70(100.0)	70(100.0)	140(100.0)

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Reasons for waiting in diagnostic test	Public	Private	Total
Crowd of patients	56(86.15)	21(48.83)	77(71.3)
Less Personnel	14(21.53)	12(27.9)	26(24.1)
Lack of instrument	16(24.61)	6(13.95)	22(20.3)
Don't know	3(4.61)	6(13.95)	9(8.3)
Total	65	43	108

7.2.2 Reasons for waiting in doing operation

After all diagnostic tests patients were supposed to get operation but 87.9 percent of all patients informed that they had to wait for some reasons (Table 7.2). The query of reasons for waiting before operation reveled multiple answers and highest 84.9 percent of waited patients of public hospitals informed that the main reason was the long operation serial but it happened for 14.1 percent of such patients of private hospitals. Highest 22.8 percent patients of private hospitals informed that they had to wait to manage money but it is insignificantly happened for the patients of public hospitals. Other reasons for waiting were lack of physical fitness (30.1%), delayed test reports (17.9%), crowd of patients mostly in public hospitals, doctors were not available mostly in private hospitals, operation machine was out of order, lack of operation theatre etc.

Table: 7.2 Reasons for waiting in doing operation (multiple)

Indicators	Frequency		Total
	Public	Private	
Wait for doing operation			
Yes	66 (94.3)	57(81.4)	123(87.9)
No	4(5.7)	13(18.6)	17(12.1)
Total	70(100.0)	70(100.0)	140(100.0)
Reasons for waiting in doing operation (multiple)			
Due to long operation serial	56(84.9)	8(14.1)	64(52.1)
Lack of Physical fitness	25(37.9)	12(21.1)	37(30.1)
Delayed test report	12(18.2)	10(17.5)	22(17.9)
To manage money	1(1.5)	13(22.8)	14(11.4)
Crowd of patients	10(15.2)	1(1.8)	11(9.0)
Operation machine out of order	2(3.0)	4(7.0)	6(4.9)
Doctor was not available	1(1.5)	8(14.1)	9(7.3)
Others	5(7.6)	7(12.3)	12(9.8)
Total	66	57	123

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7.2.3 Comments of the patients on duration of total hospital days for operation

Half of the all patients commented that the duration of total hospital days were normal (Table 7.3) but normal was said by 85.7% patients of private hospitals and only 14.3 percent patients of public hospitals thought that the hospital days were normal. According to the opinion of the patients of public hospitals, 72.9 percent thought that the duration of total hospital days were high and 12.9 percent said the hospital days were very high. On the other hand 11.4 percent patients of private hospitals informed that hospital days for operation were high and only 2.9 percent thought that it was very high. But still half of all patients thought that hospital days for operation were high or very high.

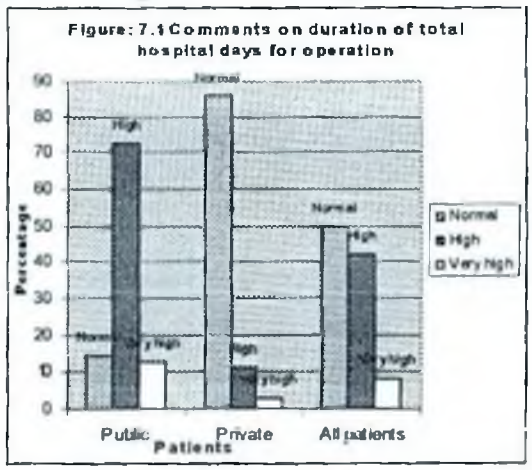

Table: 7.3 Comments on duration of total hospital days for operation

Comments on Hospital days for operation	Frequency (percentage)		Total
	Public	Private	
Normal	10 (14.3)	60(85.7)	70(50.0)
High	51(72.9)	8(11.4)	59(42.1)
Very high	9(12.9)	2(2.9)	11(7.9)
Total	70(100.0)	70(100.0)	140(100.0)

7.2.4 Reasons for long hospital days in doing operation (multiple)

Since half of the patients thought that the duration of hospital days were high or very high, they were asked about the reasons for long hospital days. In reply, 62.9 percent of those patients said that long operation serial was the main cause and 47.1 percent informed the crowd of patients was the second cause for long hospital days. Some mentioned less efficiency in management, alternative operation schedule, doctors were not available etc as the causes for long hospital days (Table 7.4).

Table: 7.4 Reasons for long hospital days in doing operation (multiple)

Reasons for long hospital days in doing operation	Frequency (percentage)		Total
	Public	Private	
Due to long operation serial	38(63.3)	6(60.0)	44(62.9)
Crowd of patients	29(48.3)	4(40.0)	33(47.1)
Less efficiency in management	3(5.0)	2(20.0)	5(7.1)
Others	7(11.67)	4(40.0)	11(15.7)
Total	60	10	70

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7.3 Discussion

Rush of patients with limited number of instruments causes waiting time in doing diagnostic tests and it happened highly in public hospitals (92.85%) than in private hospitals (61.42%). After all diagnostic tests patients were supposed to get operation but 87.9 percent of all patients informed that they had to wait and highest 84.9 percent of waited patients of public hospitals informed that the main reason was the long operation serial. On the other hand highest 22.8 percent patients of private hospitals informed that they had to wait to manage money. Other reasons for waiting were lack of physical fitness (30.1%), delayed test reports (17.9%), crowd of patients mostly in public hospitals, doctors were not available mostly in private hospitals, operation machine was out of order, lack of operation theatre etc.

According to the opinion of the patients of public hospitals, 72.9 percent thought that the duration of total hospital days were high and 12.9 percent said the hospital days were very high. On the other hand 85.6 percent patients of private hospitals thought that hospital days for operation was normal and only 11.4 percent thought that it was high. Reasons for long hospital days in doing operation revealed long operation serial, crowd of patients, less efficiency in management, alternative operation schedule, doctors were not available etc.

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CHAPTER 8

Cost Estimation of Gall-Stone Surgery

8.1 Introduction

One of the objectives of the study is to estimate and compare the direct cost, indirect cost and total cost of gall-stone surgery in public and private hospitals. This chapter comprises of all types of cost like direct, indirect and total cost of gall-stone operation incurred by the patients of public and private hospitals. To get the in-depth scenario of the cost of operation, data on cost were collected before and after the operation and a detailed comparative analysis of public and private hospitals was made in this chapter.

8.2 Empirical findings

Different types of cost of gall-stone surgery in hospitals are discussed and analyzed in the following subsections.

8.2.1 Direct cost of operation

Direct cost contains the explicit cost like doctor's fee, OT charge, cost of diagnostic test, drug cost, food cost, bed cost etc. and the implicit cost like opportunity cost of patient.

8.2.1.1 Cost for the purpose of doctor's payment and OT charge in Private hospitals

Patients do not need to pay doctor's payment and OT charge in public hospitals but these are necessary to pay in private hospitals. About one-fourth (25.7%) patients in private hospitals had to pay Tk. 6001 to 10000 as doctor's surgery fees and 20.0 percent had to pay Tk. 10001 to 1500; also another 20.0 percent paid Tk. 5001 to Tk. 6000 as doctor's surgery fees. The cost for the purpose of doctor's payment ranges from Tk. 3200 to Tk. 31000 and the mean cost was Tk. 9303.2 in private hospitals. OT charge also varies form Tk. 1200 to Tk. 7000 in private

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hospitals. Half of the patients of private hospitals needed amount of Tk. 1000 to Tk. 2000 as OT charge and 21.4 percent needed Tk. 2001 to Tk. 3000 for OT charge. The cost for the purpose of OT charge ranges from Tk. 1200 to Tk. 7000 and the mean cost was Tk. 2731.4 in private hospitals (Table 8.1).

Table: 8.1 Cost for the purpose of doctor's payment and OT charge in Private hospitals

Indicators	Frequency	Percent
Doctor's payment		
3000-4000	5	7.1
4001-5000	13	18.6
5001-6000	14	20.0
60001-10000	18	25.7
10001-15000	14	20.0
15000+	6	8.6
Total	70	100.0
Mean = 9303.2	**Minimum = 3200**	**Maximum = 31000**
OT charge		
1000-2000	35	50.0
2001-3000	15	21.4
3001-4000	8	11.4
4001-5000	10	14.3
5000+	2	2.9
Total	70	100.0
Mean = 2731.4	**Minimum = 1200**	**Maximum = 7000**

8.2.1.2 Cost for the purpose of relevant diagnostic test before admit

It is observed from table 8.2 that only 5.7 percent of all patients did not do any diagnostic tests before admit and rest 94.3 percent went through the diagnostic tests. Highest 34.3 percent patients of public hospitals needed cost of diagnostic tests Tk. 501 to Tk. 1000 before admit followed by 22.9 percent needed Tk. 1001 to Tk. 1500 and 14.3 percent needed Tk. 1501 to Tk. 2000 for the cost of diagnostic tests before admit. In private hospitals the cost of diagnostic tests before admit was high. Highest 18.6 percent patients of private hospitals needed cost of diagnostic tests Tk. 1001 to Tk. 1500 before admit followed by 17.1 percent needed Tk. 1501 to Tk. 2000 and another 17.1 percent needed Tk. 2001 to Tk. 3000. The mean costs of diagnostic test before admit were Tk. 1750.8 and Tk. 2695.9 for the patients of public hospitals and private hospitals respectively. The difference of the two means was statistically significant ($p=.045$) at 5% level of significance indicating higher cost needed for diagnostic tests before admit in private hospitals in comparison to public hospitals.

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Table: 8.2 Cost for the purpose of relevant diagnostic test before admit

Cost of diagnostic tests (before admit)	Frequency		Total
	Public	Private	
None	4(5.7)	4(5.7)	8(5.7)
<500	1(1.4)	5(7.1)	6(4.3)
501-1000	24(34.3)	8(11.4)	32(22.9)
1001-1500	16(22.9)	13(18.6)	29(20.7)
1501-2000	10(14.3)	12(17.1)	22(15.7)
2001-3000	4(5.7)	12(17.1)	16(11.4)
3001-5000	8(11.4)	8(11.4)	16(11.4)
5001-7000	2(2.9)	6(8.6)	8(5.7)
7000+	1(1.4)	2(2.9)	3(2.1)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	1750.8	2695.9	2223.4
Minimum	360.0	420.0	360.0
Maximum	10000.0	25000.0	25000.0
Mean test	*t-value = -2.030, P-value = .045, Comment: Significant*		

8.2.1.3 Cost for the purpose of relevant diagnostic test after admit

Table 8.3 shows that 15.7 percent of all patients did not do any diagnostic test after admit where all of them (31.4%) were from private hospitals since patients of private hospitals usually did their diagnostic tests before admit. Highest 31.4 percent patients of public hospitals needed cost of diagnostic test Tk. 1001 to Tk. 1500 after admit followed by 30.0 percent needed Tk. 501 to Tk. 1000 and 22.9 percent needed less than Tk. 500 as the cost of diagnostic test after admit. On the other hand 20.0 percent patients of private hospitals needed Tk. 501 to 1000 and 18.6 percent needed Tk. less than 500 as the cost of diagnostic test after admit. The average costs of diagnostic test after admit were Tk. 1277.3 in public hospitals and Tk. 813.0 in private hospitals. The mean test shows that the difference of the two means was significant (p=.026).

Table: 8.3 Cost for the purpose of relevant diagnostic test after admit

Cost of diagnostic tests (after admit)	Frequency		Total
	Public	Private	
None	0	22(31.4)	22(15.7)
<500	16(22.9)	13(18.6)	29(20.7)
501-1000	21(30.0)	14(20.0)	35(25.0)
1001-1500	22(31.4)	12(17.1)	34(24.3)
1501-2000	3(4.3)	2(2.9)	5(3.6)
2001-3000	5(7.1)	2(2.9)	7(5.0)
3001-5000	2(2.9)	5(7.1)	7(5.0)
5000+	1(1.4)	-	1(.7)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	1277.3	813.0	1045.2
Minimum	110.0	250.0	110.0
Maximum	11000.0	3384.0	11000.0
Mean test	*t-value = 2.248, P-value = .026, Comment: Significant*		

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8.2.1.4 Cost for the purpose of buying medicine before operation in the hospital

Medicine is essential for recovering ailment and waiting time increases the cost of medicine. Since preoperative stay of patients was high in public hospitals than private hospitals (Table 5.1) cost for medicine would also be higher in public hospitals than private hospitals. Table 8.4 shows that 14.2 percent patient of public hospitals and 22.9 percent patient of private hospitals did not need any cost for the purpose of buying medicine before operation in the hospital. Highest 18.6 percent patients of public hospitals needed Tk. 501 to Tk. 1000 followed by 17.1 percent needed Tk. 1001 to Tk.1500 and 8.7 percent needed more than Tk 5000 for the purpose of buying medicine before operation in the hospital. On the contrary, 18.6 percent patients of private hospitals needed Tk. less than 500 and 17.1 percent needed Tk. 1501 to Tk. 2000 for the purpose of buying medicine before operation in the hospital. The maximum cost for the purpose of buying medicine before operation were Tk. 20000.0 and Tk. 3800.0 in public and private hospitals respectively and the mean cost were Tk. 2128.1 and Tk. 1193.4 respectively. The difference of the two means was statistically significant (p=.026) at 5% level of significance indicating cost of medicine was higher in public hospitals than private hospitals. To avoid the effect of extreme values (since 8.7 percent patients of public hospitals needed cost of medicine Tk. 5000 plus before operation) we may consider median cost of medicine before operations which were Tk.1500.0 and Tk.1400.0 for the patients of public and private hospitals respectively. Public hospitals usually deal more complicated and serious cases causing more time and cost for medicine. If we consider median (to avoid extreme cases) cost of medicine before operation was almost similar in public and private hospitals. But if we consider mean, costs of medicine before operation differ significantly in public and private hospitals.

Table: 8.4 Cost for the purpose of buying medicine before operation in the hospital

Cost of medicine (before operation)	Frequency		Total
	Public	Private	
None	10(14.2)	16(22.9)	25(18.0)
<500	9(13.0)	13(18.6)	22(15.8)
501-1000	13(18.6)	10(14.3)	23(16.5)
1001-1500	12(17.1)	5(7.1)	17(12.2)
1501-2000	10(14.5)	12(17.1)	22(15.8)
2001-3000	4(5.8)	8(11.4)	12(8.6)
3001-5000	6(8.7)	6(8.6)	12(8.6)
5000+	6(8.7)		6(4.3)
Total	70(100.0)	70(100.0)	140(100.0)

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Cost of medicine (before operation)	Public	Private	Total
Mean	2128.1	1193.4	1660.7
Median	1500.0	1400.0	1500.0
Minimum	30.0	7.0	7.0
Maximum	20000.0	3800.0	20000.0
Mean test	*t-value = 2.257, P-value = .026, Comment: Significant*		

8.2.1.5 Cost for the purpose of buying medicine after operation in the hospital

Table 8.5 shows the cost for the purpose of buying medicine after operation in hospital duration. Highest 35.7 percent patients of public hospitals needed Tk. 2001.0 to Tk. 3000.0 for the cost of medicine, 18.6 percent needed Tk. 3001.0 to Tk. 4000.0 and another 17.1 percent needed Tk. 1001.0 to Tk. 2000.0 for the purpose of buying medicine. In private hospitals one-fourth patients needed Tk. 2001.0 to Tk. 3000.0 for the cost of medicine, 21.4 percent needed Tk. less than 1000.0 and another 18.6 percent needed Tk. 1001.0 to Tk. 2000.0 for the purpose of buying medicine. The mean cost for the purpose of buying medicine after operation were Tk. 2886.7 and Tk. 2560.0 for the patients of public and private hospitals respectively and mean test shows insignificant (p=.382) difference between the two means. So cost for the purpose of buying medicine after operation at hospital duration was statistically same in both types of hospitals.

Table: 8.5 Cost for the purpose of buying medicine after operation in the hospital

Cost of medicine (after operation)	Frequency		Total
	Public	Private	
<1000	11(15.7)	15(21.4)	26(18.6)
1001-2000	12(17.1)	13(18.6)	25(17.9)
2001-3000	25(35.7)	18(25.7)	43(30.7)
3001-4000	13(18.6)	11(15.7)	24(17.1)
4001-5000	3(4.3)	8(11.4)	11(7.9)
5001+	6(8.6)	5(7.1)	11(7.9)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	2886.7	2560.6	2723.3
Median	2622.5	2500.0	2500.0
Minimum	600.0	150.0	150.0
Maximum	15000.0	15000.0	15000.0
Mean test	*t-value = .877, P-value = .382, Comment: Insignificant*		

8.2.1.6 Cost for the purpose of buying food of the patient before operation

Food is usually supplied freely by the public hospitals but patients may need other more food to take by themselves. On the other hand patients of private hospitals

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usually admitted to hospitals immediately before operation and so they were rarely needed food cost before operation. Table 8.6 revels that about one-fourth patients of public hospitals and half of the patients of private hospitals did not need any food cost before operation in the hospitals. Here 17.1 percent patients of public hospitals needed Tk. 601.0 to Tk. 1000.0 and one-fifth patients of private hospitals needed Tk. less than 100.0 as their food cost before operation in the hospitals. The maximum cost for the purpose of buying food before operation were Tk. 2475.0 and Tk. 5200.0 in public and private hospitals respectively and the mean cost were Tk. 551.7 and Tk. 238.0 respectively. Mean test shows significant (p=.015) difference between the two means. To avoid the effect of extreme values in private hospitals, we may consider median cost of food before operations which were Tk.545.0 and Tk.150.0 for the patients of public and private hospitals respectively showing more than three times higher cost of food needed in public hospitals than private hospitals.

Table: 8.6 Cost for the purpose of buying food of the patient before operation

Cost of food (before operation)	Frequency		Total
	Public	Private	
None	18(25.7)	36(51.4)	54(38.6)
<100	6(8.6)	14(20.0)	20(14.3)
101-200	6(8.6)	9(12.9)	15(10.7)
201-400	6(8.6)	6(8.6)	12(8.6)
401-600	9(12.9)	1(1.4)	10(7.1)
601-1000	12(17.1)	2(2.9)	14(10.0)
1001-15000	6(8.6)		6(4.3)
1500+	7(10.0)	2(2.9)	9(6.4)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	551.7	238.0	394.9
Median	545.0	150.0	300.0
Minimum	40.0	30.0	30.0
Maximum	2475.0	5200.0	5200.0
Mean test	*t-value = 2.47, P-value = .015, Comment: Significant*		

8.2.1.7 Cost for the purpose of buying food of the patient after operation

Food intake is usually restricted for few times after operation. About one-third patients of public hospitals and one-fourth patients of private hospitals did not need any cost for the purpose of buying food after operation in the hospital (Table-8.7). Highest 15.7 percent patients of public hospitals needed Tk. 201.0 to

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Tk. 400.0 for the cost of buying food, 12.9 percent needed Tk. 101.0 to Tk. 200.0 and another 11.4 percent needed Tk. less than 100.0 for the purpose of buying food after operation. In private hospitals 22.9 percent patients needed Tk. 101.0 to Tk. 200.0 for the cost of food, 21.4 percent needed Tk. 401.0 to Tk.600.0 and another 14.3 percent needed Tk. 201.0 to Tk. 400.0 for the purpose of buying food after operation. The mean cost for the purpose of buying food after operation were Tk. 316.0 and Tk. 447.1 for the patients of public and private hospitals respectively which were statistically equal (p=.386) and median cost were Tk. 275.0 and Tk. 300.0 respectively.

Table: 8.7 Cost for the purpose of buying food of the patient after operation

Cost of food (after operation)	Frequency		Total
	Public	Private	
None	24(34.3)	18(25.7)	42(30.0)
<100	8(11.4)	4(5.7)	12(8.6)
101-200	9(12.9)	16(22.9)	25(17.9)
201-400	11(15.7)	10(14.3)	21(15.0)
401-600	5(7.1)	15(21.4)	20(14.3)
601-1000	5(7.1)	5(7.1)	10(7.1)
1001-15000	7(10.0)		7(5.0)
1500+	1(1.4)	2(2.9)	3(2.1)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	316.0	447.1	381.5
Median	275.0	300.0	300.0
Minimum	10.0	45.0	10.0
Maximum	1650.0	7200.0	7200.0
Mean test	*t-value = -.869, P-value = .386, Comment: Insignificant*		

8.2.1.8 Cost for the purpose of lodging of patient in the hospital before operation

Lodging cost was free for ward patients but cabin patients were not free in public hospitals. Most of the patients (87.1%) in public hospitals did not need any lodging cost and the mean lodging cost for the patients of public hospitals were Tk.247.7 before operation (Table 8.8). About one-fourth patients of private hospitals did not need any lodging cost before operation and one-third patients needed Tk. 501.0 to Tk. 1000.0, and one-fifth patients needed Tk. less than 500 as lodging cost before operation in private hospitals. The mean lodging cost of patient in private hospitals before operation was Tk. 1027.9. There exists significant difference between the two means.

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Table: 8.8 Cost for the purpose of lodging of patient in the hospital before operation

Cost of lodging (before operation)	Frequency		Total
	Public	Private	
None	61(87.1)	18(25.7)	79(56.4)
<500		14(20.0)	14(10.0)
501-1000	2(2.9)	24(34.3)	26(18.6)
1001-2000	3(4.3)	5(7.1)	8(5.7)
2001-3000	3(4.3)	3(4.3)	6(4.3)
3000+	1(1.4)	6(8.6)	7(5.0)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	247.7	1027.9	637.8
Median	1800.0	900.0	900.0
Minimum	714.0	250.0	250.0
Maximum	3350.0	6000.0	6000.0
Mean test	*t-value = -4.072, P-value = .000, Comment: Significant*		

8.2.1.9 Cost for the purpose of lodging of patient in the hospital after operation

The mean lodging cost of the patients of public hospitals was Tk.129.1 after operation. All private patients needed lodging cost after operation and 27.1 percent of them concentrated in the group Tk. 1001.0 to Tk. 2000.0, and 21.4 percent needed Tk. 3001.0 to Tk.5000.0 as lodging cost after operation. The maximum cost for lodging in public and private hospitals were Tk. 1700.0 and Tk. 12800.0 respectively. The mean lodging cost of the patients of public and private hospitals after operation were Tk.1004.1.and Tk. 3675.0 respectively and the median costs were Tk. 920.0 and Tk. 2950.0 respectively where mean lodging costs differ significantly (p=.000) and it was more than three times higher in private hospitals than public hospitals (Table 8.9).

Table: 8.9 Cost for the purpose of lodging of patient in the hospital after operation

Cost of lodging (after operation)	Frequency		Total
	Public	Private	
None	61(87.1)	-	61(43.6)
<1000	5(7.1)	7(10.0)	12(8.6)
1001-2000	4(5.7)	19(27.1)	23(16.4)
2001-3000	-	14(20.0)	14(10.0)
3001-5000	-	15(21.4)	15(10.7)
5001-7000	-	6(8.6)	6(4.3)
7001+	-	9(12.9)	9(6.4)
Total	70 (100.0)	70(100.0)	140(100.0)
Mean	129.1	3675.0	1902.1
Median	920.0	2950.0	2500.0
Minimum	450.0	400.0	400.0
Maximum	1700.0	12800.0	12800.0
Mean test	*t-value = -9.60, P-value = .000, Comment: Significant*		

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8.2.1.10. Other cost of patient in the hospital before operation

Other costs include admission fee, entertainment of visitors, communication etc. which were not headed and undefined. About one-third patients of public hospitals and one fourth patients of private hospitals did not mention any other cost before operation. One fifth percent patients of public hospitals mentioned Tk. less than 200.0 and 15.7 percent mentioned Tk. 801.0 to Tk. 1000.0 as the cost of other purposes in the hospitals before operation. In private hospitals 30.0 percent mentioned Tk. less than 200.0 and 24.3 percent mentioned Tk. 201.0 to Tk. 400.0 as other cost before operation. The mean costs for other purpose were Tk. 555.6 and Tk. 319.3 for the patients of public and private hospitals respectively and median cost for other purpose were Tk. 500.0 and Tk. 220.0 respectively. Mean test shows insignificant (p=.266) difference between the two means (Table 8.10).

Table: 8.10 Other costs of patient in the hospital before operation

Other cost of patient (before operation)	Frequency		Total
	Public	Private	
None	24(34.3)	17(24.3)	41(29.3)
<200	14(20.0)	21(30.0)	35(25.0)
201-400	6(8.6)	17(24.3)	23(16.4)
401-600	7(10.0)	3(4.3)	10(7.1)
601-800	5(7.1)	2(2.9)	7(5.0)
801-1000	11(15.7)	6(8.6)	17(12.1)
1001-1500	2(2.9)	3(4.3)	5(3.6)
1500+	1(1.4)	1(1.4)	2(1.4)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	555.6	319.3	437.4
Median	500.0	220.0	300.0
Minimum	15.0	50.0	15.0
Maximum	15000.0	2000.0	15000.0
Mean test	*t-value = 1.071, P-value = .266, Comment: Insignificant*		

8.2.1.11 Other cost of patient in the hospital after operation

Table 8.11 reveals that 77.1 percent patients of public hospitals and 15.7 percent patients of private hospitals did not mentioned any other cost. One fifth patients of private hospitals mentioned Tk. 101.0 to Tk. 200.0 and 14.3 percent mentioned Tk. 201.0 to Tk. 300.0 as their other cost in the private hospital. Mean other cost were Tk. 30.57 and Tk. 406.0 for patients of public and private hospitals respectively where the two means differ significantly (p=.000).

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Table: 8.11 Other costs of patient in the hospital after operation

Other cost of patient (after operation)	Frequency		Total
	Public	Private	
None	54(77.1)	11(15.7)	65(46.4)
<100	8(11.4)	4(5.7)	12(8.6)
101-200	6(8.6)	14(20.0)	20(14.3)
201-300	2(2.9)	10(14.3)	12(8.6)
301-400		6(8.6)	6(4.3)
401-500		8(11.4)	8(5.7)
501-600		6(8.6)	6(4.3)
600+		11(15.7)	11(7.9)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	30.57	406.0	218.3
Median	110.0	390.0	250.0
Minimum	30.0	50.0	30.0
Maximum	300.0	2000.0	2000.0
Mean test	*t-value = -7.458, P-value = .000, Comment: Significant*		

8.2.1.12 Opportunity cost of patients for operation in the hospitals

Monthly income distribution of patients in table 4.6 shows that almost half of the total patients (50.7%) were not involved with earning and hence not having any cost of opportunity loss. Rest of the patients loss their working time during the period of admission in hospital and cost of opportunity loss was calculated and presented in table 8.12. It is observed that 11.4 percent patients of public hospitals loss Tk. 1001 to Tk. 4000, another 11.4 percent loss Tk. 4001 to Tk. 7000 and 5.7% patients of public hospitals loss Tk. more than 10000 as their opportunity cost. On the other hand 31.4% patients of private hospitals loss Tk. 1001 to Tk. 4000 and 20.0% loss less than Tk 1000 as their opportunity cost. The average losses of opportunity cost were Tk. 2905.6 and Tk. 951.05 for the patients of public and private hospitals respectively and mean test shows significant (p=.004) difference between the two means indicating higher opportunity losses for the patients of public hospitals than that of private hospitals

Table: 8.12 Opportunity cost of patients for operation in the hospitals

Opportunity cost of patient	Frequency		Total
	Public	Private	
No opportunity cost	39 (55.8)	32 (45.7)	71 (50.7)
1-1000	4(5.7)	14(20.0)	18(12.9)
1001-4000	8(11.4)	22(31.4)	30(21.4)
4001-7000	8(11.4)	2(2.9)	10(7.1)
7001-10000	7(10.0)	0	7(5.0)
10000+	4(5.7)	0	4(2.9)
Total	70(100.0)	70(100.0)	140(100.0)

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Opportunity cost of patient	Public	Private	Total
Mean	2905.6	951.05	1928.3
Minimum	280.0	466.7	280.0
Maximum	26000.0	6500.0	26000
Mean test	*t-value = 2.984, P-value = .004, Comment: Significant*		

8.2.1.13 Total direct cost of patients for operation in the hospitals

Total direct cost for operation had been obtained by adding up all direct cost associated to the operation including opportunity cost of patients. Table 8.13 reveals that minimum direct cost for operation in public hospitals was Tk.1200.0 and 8.6 percent patients of public hospitals needed Tk. less than 5000.0 for their direct operation cost. About one-third (35.7%) patients of public hospitals needed Tk. 5001.0 to Tk. 10000.0 and 27.1 percent needed Tk. 10001.0 to Tk. 15000.0 and another 15.7 percent needed Tk. 15001.0 to Tk. 20000.0 for their direct operation cost. Public hospital like Dhaka Medical College Hospital (DMCH) was the ultimate place of most complicated cases for the common people. So DMCH treated more complicated cases and unexpectedly sometimes cost rises very high. One such patient of gall stone operation was found whose total cost needed Tk. 125000.0 due to repeated operation. Highest 31.4 percent patients of private hospitals needed Tk. 15001.0 to Tk. 20000.0 followed by 21.4 percent needed Tk.25001.0 to Tk.30000.0 for their total operation cost. The mean direct cost of patient of private hospitals for operation was Tk. 26258.0, which was about double of their similar cost of public hospitals (Tk. 13955.0). Mean tests shows significant (p=.000) difference between the two means. To avoid outlier we can consider the median cost, which were Tk. 11416.0 and Tk. 24612.0 in public and private hospitals respectively. That is median direct cost of operation in private hospitals were also more than double than that of public hospitals.

Table: 8.13 Total direct cost of patients for operation in the hospitals

Direct cost of patient	Frequency		Total
	Public	Private	
<5000	6(8.6)		6(4.3)
5001-10000	25(35.7)		25(17.9)
10001-15000	19(27.1)	3(4.3)	22(15.7)
15001-20000	11(15.7)	22(31.4)	33(23.6)
20001-25000	2(2.9)	10(14.3)	12(8.6)
25001-30000	3(4.3)	15(21.4)	18(12.9)
30001-35000	2(2.9)	10(14.3)	12(8.6)
35000+	2(2.9)	10(14.3)	12(8.6)
Total	70(100.0)	70(100.0)	140(100.0)

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Direct cost of patient	Public	Private	Total
Mean	13955.0	26258.0	20107.0
Median	11416.0	24612.0	17562.0
Minimum	1200.0	12200.0	1200.0
Maximum	125000.0	58100.0	125000.0
Mean test	*t-value = -5.521, P-value = .000, Comment: Significant*		

8.2.2 Indirect cost of operation

Indirect cost includes accompanying transport cost and food cost, gift and travel cost of visitors, and also the implicit cost like opportunity cost for time loss by accompanies. This subsection describes all the above headed indirect costs.

8.2.2.1. Cost of opportunity loss by patient's accompanies before operation

It is obvious that the operation patients are usually accompanied staying in hospital and in this study all patients informed that they were accompanied in the hospitals. So the accompanies loss their working time to support the patients and cost of opportunity loss was obtained. Table 5.1 shows that duration of staying before starting operation was low in private hospitals than in public hospitals and consequently cost of opportunity loss by patient's accompanies before operation would be low in private hospitals than in public hospitals. Table 8.14 shows the cost of opportunity loss by patient's accompanies before operation. Highest 30.0 percent patients of private hospitals lost Tk. less than 100 followed by 22.9 percent lost Tk. 201 to 300 and 17.1 percent lost Tk. 501 to 1000 as the cost of opportunity loss by patients' accompanies before operation. On the other hand 17.1 percent patients of pubic hospitals lost Tk. more than 2000 and another 17.1 percent lost Tk. 501 to 1000 as the cost of opportunity loss by patients accompanies before operation. The mean costs of opportunity loss by patients accompanies before operation were Tk.1000.97 and Tk. 349.88 in public and private hospitals respectively and overall mean was Tk. 680.16. The mean test shows significant (p=.000) difference between the two means indicating higher cost of opportunity loss by patients accompanies before operation in public hospitals than private hospitals

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Table: 8.14 Cost of opportunity loss by patient's accompanies before operation

Opportunity cost of Accompanies before operation	Frequency (percentage)		Total
	Public	Private	
<100	8(11.4)	21(30.0)	29(20.7)
100-200	11(15.8)	7(10.0)	18(12.9)
201-300	9(12.9)	16(22.9)	25(17.9)
301-500	9(12.9)	10(14.3)	19(13.6)
501-1000	12(17.1)	12(17.1)	24(17.1)
1001-2000	9(12.9)	4(5.7)	13(9.3)
2000+	12(17.1)	0	12(8.6)
Total	70	70	140
Mean	1000.97	349.88	680.16
Minimum	7.0	17.00	7.0
Maximum	5014.35	1515.00	5014.35
Mean test	*t-value = 4.358, P-value = .000, Comment: Significant*		

8.2.2.2 Cost of opportunity loss by patient's accompanies after operation

Public hospitals always suffering rush of patients and people of low income group usually took treatment from Public hospitals although having long queue and long time as the opportunity cost of low income group is low. On the other hand high income group usually prefer private hospitals to avoid long queue as well as high opportunity cost. Since post operative patients usually have to stay same period of time in both types of hospitals other than unwanted complications, opportunity cost of accompanies after operation well be high in private hospitals than in public hospitals. In public hospitals, 30 percent patients informed that the opportunity cost of their accompanies after operation were less than Tk. 100 and 18.6 percent patients informed that such cost were Tk. 1001 to 2000. This scenario in private hospitals was that the opportunity cost of accompanies after operation was Tk. 1001 to 2000 for 25.7 percent of patients and Tk. 501 to 1000 for 20.0 percent patients. The mean costs of opportunity loss by patients accompanies after operation were Tk. 628.1 and Tk. 958.9 in public and private hospitals respectively. The mean test shows significant (p=.023) difference between the two means indicating higher cost of opportunity loss by patients accompanies after operation in private hospitals than public hospitals (Table 8.15).

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Table: 8.15 Cost of opportunity loss by patient's accompanies after operation

Opportunity cost of Accompanies after operation	Frequency (percentage)		Total
	Public	Private	
<100	21(30.0)	4(5.7)	25(17.9)
100-200	11(15.7)	6(8.6)	17(12.1)
201-300	4(5.7)	6(8.6)	10(7.1)
301-500	10(14.3)	13(18.6)	23(16.4)
501-1000	6(8.6)	14(20.0)	20(14.3)
1001-2000	13(18.6)	18(25.7)	31(22.1)
2001+	5(7.1)	9(12.9)	14(10.0)
Total	70(100)	70(100)	140(100)
Mean	628.1	958.9	793.51
Minimum	15.00	17.00	15.00
Maximum	3334.00	4983.00	4983.00
Mean test	*t-value = -2.305, P-value = .023, Comment: Significant*		

8.2.2.3 Total food cost of patient's accompany before operation

Since preoperative stay of patients were high in public hospitals and low in private hospitals, food cost of patient's accompany before operation would be high in public hospitals and low in private hospitals. More than one-third (37.1%) patients of public hospitals informed that the food cost of their accompanies before operation was TK. 1001 to 2000 and 22.9 percent informed Tk. 501 to 1000 and also 15.7 percent informed Tk. more than 2001 as their accompanies' food cost before operation (Table 8.16). This scenario was opposite in private hospitals as one third (32.9%) patients informed that the food cost of their accompanies before operation was Tk. 100 to 200 only and 20.0 percent informed Tk. less than 100. Even 7.1 percent patients of private hospitals did not needed any food cost for their accompanies before operation. The mean costs for food of patient's accompanies before operation were Tk. 1201.93 and Tk. 270.3 for public and private hospitals respectively where the mean difference was statistically significant (p=.000) illustrating the mean cost in public hospitals was more than four times higher than private hospitals.

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Table: 8.16 Total food cost of patient's accompany before operation

Food cost of patient's accompany before operation	Frequency (percentage)		Total
	Public	Private	
None	0	5(7.1)	5(3.6)
<100	0	14(20.0)	14(10.0)
100-200	9(12.9)	23(32.9)	32(22.9)
201-300	4(5.7)	13(18.6)	17(12.1)
301-500	4(5.7)	6(8.6)	10(7.1)
501-1000	16(22.9)	6(8.6)	22(15.7)
1001-2000	26(37.1)	3(4.2)	29(20.7)
2001+	11(15.7)	0	11(7.9)
Total	70(100)	70(100)	140(100)
Mean	1201.93	270.3	736.1
Minimum	120.00	30.00	30.0
Maximum	4125.00	1150.00	4125.00
Mean test	*t-value = 8.216, P-value = .000, Comment: Significant*		

8.2.2.4 Total food cost of patient's accompany after operation

It is assumed that post operative patients have to stay similar duration for post operative care in both public and private hospitals. So food cost of patient's accompanies after operation would be almost similar for both types of hospitals. Table 8.17 shows that highest number of patients for both types of hospitals concentrated to the group Tk. 501 to 1000 and next highest group for all patients was Tk. 301 to 500 as the food cost of patient's accompanies after operation. Also 14.3 percent patients of both types of hospitals expensed Tk. 1001 to 2000 as the food cost of patients accompanies after operation. The mean costs for food of patient's accompanies after operation were Tk. 626.14 and Tk. 694.67 which were statistically equal (p=.423) for public and private hospitals respectively.

Table: 8.17 Total food cost of patient's accompany after operation

Food cost of patient's accompany after operation	Frequency (percentage)		Total
	Public	Private	
<100	1(1.4)	2(2.9)	3(2.1)
100-200	9(12.9)	6(8.6)	15(10.7)
201-300	15(21.4)	7(10.0)	22(15.7)
301-500	13(18.6)	20(28.6)	33(23.6)
501-1000	19(27.1)	24(34.3)	43(30.7)
1001-2000	10(14.3)	10(14.3)	20(14.3)
2001+	3(4.3)	1(1.4)	4(2.9)
Total	70(100)	70(100)	140(100)
Mean	626.14	694.67	660.41
Minimum	70.0	90.0	70.0
Maximum	2400.0	2475.0	2475.0
Mean test	*t-value = -.804, P-value = .423, Comment: Insignificant*		

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8.2.2.5 Total travel cost of patient's accompany before operation

Travel cost of patient's accompany before operation was also high in public hospitals than in private hospitals. Highest 30.0 percent patients of public hospitals needed Tk. 1001 to 2000 followed by 25.7 percent patients needed Tk. 501 to 1000 as the cost of travel of patient's accompanies before operation (Table 8.18). In contrast one third patients (34.3%) of private hospitals needed Tk. 100 to 200 and 28.6 percent patients needed Tk. less than 100 as the cost of travel of patient's accompanies before operation. The mean travel cost of patient's accompanies before operation were Tk. 807.1 and Tk. 264.2 for public and private hospitals respectively which shows that mean travel cost of patient's accompanies before operation in public hospitals was significantly (p=.000) higher than private hospitals. The maximum travel costs of patient's accompany before operation in public hospitals was Tk. 3300.0 and in private hospitals was Tk. 1250.0.

Table: 8.18 Total travel cost of patient's accompany before operation

Travel cost of patient's accompany before operation	Frequency (percentage)		Total
	Public	Private	
None	7(10.0)	2(2.9)	9(6.4)
<100	4(5.7)	20(28.6)	24(17.1)
100-200	4(5.7)	24(34.3)	28(20.0)
201-300	9(12.9)	4(5.7)	13(9.3)
301-500	5(7.1)	11(15.7)	16(11.4)
501-1000	18(25.7)	7(10.0)	25(17.9)
1001-2000	21(30.0)	2(2.6)	23(16.4)
2001+	2(2.9)	0	2(1.4)
Total	70(100)	70(100)	140(100)
Mean	807.1	264.2	535.6
Minimum	48.0	20.0	20.0
Maximum	3300.0	1250.0	3300.0
Mean test	*t-value =6.249, P-value = .000, Comment: Significant*		

8.2.2.6 Total travel cost of patient's accompanies after operation

Table: 8.19 shows total travel cost of patient's accompanies after operation, where we observe the similar pattern of expenses for the patients of both public and private hospitals. Highest 30.0 percent patients of public hospitals needed Tk. 301 to 500 followed by 18.6 percent patients needed Tk. 100 to 200 and 15.7 percent patients needed Tk. 1001 to 2000 as total travel cost of patient's accompanies after operation. On the other hand highest 30.0 percent patients of private hospitals needed Tk. 501 to 1000 followed by 25.7 percent patients needed Tk. 301 to 500 and 17.1 percent patients needed Tk. 100 to 200 as total travel cost of patient's

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accompanies after operation. The mean travel costs of patient's accompanies after operation were Tk. 529.9 and Tk. 550.5 for public and private hospitals respectively which shows that mean travel cost of patient's accompanies after operation in public and private hospitals were almost same and supported by statistical tests (p=.801).

Table: 8.19 Total travel cost of patient's accompanies after operation

Travel cost of patient's accompanies after operation	Frequency (percentage)		Total
	Public	Private	
None	4(5.7)	0	4(2.9)
<100	5(7.1)	2(2.9)	7(5.0)
100-200	13(18.6)	12(17.1)	25(17.9)
201-300	6(8.6)	10(14.3)	16(11.4)
301-500	21(30.0)	18(25.7)	39(27.9)
501-1000	8(11.4)	21(30.0)	29(20.7)
1001-2000	11(15.7)	4(5.7)	14(10.0)
2001+	2(2.9)	3(4.3)	5(3.57)
Total	70(100)	70(100)	140(100)
Mean	529.9	550.5	540.2
Minimum	56.0	40.0	40.0
Maximum	2100.0	2500.0	2500.0
Mean test	*t-value = -0.252, P-value = .801, Comment: Insignificant*		

8.2.2.7 Number of visitors visited to the patient

It is usual that operation patients are visited by the visitors and Table 8.20 shows the number of visitors visited to the patients. Highest 41.4 percent patients of public hospitals informed that their number of visitors were 4 to 6 and 24.3 percent patients said their number of visitors were 1 to 3 and 20.0 percent patients said their number of visitors were 7 to 9. On the other hand highest 38.6 percent patients of private hospitals informed that their number of visitors were 4 to 6 and 27.1 percent patients said their number of visitors were 7 to 9 and 11.4 percent patients said their number of visitors were 13 to 15.. The mean number of visitors visited to the patients of public hospitals and private hospitals were 5.97 and 7.96 respectively. The mean test shows significant difference (p=.005) between the two means. So numbers of visitors visited to the patients of private hospitals were higher than that of public hospitals

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Table: 8.20 Number of visitors visited to the patient

Visitors	Frequency (percentage)		Total
	Public	Private	
1-3	17(24.3)	6(8.6)	23(16.4)
4-6	29(41.4)	27(38.6)	56(40.0)
7-9	14(20.0)	19(27.1)	33(23.6)
10-12	6(8.6)	7(10.0)	13(9.3)
13-15	2(2.9)	8(11.4)	10(7.1)
15+	2(2.9)	3(4.28)	5(3.6)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	5.97	7.96	6.96
Minimum	1	1	1
Maximum	17	22	22
Mean test	*t-value =-2.846, P-value = .005, Comment: Significant*		

8.2.2.8. Total travel cost of patient's visitors before operation

Travel cost of patient's visitors before operation is presented in Table 8.21, where 20.0 percent patients of public hospitals needed Tk. less than 100, 18.6 percent needed Tk. 501 to 1000 and another 18.6 percent needed Tk. 301 to 500 as the travel cost of visitors before operation. On the other hand highest 34.3 percent patients of private hospitals needed Tk. 100 to 200 and 22.9 percent patients needed less than Tk. 100 as travel cost of visitors before operation. The mean travel costs of visitors before operation were Tk. 379.3 and Tk. 254.0 for the patients of public and private hospitals respectively. Mean test shows insignificant (p=.076) difference between the two means.

Table: 8.21 Total travel cost of patient's visitors before operation

Travel cost of visitors before operation	Frequency (percentage)		Total
	Public	Private	
None	5(7.1)	9(12.9)	14(10.0)
<100	14(20.0)	16(22.9)	30(21.4)
100-200	10(14.3)	24(34.3)	34(24.3)
201-300	12(17.1)	12(17.1)	24(17.1)
301-500	13(18.6)	5(7.1)	18(12.9)
501-1000	13(18.6)	0	13(9.3)
1001+	3(4.3)	4(5.7)	7(5.0)
Total	70(100)	70(100)	140(100)
Mean	379.3	254.0	316.6
Minimum	20.0	50.0	20.0
Maximum	3000.0	2000.0	3000.0
Mean test	*t-value =1.786, P-value = .076, Comment: Insignificant*		

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8.2.2.9 Total travel cost of patient's visitors after operation

Travel cost of patient's visitors after operation was high in private hospitals than in public hospitals. About one-fourth patients (25.7%) of public hospitals informed that travel cost of their visitors after operation was Tk.100 to 200 and another 24.3 percent informed such cost was Tk.301 to 500. About one-third patients (34.3%) of private hospitals informed that travel cost of their visitors after operation was Tk.501 to 1000 and another 24.3 percent informed such cost was Tk.301 to 500. The mean travel costs of visitors after operation were Tk. 384.8 and Tk. 579.7 for the patients of public and private hospitals respectively. Mean test shows significant (p=.005) difference between the two means. i.e. travel costs of visitors after operation was higher for patients of private hospitals than that of public hospitals (Table 8.22).

Table: 8.22 Total travel cost of patient's visitors after operation

Travel cost of visitors after operation	Frequency (percentage)		Total
	Public	Private	
None	0	4(5.7)	4(2.9)
<100	10(14.3)	2(2.9)	12(8.6)
100-200	18(25.7)	12(17.1)	30(21.4)
201-300	11(15.7)	8(11.4)	19(13.6)
301-500	17(24.3)	12(17.1)	29(20.7)
501-1000	11(15.7)	24(34.3)	35(25.0)
1001+	3(4.3)	8(11.4)	11(7.9)
Total	70(100)	70(100)	140(100)
Mean	384.8	579.7	482.2
Minimum	20.0	100.0	20.0
Maximum	2000.0	2500.0	2500.0
Mean test	*t-value =-2.825, P-value = .005, Comment: Significant*		

8.2.2.10 Total gift cost of patient's visitors before operation

About one-fourth (25.7%) patients of public hospitals informed that the gift cost of their visitors before operation was Tk. 301 to 500 and 21.4 percent of such patients informed their visitor's gift cost was Tk. 100 to 200 and another 20.0 percent informed such cost was Tk. 201 to 300 (Table 8.23). In private hospitals, 30.0 percent patients informed that the gift cost of their visitors was less than Tk. 100. About one-fourth (23.6%) of all patients informed that there had not any gift cost by their visitors. The mean gift costs of visitors before operation were Tk. 252.7 and Tk. 100.9 for the patients of public hospitals and private hospitals respectively. Mean test shows significant (p=.000) difference between the two means, i.e. gift cost of patient's visitors before operation was higher in public hospitals than in private hospitals.

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Table: 8.23 Total gift cost of patient's visitors before operation

Gift cost of visitors before operation	Frequency (percentage)		Total
	Public	Private	
None	13(18.6)	20(28.6)	33(23.6)
<100	7(10.0)	21(30.0)	28(20.0)
100-200	15(21.4)	10(14.3)	25(17.9)
201-300	14(20.0)	5(7.1)	19(13.6)
301-500	18(25.7)	4(5.7)	22(15.7)
501+	3(4.3)	0	3(2.1)
Total	70(100)	70(100)	140(100)
Mean	252.7	100.9	176.8
Minimum	0.0	50.0	0.0
Maximum	800.0	450.0	800.0
Mean test	*t-value =5.694, P-value = .000, Comment: Significant*		

8.2.2.11. Total gift cost of patient's visitors after operation

About one-third (32.9%) patients of public hospitals informed that the gift cost of their visitors before operation was Tk. 301 to 500 and 24.3 percent of such patients informed their visitor's gift cost was Tk. 201 to 300 and another 24.3 percent informed such cost was Tk. 100 to 200 (Table 8.24). In private hospitals, highest 40.0 percent patients informed that the gift cost of their visitors was Tk. 301 to Tk. 500, followed by 20.0 percent informed such cost was Tk. 501 to 800. Here 8.6 percent of all patients informed that there had not any gift cost by their visitors. The mean gift costs of visitors after operation were Tk. 316.4 and Tk. 408.1 for the patients of public hospitals and private hospitals respectively and the difference of these two means was statistically significant (p=.018). So it could be concluded that gift cost of patient's visitors after operation was low in public hospitals and high in private hospitals.

Table: 8.24 Total gift cost of patient's visitors after operation

Gift cost of visitors after operation	Frequency (percentage)		Total
	Public	Private	
None	4(5.7)	8(11.4)	12(8.6)
<100	5(7.1)	1(1.4)	6(4.3)
100-200	17(24.3)	6(8.6)	23(16.4)
201-300	17(24.3)	9(12.9)	26(18.6)
301-500	23(32.9)	28(40.0)	51(36.4)
501-800	3(4.3)	14(20.0)	17(12.1)
800+	1(1.4)	4(5.7)	5(3.6)
Total	70(100)	70(100)	140(100)
Mean	316.4	408.1	362.3
Minimum	100.0	100.0	100.0
Maximum	1000.0	1200.0	1200.0
Mean test	*t-value =-2.396, P-value = .018, Comment: Significant*		

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8.2.2.12 Unofficial payment provided by patient in the hospital

Patients were asked whether they paid any unofficial payment to get service from hospitals and 8.6 percent patients of public hospitals and 2.9 percent patients of private hospitals informed that they had to pay unofficial payment (Table 8.25). The amount varies from Tk.50.0 to Tk.300.0 for the patients of public hospitals and in case of the patients of private hospitals; the amount was less than Tk.50.0. The mean amounts of unofficial payments were Tk.16.14 and Tk.1.14 for the patients of public and private hospitals respectively. The mean test shows significant difference between the two means. The reasons behind the unofficial payments mentioned by the patients were, to get good service and to get well behave. The measures could be taken, which mentioned by them was punishment system. But one-third of them thought that it was impossible to control unofficial payment.

Table: 8.25 Unofficial payment provided by patient in the hospital

Indicators	Frequency		Total
	Public	Private	
Any Unofficial payment			
Yes	6 (8.6)	2(2.9)	8(5.7)
No	64(91.4)	68(97.1)	132(94.3)
Total	70(100.0)	70(100.0)	140(100.0)
Amount of Unofficial payment			
No payment	64(91.4)	68(97.1)	132(94.4)
1 – 50	0	2(2.9)	2(1.4)
50 – 100	2(2.9)	0	2(1.4)
101 – 200	1(1.4)	0	1(0.7)
201 – 300	3(4.3)	0	3(2.1)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	16.14	1.14	8.64
Mean test	*t-value = 2.095, P-value = .040, Comment: Significant*		
Reasons for unofficial payment	(Multiple)		
To get good service	4(66.6)	2(100.0)	6(75.0)
To get well behave	2(33.3)	0	2(25.0)
Others	1(16.66)	0	1(12.5)
Total	6	2	8
Measures to control unofficial payment			
punishment	2(33.3)	0	2(33.3)
Impossible	2(33.3)	0	2(33.3)
Others	2(33.3)	0	2(33.3)
Total	6	0	6

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8.2.2.13 Indirect cost required for operation

Travel cost, food cost and opportunity cost of accompanies are together considered as indirect cost. Table 8.26 shows that highest 40.0 percent patients of public hospitals needed Tk. 3001 to Tk. 6000, followed by 22.9 percent needed Tk. 6001 to Tk. 9000 and 20.0 percent needed Tk. 1000 to Tk. 3000 for the purpose of their indirect cost. In contrast, above half (55.7%) number of patients of private hospitals needed Tk. 3001 to Tk. 6000, one-fourth patients needed Tk. 1000 to Tk. 3000 and 11.4 percent needed Tk. 6001 to Tk. 9000 as their indirect cost for operation. The mean indirect costs were Tk. 6143.5 and Tk. 4422.30 in public and private hospitals respectively. Statistical test shows that indirect cost in public hospitals was significantly higher than that of private hospitals.

Table: 8.26 Distribution of total indirect cost required for operation

Total indirect cost	Frequency (percentage)		Total
	Public	Private	
1000-3000	14(20.0)	18(25.7)	32(22.9)
3001-6000	28(40.0)	39(55.7)	67(47.9)
6001-9000	16(22.9)	8(11.4)	24(17.1)
9001-12000	6(8.6)	5(7.1)	11(7.9)
12001+	6(8.6)	0	6(4.3)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	6143.5	4422.3	5282.9
Mean test	*t-value = 3.169, P-value = .002, Comment: Significant*		

8.2.3 Total cost of operation

Total cost of operation considers the direct cost and indirect cost associated with operation. All direct cost and indirect cost together constitute total cost of operation. Here 17.1 percent patients of public hospitals expended Tk. 5000 to Tk. 10000 as total cost of operation but no patients were found who expended such amount in private hospitals. Highest 24.3 percent patients of public hospitals spent Tk. 10001 to Tk. 15000 and 22.9 percent patients spent Tk. 15001 to Tk. 20000 and another 17.1 percent patients spent Tk. 20001 to Tk. 25000 for the purpose of operation. Some serious patients admitted in public hospitals whose expenses went unexpectedly high. In contrast, highest 30.0 percent patients of private hospitals spent Tk. 20001 to Tk. 25000 followed by 20.0 percent patients spent Tk. 30001 to Tk. 35000 and 14.3 percent patients spent more than Tk. 40000 for the purpose of

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operation as total cost. The averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively. A comparison of direct, indirect and total cost of operation is presented in Figure 8.1. To avoid the effect of extreme costs, the median total cost of operation were Tk. 16479.0 and Tk. 27981.0 for the patients of public and private hospitals respectively. The mean test also shows significance (p=.000) differences between the two mean costs (Table 8.27).

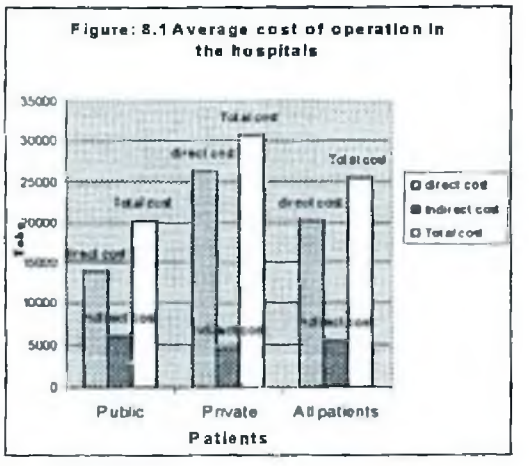

Table: 8.27 Total cost of operation (direct + indirect)

Total cost of operation	Frequency		Total
	Public	Private	
5000-10000	12(17.1)	0	12(8.6)
10001-15000	17(24.3)	2(2.9)	19(13.6)
15001-20000	16(22.9)	5(7.1)	21(15.0)
20001-25000	12(17.1)	21(30.0)	33(23.6)
25001-30000	3(4.3)	9(12.9)	12(8.6)
30001-35000	5(7.1)	14(20.0)	19(13.6)
35001-40000	1(1.4)	9(12.9)	10(7.1)
40000+	4(5.7)	10(14.3)	14(10.0)
Total	70(100.0)	70(100.0)	140(100.0)
Mean	20099.0	30681.0	25390.0
Median	16479.0	27981.0	21820.0
Minimum	5966.0	14500.0	5966.0
Maximum	131000.0	67600.0	131000.0
Mean test	*t-value = -4.335, P-value = .000, Comment: Significant*		

8.3 Discussion

Direct cost of operation

Direct cost contains the explicit cost like doctor's fee, OT charge, cost of diagnostic test, drug cost, food cost, bed cost etc. and the implicit cost like opportunity cost of patient. The cost for the purpose of doctor's payment ranges from Tk. 3200 to Tk. 31000 and the mean cost was Tk. 9303.2 in private hospitals. OT charge also varies form Tk. 1200 to Tk. 7000 and the mean cost was Tk.

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2731.4 in private hospitals. The mean costs of diagnostic test before admit were Tk. 1750.8 and Tk. 2695.9 for the patients of public hospitals and private hospitals respectively. The difference of the two means was statistically significant (p=.045) at 5% level of significance indicating higher cost needed for diagnostic tests before admit in private hospitals in comparison to public hospitals. The average costs of diagnostic test after admit were Tk. 1277.3 in public hospitals and Tk. 813.0 in private hospitals, which were not statistically equal.

Public hospitals usually deal more complicated and serious cases causing more time and cost for medicine. If we consider median, (to avoid extreme cases) cost of medicine before operation was almost similar in public (Tk.1500.0) and private (Tk.1400.0) hospitals. But if we consider mean, costs of medicine before operation differ significantly in public (Tk. 2128.1) and private (Tk. 1193.4) hospitals due to extreme cases. Again average cost for the purpose of buying medicine after operation at hospital duration was statistically same in public (Tk. 2886.7) and private (Tk. 2560.0) hospitals.

Lodging cost was free for ward patients but cabin patients were not free in public hospitals. Most of the patients (87.1%) in public hospitals did not need any lodging cost and the mean lodging cost for the patients of public hospitals was Tk.247.7 and private hospitals was Tk. 1027.9 before operation. But after operation the mean lodging cost of patients of public and private hospitals were Tk.129.1.and Tk. 3675.0 respectively.

The average losses of opportunity cost were Tk. 2905.6 and Tk. 951.05 for the patients of public and private hospitals respectively and mean test shows significant (p=.004) difference between the two means indicating higher opportunity losses for the patients of public hospitals than that of private hospitals

Total direct cost for operation had been obtained by adding up all direct cost associated to the operation including opportunity cost of patients. The mean direct cost of patient of private hospitals for operation was Tk. 26258.0, which was about double of their similar cost of public hospitals (Tk. 13955.0). Mean tests shows significant (p=.000) difference between the two means. To avoid outlier we can consider the median cost, which were Tk. 11416.0 and Tk. 24612.0 in public and private hospitals respectively. That is median direct cost of operation in private hospitals were also more than double than that of public hospitals.

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Indirect cost of operation

Indirect cost includes accompanying transport cost and food cost, gift and travel cost of visitors, and also the implicit cost like opportunity cost for time loss by accompanies. All patients were accompanied in the hospitals. So the accompanies loss their working time to support the patients and cost of opportunity loss was obtained. The mean costs of opportunity loss by patients accompanies before operation were Tk.1000.97 and Tk. 349.88 and after operation were Tk. 628.1 and Tk. 958.9 in public and private hospitals respectively. The mean test shows significant difference between the two means of before operation as well as after operation, indicating higher cost of opportunity loss by patients accompanies before operation and lower cost of opportunity loss by patients accompanies after operation in public hospitals than private hospitals. The overall mean costs of opportunity loss by patients accompanies was Tk. 1473.67

Since preoperative stay of patients were high in public hospitals and low in private hospitals, food cost of patient's accompany before operation would be high in public hospitals and low in private hospitals. The mean costs for food of patient's accompanies before operation were Tk. 1201.93 and Tk. 270.3 for public and private hospitals respectively where the mean difference was statistically significant (p=.000) illustrating the mean cost in public hospitals was more than four times higher than private hospitals before operation. But after operation the mean costs for food of patient's accompanies were Tk. 626.14 and Tk. 694.67 which were statistically equal (p=.423) for public and private hospitals respectively.

The mean travel cost of patient's accompanies before operation were Tk. 807.1 and Tk. 264.2 for public and private hospitals respectively which shows that mean travel cost of patient's accompanies before operation in public hospitals was significantly (p=.000) higher than private hospitals. But after operation the mean travel costs of patient's accompanies were Tk. 529.9 and Tk. 550.5 for public and private hospitals respectively which were statistically equal.

The mean number of visitors visited to the patients of public hospitals and private hospitals were 5.97 and 7.96 respectively. The mean travel costs of visitors before operation were Tk. 379.3 and Tk. 254.0 as well as after operation were Tk. 384.8 and Tk. 579.7 for the patients of public and private hospitals respectively. Travel

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cost of patient's visitors before operation was statistically same but after operation was high in private hospitals than in public hospitals.

The mean gift costs of visitors before operation were Tk. 252.7 and Tk. 100.9 for the patients of public hospitals and private hospitals respectively. Mean test shows significant (p=.000) difference between the two means. i.e. gift cost of patient's visitors before operation was higher in public hospitals than in private hospitals. Again the mean gift costs of visitors after operation were Tk. 316.4 and Tk. 408.1 for the patients of public hospitals and private hospitals respectively and the difference of these two means was statistically significant (p=.018). So it could be concluded that gift cost of patient's visitors after operation was low in public hospitals and high in private hospitals.

Total indirect cost for operation had been obtained by adding up all indirect cost like travel cost, food cost and opportunity cost of accompanies. The mean indirect costs were Tk. 6143.5 and Tk. 4422.30 in public and private hospitals respectively. Statistical test shows that indirect cost in public hospitals was significantly higher than that of private hospitals.

Total cost of operation

Total cost of operation considers the direct cost and indirect cost associated with operation. The averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively. To avoid the effect of extreme costs, the median total cost of operation were Tk. 16479.0 and Tk. 27981.0 for the patients of public and private hospitals respectively. The mean test also shows significance (p=.000) differences between the two mean costs. The minimum and maximum total costs of operation were Tk. 5966.0 and Tk. 131000.0; and both happened in public hospitals. Some serious patients admitted in public hospitals whose expenses went unexpectedly high due to repeated operation.

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CHAPTER 9

Consequences of Waiting Time

9.1 Introduction

Waiting for service is undesirable and measuring consequences of waiting time is also difficult. It is obvious that waiting time causes monetary loss and dissatisfaction. Here an attempt has been made to measure the consequences of waiting time by monetary loss and dissatisfaction. Average monetary loss of waiting time for public and private hospitals was measured. Behaviours of doctors and service personnel, and satisfaction of patients with the service of the hospitals is discussed here. Also cross table of satisfaction and waiting time with chi square test is presented in this chapter.

9.2 Empirical findings

Consequences of waiting time in terms of monetary loss and dissatisfaction are discussed and analyzed in the following subsections.

9.2.1 Monetary loss of waiting time

Waiting time is defined only the time of long queue for doing diagnostic tests (other than physical fitness) and time for getting operation serial which are real waiting time, not caused by doctor's advice or patient's personal reasons. Indirect cost (travel cost, food cost and opportunity cost of accompanies) and Direct cost (medicine cost, food cost, bed cost, and opportunity cost of patient) during the waiting time together are considered as cost of waiting time. Public hospital has more waiting time than private hospital (Table 6.1). Table 9.1 reveals that 5.7 percent patient of public hospitals and 31.4 percent patient of private hospitals had no cost of waiting time. Highest 22.9 percent patient of public hospitals had Tk. 4001 to Tk. 6000 as cost of waiting time, followed by 20.0 percent had Tk. 6001 to Tk. 8000 and 18.6 percent had Tk. 2001 to Tk. 4000 as cost of waiting time. In contrast, highest 44.3 percent patient of private hospitals had Tk. 1 to Tk. 2000 as

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cost of waiting time, followed by 11.4 percent had Tk. 2001 to Tk. 4000 as cost of waiting time. The averages cost of waiting time were Tk. 5188.5 and Tk. 1547.98 for public and private hospitals respectively. Table 8.26 reveled that the averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively. So waiting time increases on average, total operation cost by 25.8% for the patients of public hospitals and by 5.0% for private hospitals. Average indirect cost of waiting time was Tk. 2621.9 and direct cost of waiting time was Tk. 2566.7 for public hospitals. On the other hand average indirect cost of waiting time was Tk. 653.31 and direct cost of waiting time was Tk. 894.68 for private hospitals (Figure 9.1). Table 8.26 reveled that the mean indirect costs of operation were Tk. 6143.5 and Tk. 4422.3 in public and private hospitals respectively. So waiting time increases on average indirect cost for operation by 42.7% in public hospitals and by 14.8% in private hospitals. Table 8.13 reveled that the mean direct costs of operation were Tk. 13955.0 and Tk. 26358.0 in public and private hospitals respectively. So waiting time increases direct cost for operation by 18.4 % in public hospitals and by 3.4% in private hospitals. Statistical test shows that public hospital had significantly (p=.000) higher (more than three times) cost of waiting time than private hospitals.

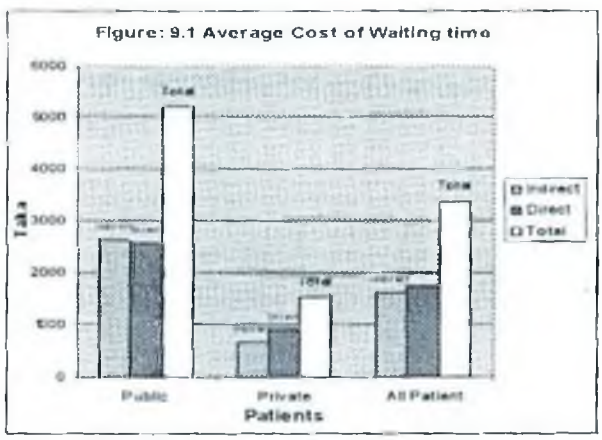

Table: 9.1 Distribution of cost of waiting time

Waiting Time Cost	Frequency		Total
	Public	Private	
0.0	4(5.7)	22(31.4)	26(18.6)
1-2000	11(15.7)	31(44.3)	42(30.0)
2001-4000	13(18.6)	8 (11.4)	21(15.0)
4001-6000	16(22.9)	5(7.1)	21(15.0)
6001-8000	14(20.0)	2(2.9)	16(11.4)
8001-10000	6(8.6)	2(2.9)	8(5.7)
10000+	6(8.6)	0(0.0)	6(4.3)
Total	70(100.0)	70(100.0)	140(100.0)
Mean (Indirect cost + Direct cost)	**5188.50** (2621.9 + 2566.7)	**1547.98** (653.31 + 894.68)	**3368.24** (1637.6 + 1730.7)
Mean test	*t-value = 7.457, P-value = .000, Comment: Significant*		

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9.2.2 Opinion of patients about behaviours

Patients of private hospitals were more pleased with the behaviour of doctors in comparison to the patients of public hospitals as 90.0 percent patients of private hospitals informed that the behaviour of doctors was 'very good' and rest 10.0 percent informed that it was 'satisfactory'. On the other hand 37.1 percent patients of public hospitals informed that the behaviour of doctors was 'very good' and more than half (61.4%) patients of public hospitals informed that it was 'satisfactory'. 'Bad' behaviour of doctors was informed insignificantly.

Behaviour of service personnel was also better in private hospitals than in public hospitals. According to the opinion of 77.1 percent patients of private hospitals and 25.7 percent patients of public hospitals, the behaviours of service personnel was 'very good'. Again 22.9 percent patients of private hospitals and 64.3 percent patients of public hospitals opined that the behaviour of service personnel was 'satisfactory'. Ten percent patients of public hospitals said that the behaviour of service personnel was 'bad' but nobody said 'bad' about the behaviour of the personnel of private hospitals (Table 9.2).

Table: 9.2 Opinion of patients about behaviours

Indicators	Frequency		Total
	Public	Private	
Doctor's behaviour			
Very good	26(37.1)	63(90.0)	89(63.6)
Satisfactory	43(61.4)	7 (10.0)	50(35.7)
Bad	1(1.4)	0	1(.7)
Total	70(100.0)	70(100.0)	140(100.0)
Service personnel's behaviour			
Very good	18(25.7)	54(77.1)	71(50.7)
Satisfactory	45(64.3)	16(22.9)	61(43.6)
Bad	7(10.0)	0	7(5.0)
Total	70(100.0)	70(100.0)	140(100.0)

9.2.3 Satisfaction of patient about the service of the hospital

Satisfaction of patients was measured by asking whether they would come to this hospital for second time with any problem or refer anybody to this hospital. Also satisfaction of patients about the service of the hospital was asked. Table 9.3 reveals that 81.4 percent patients of public hospitals and 95.7 percent patients of

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private hospitals informed that they would visit second time with any of their physical problem to this hospital. Similarly 81.4 percent patients of public hospitals and 98.6 percent patients of private hospitals said that they would refer patients to this hospital. About overall satisfaction, 80.0 percent patients of public hospitals and 92.8 percent patients of private hospitals informed that they satisfied with the service of the hospital. It was observed that although overall satisfaction was good in both types of hospitals but satisfaction level was better in private hospitals in comparison to public hospitals.

Table: 9.3 Satisfaction of patient about the service of this hospital

Indicators	Frequency		Total
	Public	Private	
Visit second time with any problem			
Yes	57(81.4)	67(95.7)	124(88.6)
No	13(18.6)	3(4.3)	16(11.4
Refer anybody to this hospital			
Yes	57(81.4)	69(98.6)	126(90.0)
No	13(18.6)	1(1.4)	14(10.0)
Satisfaction			
Yes	56(80.0)	65(92.8)	121(86.4)
No	14(20.0)	5(7.2)	19(13.6)
Total	70(100.0)	70(100.0)	140(100.0)

9.2.4 Satisfaction with waiting time

Satisfaction of patients with the service of the hospital usually depends on a number of reasons. Here we do a cross check with satisfaction and waiting time to conclude how much waiting time effects the satisfaction level. Table 9.4 shows that no patients were found 'not satisfied' having zero day waiting time but 44.6 percent 'satisfied' patients found on zero day waiting time. Again 36.4 percent 'satisfied' patients and 36.8 percent 'not satisfied' patients had waiting time 1 to 5 days. Also 11.6 percent 'satisfied' patients and 36.8 percent 'not satisfied' patients had waiting time 5 to 10 days. More than 10 days waiting time found among 7.4 percent 'satisfied' patients and 26.3 percent 'not satisfied' patients. So it is obvious that more waiting time decreases percentage of 'satisfied' patients and increases percentage of 'not satisfied' patients. The chi-square test shows that there was significant ($p=.000$) negative relationship between satisfaction and waiting time, i.e.

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less waiting time occurs in 'satisfied' patients and more waiting time occurs in 'not satisfied' patients.

Table: 9.4 Cross table of satisfaction with waiting time

Waiting time	Satisfaction with Service		Total
	Frequency (percentage)		
	Satisfied	Not satisfied	
0 day	54 (44.6)	0 (0.0)	54 (38.6)
1 to 5 days	44 (36.4)	7 (36.8)	51 (36.4)
5 to 10 days	14 (11.6)	7 (36.8)	21 (15.0)
More than 10 days	9 (7.4)	5 (26.3)	14 (10.0)
Total	121 (100.0)	19 (100.0)	140 (100.0)
Test	*x^2 (chi-square) = 21.324, P-value = .000, Comment: Significant*		

9.3 Discussion

About one-third patients of private hospitals and 5.7 percent patient of public hospitals had no cost of waiting time. The averages cost of waiting time were Tk. 5188.5 and Tk. 1547.98 for public and private hospitals respectively. Statistical test shows that public hospital had significantly (p=.000) higher (more than three times) cost of waiting time than private hospitals. The averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively. So waiting time increases on average total operation cost by 25.8% for public hospitals and by 5.0% for private hospitals.

Patients of private hospitals were more pleased with the behaviour of doctors in comparison to the patients of public hospitals as 90.0 percent patients of private hospitals informed that the behaviour of doctors was 'very good' and rest 10.0 percent informed that it was 'satisfactory'. On the other hand 37.1 percent patients of public hospitals informed that the behaviour of doctors was 'very good' and more than half (61.4%) patients of public hospitals informed that it was 'satisfactory'. 'Bad' behaviour of doctors was informed insignificantly.

Behaviour of service personnel was also better in private hospitals than in public hospitals. Also 81.4 percent patients of public hospitals and 98.6 percent patients of private hospitals said that they would refer patients to this hospital. About overall satisfaction, 80.0 percent patients of public hospitals and 92.8 percent patients of private hospitals informed that they satisfied with the service of the

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hospital. It was observed that although overall satisfaction was good in both types of hospitals but satisfaction level was better in private hospitals in comparison to public hospitals.

More than 10 days waiting time found among 7.4 percent 'satisfied' patients and 26.3 percent 'not satisfied' patients. More waiting time decreases percentage of 'satisfied' patients and increases percentage of 'not satisfied' patients. The chi-square test shows that there was significant (p=.000) relationship (negative) between satisfaction and waiting time, i.e. less waiting time occurs in 'satisfied' patients and more waiting time occurs in 'not satisfied' patients.

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CHAPTER 10

Choice of Hospitals

10.1 Introduction

Patients have the options to get operation from public hospitals or private hospitals. The decision on the choice of place was based on a number of factors, which were tried to find out through asking questions from patients and also a logistic regression of dependent variable 'place' was fitted on different independent variables that we have identified among the background characteristics of patients. The results of analysis are discussed in this chapter so that it would be clear the factors influencing the choice of place.

10.2 Empirical findings

Choice of hospitals are discussed in the following pages..

10.2.1. Reasons for selecting the hospital

The reasons behind selecting public or private hospitals were asked to the patients and multiple answers were replied (table 10.1). Considering low cost of treatment (72.9%) was the main reason for selecting public hospitals as there was no operation cost in public hospitals. Other reasons for selecting public hospitals were the advice of doctors (37.1%), quality care (30.0%) and consideration of other related costs (21.4%).

Patients of private hospitals thought that quality care was more ensured in private hospitals and so this was the main reason (62.9%) for selecting private hospitals. Treatment takes less time (34.3%), doctor's advice (30.0%), and nearest to the living place (12.9%) were other reasons for selection of private hospitals.

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Table: 10.1 Reasons for selecting this hospital (multiple)

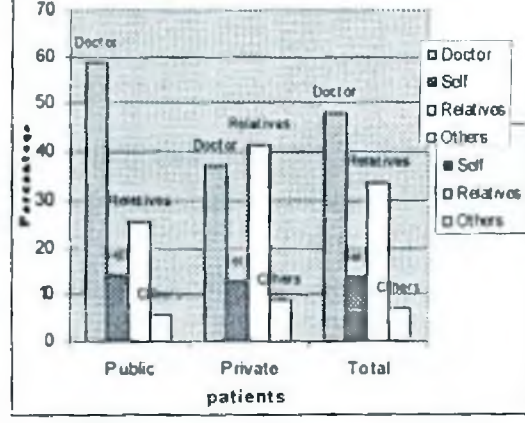
Reasons	Frequency		Total
	Public	Private	
Considering low cost of treatment	51(72.9)	8(11.4)	59(42.1)
Considering other related cost	15(21.4)	4(5.7)	19(13.6)
Due to quality care	21(30.0)	44(62.9)	65(46.4)
Due to doctor's advice	26(37.1)	21(30.0)	47(33.6)
Treatment takes less time	1(1.4)	24(34.3)	25(17.9)
Nearest to the living place	1(1.4)	9(12.9)	10(7.1)
Others	2(2.9)	7(10.0)	9(6.4)
Total	70	70	140

10.2.2 Persons advised patients to admit the hospital

Patients were asked by whom they were advised to choose the hospitals. In reply, 58.6 percent patients of public hospitals informed that they were advised by doctors; about one fourth were reported to be recommended by relatives or friends and 14.3 percent decided by themselves.

About patients of private hospitals, highest 41.4 percent were advised by relatives or friends, followed by 37.1 percent were advised by doctors and 12.9 percent were decided by themselves (Table 10.2).

Figure: 10.1 Persons advised patients to admit the hospital



So patients of public hospitals were mostly influenced by doctors and patients of private hospitals were more influenced by relatives or friends (Figure: 10.1).

Table: 10.2 Persons advised patients to admit the hospital (multiple)

Persons advised	Frequency		Total
	Public	Private	
Doctor	41(58.6)	26(37.1)	67(47.9)
Self	10(14.3)	9(12.9)	19(13.6)
Relatives / friends	18(25.7)	29(41.4)	47(33.6)
Others	4(5.7)	6(8.6)	10(7.1)
Total	70	70	140

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10.2.3 Reasons for not selecting Private / public hospitals

Patients of public hospitals were asked about the reasons for not going to private hospitals and in reply multiple answers were found (Table 10.3). About three-fourth of them informed that much money needed in private hospitals and 40.0 percent said that money needs at a time. Also lacking of experienced doctors was another reason for not selecting private hospitals, mentioned by 17.1 percent patient of public hospitals.

Same question was asked to the patients of private hospitals and in reply half of the private patients informed that service of public hospitals was not satisfactory, 45.7 percent said that treatment in public hospitals was time consuming and 40.0 percent thought that doctors were not experienced in public hospitals. Another 28.6 percent thought that operation was not satisfactory in public hospitals. Over crowd in public hospitals was also mentioned by 10.0 percent patients of private hospitals as a reason for not selecting the public hospital for treatment.

Table: 10.3 Reasons for not selecting Private / public hospitals (multiple)

Reasons	Frequency		Total
	Public	Private	
Much money needed	53(75.7)	4(5.7)	57(40.7)
Money needs at a time	28(40.0)	0	28(20.0)
Lack of experienced doctors	12(17.1)	28(40.0)	40(28.6)
Operation is not satisfactory	3(4.3)	20(28.6)	23(16.4)
Service is not satisfactory	1(1.4)	35(50.0)	36(25.7)
Over crowd	0	7(10.0)	7(5.0)
Time consuming	0	32(45.7)	32(22.9)
Doctors not available all time	0	5(7.1)	5(3.6)
Others	3(4.3)	5(7.1)	8(5.7)
Total	70	70	140

10.2.4 Hospital preference of patients for getting treatment

Patients were asked whether they preferred public hospitals or private hospitals for getting treatment of gall stone operation and in reply 88.3 percent patients of public hospitals opined that they prefer public hospitals and rest 11.7 percent preferred private hospitals (Table 10.4). On the other hand 80.0 percent of patients of private hospitals preferred private hospitals and rest 20.0 percent preferred public hospitals. So it is observed that patients of public hospitals were more

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consistent to get treatment in public hospitals than that of private hospitals. That is patients of private hospitals preferred public hospitals more in comparison to their counter part. Above all, among all the patients, 54.2 percent preferred public hospital's service and 45.8 percent preferred private hospital's services.

Table: 10.4 Hospital preference of patients for getting treatment

Hospital Preference	Frequency (percentage)		Total Percent
	Public	Private	
Public	53 (88.3)	14 (20.0)	54.2
Private	7 (11.7)	56 (80.0)	45.8
Total	60(100.0)	70(100.0)	100.0

*10 missing value occurred in questionnaires of patients of public hospital.

10.2.5 Fitting logistic regression of 'place' (dependent variable) on independent variables

Before fitting logistic regression influential variables effecting choice of place were found out. Selection of independent variables depends on analyzing the previous tables. Table 4.2 showed that about one fourth patients of private hospitals were 50-60 aged groups. So aged patients treated more in private hospitals. Table 4.4 showed that less educated people comparatively treated more in public hospitals and more educated people comparatively treated more in private hospitals. So education was an important variable for choosing private or public hospitals. Table 4.6 showed that patients having income more than Tk. 10000 mostly treated in private hospitals. Also table 4.8 showed that family income influences the choice of place for operation. Table 4.10 showed that patients suffered short time mostly treated in private hospitals and patients suffered long time mostly treated in public hospitals. So duration of sufferings also an influential factor. Also table 10.2 showed that advice of person was an important variable. Besides, a number of variables had been run and retained only those variables which had significant influence.

Place of operation is a binomial variable taking values '0' for public hospitals and '1' for private hospitals. To find out the influential factors affecting the choice of place of operation, we have applied the logistic regression model of 'place' on independent variables like Age, Education, Patient's Income, Family Income, Days of Sufferings and Person Advised to admit in the hospital.

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The results are presented in Table 10.5. It is observed that patient's income had no significant (p=.659) influence to choose the place of operation. Rather family income had significant influence as patients of middle income group family (Tk.10000 – Tk.20000) had 3.382 times higher chance than those of lower income group family (less than Tk. 10000) of selecting private hospitals for operation than public hospitals. Also patients of higher income group family (more than Tk.20000) had 18.758 times more likely than those of lower income group family to go to private hospitals than public hospitals.

The variable 'Age' had no significant influence to choose the place of operation. 'Education' had significant influence as primary educated patients had 12.869 times higher chance than illiterate patients to choose private hospitals. Secondary and above secondary educated patients had 17.813 and 24.211 times more likely to go to private hospitals for operation than public hospitals in comparison to illiterate patients.

Days of sufferings before admission were also an important factor for selecting place of operation. It is observed that patients suffered from three months to one year had .221 times less chance of going to private hospitals than those suffered from less than three months. So more sufferer patients had high chance to choose public hospitals and less sufferer patients had more likely to choose private hospitals. This was because more sufferer patients came from lower or middle income group family but less sufferer patients came from higher income group family (Table-4.11).

Person's advice was another powerful factor to choose place of operation. Relatives or friends had no significant (p=.252) effect but advise of doctors had high significant (p=.004) influence i.e. 10.192 times higher chance than self choice to select private hospitals than public hospitals as place of operation. Other's advise had also significant (p=.012) influence (19.525 times more likely) to choose private hospitals than public hospitals.

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Table: 10.5 Results of fitting logistic regression of 'place' on independent variables

Variable	Parameter (β)	S.E.	Wald	P-value	Exp(β)[odds ratio]
Constant	-4.802	1.659	8.375	.004	.008
Patient's Income					
No					1.00
Yes	.236	.535	.195	.659	1.266
Family Income					
Lower income group					1.00
Middle income group	1.219	.523	5.426	.020	3.382
Higher income group	2.932	.781	14.085	.000	18.758
Age					
Young					1.00
Middle	-.356	.624	.325	.568	.701
Old	.684	.772	.787	.375	1.983
Education					
Illiterate					1.00
Primary	2.555	1.250	4.176	.041	12.869
Secondary	2.880	1.187	5.890	.015	17.813
Above Secondary	3.187	1.184	7.246	.007	24.211
Sufferings					
Less than 3 months					1.00
3 months to 1 year	-1.507	.549	7.544	.006	.221
Above 1 year	.328	.591	.308	.579	1.388
Person Advised					
Self					1.00
Relative / Friend	.867	.756	1.313	.252	2.379
Doctor	2.322	.806	8.298	.004	10.192
Others	2.972	1.182	6.323	.012	19.525

10.3 Discussion

Considering low cost of treatment (72.9%) and the advice of doctors (37.1%) were the main reasons for selecting public hospitals. On the other hand getting quality care and less time to take treatment were the main reasons behind selecting private hospitals. Patients of public hospitals were mostly advised by doctors and patients of private hospitals were mostly advised by relatives or friends to select the hospitals. Patients of public hospitals informed that high operation cost was the main reason for not going to private hospitals. In contrast, patients of private hospitals informed that service of public hospitals was not satisfactory and time consuming and so they did not select public hospitals. In reply of the question of

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hospital preference, it is observed that patients of public hospitals were more consistent to get treatment in public hospitals than that of private hospitals.

To find out the influential factors affecting the choice of place of operation, we have applied the logistic regression model of 'place' on independent variables like Age, Education, Patient's Income, Family Income, Days of Sufferings and Person Advised to admit in the hospital. It is observed that patient's income had no significant influence, rather family income had significant influence as patients of middle income group family had 3.382 times higher chance and patients of higher income group family had 18.758 times more likely than those of lower income group family to go to private hospitals than public hospitals. The variable 'Age' had no significant influence but 'Education' had significant influence as primary educated patients had 12.869 times higher chance, Secondary educated patients had 17.813 times higher chance and above secondary educated patients had 24.211 times more likely to go to private hospitals for operation than public hospitals in comparison to illiterate patients. Days of sufferings before admission were also an important factor for selecting place of operation. It is observed that patients suffered from three months to one year had .221 times less chance of going to private hospitals than those suffered from less than three months. So more sufferer patients had high chance to choose public hospitals and less sufferer patients had more likely to choose private hospitals. This was because more sufferer patients came from lower or middle income group family but less sufferer patients came from higher income group family (Table-4.11). Advise of doctors had high significant ($p=.004$) influence i.e. 10.192 times higher chance than self choice to select private hospitals than public hospitals for place of operation.

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CHAPTER 11

Conclusion and Recommendation

11.1 Introduction

The efforts of Bangladesh to improve its health care delivery system have increasingly emphasized quality of care. Quality assessment studies usually measure one of three types of outcomes: medical outcomes, costs and client satisfaction. A reduction in waiting time is one of the powerful predictors for client satisfaction and also it reduces cost of services. A better understanding of the determinants of waiting time should help policy and decision makers to implement programs tailored to patients needs as perceived by patients. So patient's waiting time study is important to ensure quality of care.

The study covers waiting time of gall stone operation patients for public hospitals and private hospitals in Dhaka city. Here an assessment of economic loss for waiting time was made. The comparison between two types of hospitals based on waiting time, waiting time cost, direct cost, indirect cost, total cost and other different variables has been performed. The most influencing variables of choice of hospitals have been determined by logistic regression model. The present study would made aware the people of our country and hospital staff and policy makers regarding the waiting time and help them to minimize the waiting time.

11.2 Conclusion

Waiting time is a common factor to obtain health services. To get the overall scenario of waiting time in public and private hospitals we considered the postoperative patients of gall stone surgery. The background characteristics of gall stone patients revealed that Cholelithiasis (Gall Stone) was generally more common in female than male. Gender wise distribution shows that male patients were treated more in private hospitals and female patients were treated more in public hospitals. Unmarried patients (80.0%) were treated mostly in private hospitals. Middle aged people suffered more in Cholelithiasis. Patients having

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earning person one or two mostly treated in public hospitals and more than two earning person patients mostly treated in private hospitals. The mean family size of the patients of private hospitals (6.37) was significantly (p=.000) higher than that of public hospitals (4.9). Illiterate and below primary educated patients treated more in public hospitals than in private hospitals. Occupation had significant influence in selecting the place of operation. Among the professional patients, 83.3 percent treated in private hospitals and rest 16.7 percent treated in public hospitals. On the other hand all day labour patients and 71.4 percent patient of retired / old man treated in public hospitals. Patients earning more mostly treated in private hospitals. Patients whom suffered more than one month to one year, mostly treated in public hospitals and patients whom suffered less than one month and more than one year got treatment more from private hospitals. The average day of sufferings of patients before admission in hospital was 370.43 days but it was higher in private hospitals (421.04) than in public hospitals (319.81) although the difference was insignificant. Types of sufferings revealed that 87.9 percent patients suffered from abdominal pain. Chi-Square test shows that there was significant (p=.034) relationship (considering 5% level of significance) between family income and duration of sufferings i.e. duration of suffering of patients before admission was high in lower and middle income group and low in higher income group. Patients of public hospitals (73.0%) got more Laporatomy and patients of private hospitals (71.4%) performed more Laparoscopy for the ailment of Cholelithiasis.

Public hospitals take significantly higher hospital days (22.95) for operation than private hospitals (5.77) and preoperative stay in public hospitals was very high (16.12 days) than private hospitals (1.79 days). Patients of public hospitals needed more diagnostic tests than that of private hospitals after admission in the hospitals and it causes more waiting time for the patients of public hospitals. The mean numbers of total diagnostic tests required for operation were 10.81 and 8.6 in public and private hospitals respectively, where mean test shows significant difference indicating that total number of diagnostic tests for operation were not equal between two types of hospitals.

The mean waiting times due to operation serial were 188.88 hours (7.87 days) and 16.87 hours for the patients of public hospitals and private hospitals respectively. The average waiting times for doing all diagnostic tests after admit were 5.23 hours for public hospitals and 2.55 hours for private hospitals. So waiting time for public

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hospitals was significantly higher than private hospitals. The mean waiting time for physical fitness in doing diagnostic tests were 4.88 days and 3.4 days for public and private hospitals respectively where the difference was statistically insignificant. Doctor often advises patients to wait for physical fitness before operation and it happened for 28.57 percent of cases. The mean waiting time due to physical fitness for doing operation were 7.1 days and 1.56 days for the patients of public and private hospitals respectively. Usually physically unfit patients stay at home other than serious cases and got admitted later in private hospitals. So mean waiting time due to physical fitness in doing operation was less in private hospitals in comparison to public hospitals. On the other hand public hospitals often deals with serious cases and those patients had to be observed before operation for physical fitness and needed to wait.

Rush of patients with limited number of instruments causes waiting time in doing diagnostic tests and it happened highly in public hospitals (92.85%) than in private hospitals (61.42%). Long operation serial was the main cause of waiting time in doing operation in public hospitals and managing money was the main cause of waiting time for the patients of private hospitals. Other reasons for waiting were lack of physical fitness, delayed test reports, crowd of patients mostly in public hospitals, doctors were not available mostly in private hospitals, operation machine was out of order, lack of operation theatre etc. Only 14.3 percent patients of public hospitals thought that the duration of total hospital days were normal, 72.9 percent thought that the duration were high and 12.9 percent said the hospital days were very high but normal was said highly (85.7%) by the patients of private hospitals. Reasons for long hospital days in doing operation revealed long operation serial, crowd of patients, less efficiency in management, alternative operation schedule, doctors were not available etc.

It is usual to wait before getting any service and 7.4 percent patient thought that minimum one hour was essential for doing diagnostic tests (Table A1 in appendix A). But actually 4.16 hours on average were needed for doing all diagnostic tests by the patients (Table 6.2). So patients had to wait more than their expectation and they suggested some ways to reduce waiting time. According to patients opinion the ways were reducing crowd of patients (34.3%), mostly in public hospitals; obtaining more machineries and equipments (26.9%); recruiting more technical personnel (19.4%); using more laboratories and latest machineries (11.1%);

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increasing efficiency and timely work (10.2%); and staying doctors for all time (8.3%) etc (Table A1 in appendix A).

Patients of those who thought that hospital days were high or very high, suggested some remedial measures for reducing waiting time in doing operation which are presented in table A2 (appendix A). More than half of all patients suggested increasing the number of doctors and near half of patients said to increase the number of operation theatre, mostly in public hospitals. Referral system may be another measure in case of public hospitals (38.33%) for reducing waiting time. Some suggested that relevant instruments should be increased.

The average losses of opportunity cost were Tk. 2905.6 and Tk. 951.0 for the patients of public and private hospitals respectively and mean test shows significant (p=.004) difference between the two means indicating higher opportunity losses for the patients of public hospitals than that of private hospitals. The mean costs of diagnostic test were Tk. 3028.1 (1750.8+1277.3) and Tk. 3508.9 (2695.9+813.0) for the patients of public hospitals and private hospitals respectively. The mean direct cost of patient of private hospitals for operation was Tk. 26258.0, which was about double of their similar cost of public hospitals (Tk. 13955.0). The average costs of opportunity loss by patients accompanies were Tk.1629.07 (1000.97+628.1) and Tk.1308.78 (349.88+958.9) for the patients of public and private hospitals respectively. The mean indirect costs were Tk. 6143.5 and Tk. 4422.9 in public and private hospitals respectively and the difference was statistically significant. The averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively

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About one-third patients of private hospitals and 5.7 percent patient of public hospitals had no cost of waiting time. The averages cost of waiting time were Tk. 5188.5 and Tk. 1547.98 for public and private hospitals respectively. Statistical test shows that public hospital had significantly (p=.000) higher (more than three times) cost of waiting time than private hospitals. The averages total cost of operation were Tk. 20099.0 and Tk. 30681.0 for the patients of public and private hospitals respectively. So waiting time increases on average, total operation cost by 25.8% for patients of public hospitals and by 5.0% for private hospitals.

ঢাকা বিশ্ববিদ্যালয় গ্রন্থাগার

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Patients of private hospitals were more pleased with the behaviour of doctors in comparison to the patients of public hospitals. Behaviour of service personnel was also better in private hospitals than in public hospitals. About overall satisfaction, 80.0 percent patients of public hospitals and 92.8 percent patients of private hospitals informed that they satisfied with the service of the hospital. It was observed that although overall satisfaction was good in both types of hospitals but satisfaction level was better in private hospitals in comparison to public hospitals. More waiting time decreases percentage of 'satisfied' patients and increases percentage of 'not satisfied' patients. The chi-square test shows that there was significant (p=.000) negative relationship between satisfaction and waiting time, i.e. less waiting time occurs in 'satisfied' patients and more waiting time occurs in 'not satisfied' patients.

Considering low cost of treatment (72.9%) and the advice of doctors (37.1%) were the main reasons for selecting public hospitals. On the other hand getting quality care and less time to take treatment were the main reasons behind selecting private hospitals. Logistic regression model showed that Family income, Education, Days of sufferings before admission and Advise of doctors had significant influence to choose the place of operation.

11.3 Recommendations

On the basis of findings of the study and observations the following recommendations are made for improvement of the functional efficiency of hospitals and reducing the waiting time for operation patients.

1. Female patients of gall-stone surgery were treated more in public hospitals. So more facilities for female patients in public hospitals should be arranged, like number of female wards should be increased.
2. Preoperative stay should be minimized in public hospitals through completion of investigations before admission in routine cases and by reducing the steps of operation i.e. the gap between laboratory tests, physical examination and operation schedule should be minimized.
3. Postoperative stay was also high in public hospitals than private hospitals and it could be minimized by increasing more facilities of Laparoscopic operation.

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4. The mean waiting times due to operation serial were 188.88 hours (7.87 days) for the patients of public hospitals which could be minimized by increasing number of operation theatre as long operation serial was the main reason for waiting time.
5. Availability of doctors, nurses, technicians and other staffs should be ensured and increased, as needed for the better management and to reduce waiting time in the hospitals.
6. The operation cost in private hospitals was much higher compared to public hospitals which should be minimized to reduce rush of patients in public hospitals.
7. Managing money was the main reason for waiting time in private hospitals. So cost of operation in private hospitals may be paid by installment system to reduce waiting time.
8. Rush of patients in public hospitals was another cause of waiting time, which could be minimized by maintaining proper referral system.
9. Doctors and other staffs should be aware of the cost of waiting time as waiting time increases on average, total operation cost by 25.8% for the patients of public hospitals and by 5.0% for private hospitals.
10. The average waiting times for doing all diagnostic tests after admit were 5.23 hours for public hospitals which could be minimized by increasing number of laboratories, technical personnel and efficient management.

10.4 Limitations of the study

- The internal cost of waiting time for public hospital such as capital cost, hotel cost, food cost was not considered here. So the cost of waiting time was underestimate for public hospital.
- During interviewing of the patients, the illiterate patients could not tell their actual age and also their monthly family income. Sometimes different cost of interest might not be reported correctly.
- Limited number of literatures and documentations available in this regard also presented a constraint to the researcher to be carried out the study.

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Appendix – A

Tables

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Table: A1 Ways to reduce waiting time in doing diagnostic test (multiple)

Ways to reduce waiting time	Frequency		Total
	Public	Private	
Less crowd of patients	30(46.2)	7(16.3)	37(34.3)
More technical personnel	15(23.1)	6(14.0)	21(19.4)
More machineries and equipments	18(27.7)	11(25.6)	29(26.9)
Increasing efficiency and timely work	5(7.7)	6(14.0)	11(10.2)
More counter for money receipt	4(6.2)	2(4.7)	6(5.5)
Doctors stay for all time	3(4.6)	6(14.0)	9(8.3)
More laboratories and latest machineries	7(10.7)	5(11.6)	12(11.1)
Timely delivery of report	0	2(4.7)	2(1.9)
Minimum one hour is essential	2(3.1)	6(14.0)	8(7.4)
Total	65	43	108

Table: A2 Remedial suggestions of waiting time for operation (multiple)

Remedial suggestions of waiting time	Frequency (percentage)		Total
	Public	Private	
By increasing OT	31(51.67)	3(30.0)	34(48.57)
By increasing doctors	26(43.33)	10(100.0)	36(51.42)
By increasing instrument	12(20.0)	2(20.0)	14(20.0)
Developing referral system	23(38.33)	1(10.0)	24(34.29)
Others	3(5.0)	0	3(4.29)
Don't know	4(6.67)	0	4(5.71)
Total	60	10	70

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Appendix – B

Questionnaire

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Strictly confined to research purpose **Identification Number** | | | |

Causes and Economic Consequences of Differential Waiting Time: A Case Study on Gallstone Surgery (Cholecystectomy)

Institute of Health Economics, University of Dhaka

PATIENTS' QUESTIONNAIRE

This study is being conducted to find out the factors affecting waiting time of preoperative patients of Gallstone surgery and also the consequences of waiting time will be evaluated. The findings of the study will be helpful for the administrators, planners and policy makers to increase patients' satisfaction as well as for the optimum utilization of health service.

Before starting the interview of a patient:

Is s/he informed about the objectives of the survey?	Yes	1	No	2
Is s/he informed that the information will be kept confidential?	Yes	1	No	2
Does s/he agree to attain the interview?	Yes	1	No	2

Place of operation

101.

A) Place: Public ☐ Private ☐

B) Name of place:

C) Time:_____ D) Date: _____

E) Name of the Patient _____

F) Ward No. G) Bed No. H) Patient's Mobile No.

I) Patient's address:

J) Type of Operation: Laparoscopy ☐ Laporatomy ☐

Background characteristics of the patient

102. Sex ☐ (1. Male, 2. Female)

103. Religion ☐ (1= Islam, 2= Hindu, 3= Christian, 4= Buddhist, 5= Others _____)

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104. Age [ ][ ] (in complete years)

105. Marital Status [ ]

(1. Unmarried, 2. Currently married, 3. Widow/Widower, 4. Divorced, 5. Separated)

106. Number of family member | Male = | Female =

107. Educational qualification (class/grade passed) [ ][ ]

(No education = 00, Can sign only = 66, Non formal education = 77, Madrasa education = 55)

108. Occupation (primary) [ ][ ]
Occupation (secondary) [ ][ ]

Occupation Code			
	01. Agriculture/Farmer	07. Motorized vehicle driver	14. Petty businessman
	02. Agriculture (lease)	08. Rickshaw/Van/cart/	15. Unemployed
	03. Agriculture (own + lease)	cart puller/boatman	16. Retired
	04. Agriculture day labour	/baby taxi Driver	17. Housewife
	05. Skilled labor	09. Domestic work	18. Motorized vehicle driver
	(Potter/Blacksmith	/Household help	19. Govt. and Non-govt. officer
	/Shoemaker/Tailor/	10. Fisherman	20. Old man/disabled
	Mason)	11. Professional	21. Student
	06. Unskilled labor	12. Salaried worker	22. Other _____
		13. Businessman	

109. Patient's Monthly Income (Total in Tk.) [ ][ ][ ][ ][ ]

110. Number of earning members in patient's family (including patient) [ ][ ]

Serial No.	Occupation	Relation	Monthly Income
1.			
2.			
3.			
4.			

111. Total Family Income [ ]

Diseases related information

112. How long are you suffering form this problem before admition? [ ] Days

113. What are the usual pain and sufferings of patients of cholelithiasis for preoperative stay?

1. Chest pain, 2. Suffocation, 3. Abdominal pain, 4. Vomiting, 5. Swelling in the face
6. Fever, 7. Backache, 8. Body ache, 9. Constipation, 10, Others (specify) .....

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114. Total hospital days [ ] Days

Admition date:		Preoperative stay	Day
Operation date:		Post operative stay	Day
Release date (tentative):		Total stay	Days

115. Who referred you to admit this hospital? [ ]

1= Doctor, 2=Self, 3= Relative / friend, 4= others (specify) .....

116. Why do you prefer this hospital for treatment? (multiple) [ ]

1= Considering cost of operation, 2= Considering other cost, 3= Due to quality care (surgery), 4= Due to doctor's advice, 5= To save time, 6= Nearest to the living place, 7 = Others (specify) .....

117. Why do you not selecting private / public hospitals for treatment? [ ]

1= Much money needed, 2= Money needs at a time, 3= Lack of experienced doctors, 4= Operation is not satisfactory, 5= Service is not satisfactory, 6= Over crowd, 7 = Time consuming, 8 = Doctors not available all time, 9 = Others (specify) .....

118. Which hospital do you prefer for getting treatment? [ ]

1. Private hospital 2. Public hospital

119. State the number of diagnostic test you need for operation.

Before admit	
After admit	
Total number of test	

Waiting time related information

120. Did you have to wait for long queue in doing diagnostic tests? 1= Yes, 2= No [ ]

121. If 'yes' what are the reasons for waiting in diagnostic tests? [ ]

1= Crowd of patients, 2= Less personnel, 3= Lack of instrument, 4= Don't know, 5 = Others (specify)

122. How much time did you need to wait for all diagnostic test after admit? [ ] Hours

123. How waiting time for diagnostic test can be reduced? (Pl. write)

.....

.....

.....

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124. Did you need to wait for recovering physical fitness in doing diagnostic tests? 1= Yes, 2= No [ ]

125. If 'yes' how long did you need to wait for physical fitness in doing diagnostic tests? [ ] Hours

126. Did you need to wait for doing operation after completing diagnostic test? 1= Yes, 2= No [ ]

127. If 'yes' (a) what are the reasons for waiting? (Pl. write)

.....

.....

(b) how long did you need to wait for physical fitness in doing operation? [ ] Hours

(c) how long did you need to wait for getting operation serial? [ ] Hours

(d) how long did you need to wait other than operation serial in doing operation? [ ] Hours

128. What do you think about the duration of total hospital days for doing operation? [ ]

1=Normal, 2= High, 3= very high

129. If 'high' or 'very high' then what are the reasons to think so? [ ]

1=Less efficiency in management, 2= Over crowd, 3= Late for operation serial, 4= Other (specify).....

130. How to reduce total waiting time for operation? (pl. write)

.....

.....

.....

Cost related information

131. Do you have any accompany in this hospital? 1= Yes, 2= No [ ]

132. If 'yes' answer the following information about (opportunity cost of) accompany?

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Sl. No. & Name	Relation	Stayed Always/ Sometimes	Days stayed	Occupation (according to code)	Monthly Income	Income per day	Cost (col.4*col.7)
1.							
2.							
3.							
4.							
Total cost							

If always then full day is count but if sometimes then half day is count.

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133. Food cost per day of your company [ ] Taka

134. Total Food cost of your company (per day cost × total days stayed)

Before operation		Taka
After operation		

135. Travel cost per day of your accompany (both way) [ ] Taka

136. Total Travel cost of your accompany (per day cost × total days stayed)

Before operation		Taka
After operation		

137. How many visitors do / did you have till today? [ ]

138. Visitors' total Travel cost (approximately)

Before operation		Taka
After operation		

139. Visitors' gift cost (consolidate, approximately)

Before operation		Tak
After operation		

140. Cost for services and commodities in this hospital (at the time of hospital release of the patient):

Item		Cost
(a) Amount of doctor's payment		
(b) OT charge		
(c) Relevant diagnostic tests	Before admit	
	After admit	
(d) Medicine cost	Before operation	
	After operation	
(e) Cost of food	Before operation	
	After operation	
(f) Lodging cost	Before operation	
	After operation	
(g) Others	Before operation	
	After operation	
Total cost		

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Information about unofficial payment

141. Did you need to provide any unofficial payment in this hospital? 1= Yes, 2= No [ ]

If 'yes' then answer the following questions.

142. How much money did you need to pay as unofficial payment? [ ] Taka

143. Why did you need to pay unofficially? [ ]

1= to provide quality service, 2= to ensure the gentle behavior form the health personnel, 3= to reduce the treatment cost, 4= to reduce waiting time, 5= to get extra facilities, 6= Others (specify).....

144. In your opinion how can we control the culture of unofficial payments? [ ]

1= by increasing the salary, 2= by increasing the promotion scope, 3= by imposing the punishment 4= It is not possible at all, 5= Others (specify).....

Information about Patient's Satisfaction

145. How did the doctors behave with you? [ ]

1=Very good, 2= Good, 3= Bad

146. How did the service personnel behave with you? [ ]

1=Very good, 2= Good, 3= Bad

147. Would you come to this hospital (for second time) with any problem? 1= Yes, 2= No [ ]

148. Would you refer anybody to come to this hospital for treatment? 1= Yes, 2= No [ ]

149. Whether a desired level of quality service is ensured here? 1= Yes, 2= No [ ]

150. If 'No' What is / are the cause(s) of your dissatisfaction? (multiple) [ ]

1= Care is not sufficient, 2= Doctors' are not cooperative, 3= Due to rude / misbehave of the health personnel, 4= Inadequate equipment, 5= Dirty environment, 6= Time consuming, 7= Costly, 8=Others_____

(End with thanks)