

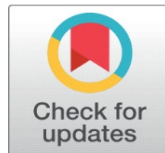
A STUDY OF PATIENT'S MONETARY SATISFACTION AT A PRIVATE HOSPITAL IN NAGPUR

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ABSTRACT

Before any surgery or clinical procedure takes place, estimates are given to make patient understand that how much they need to spend on a particular procedure (surgery) because if in case there is any fluctuation in the actual bills, it will ultimately lead to patients' dissatisfaction. The proposed study is quantitative by the nature due to primary and secondary databases used to analyze the estimated and actuals bills of the CABG and PTCA patients in the Wockhardt heart hospital, Nagpur. The design for the research is exploratory and descriptive as the patient's bill have been compared to check whether there is any difference exist or not. The study analyzes the factors responsible for creating differences between the estimated and actual bills and suggests measures that will help in reducing the differences in the estimates and actual bills.

Keywords: Patient, Monetary, Satisfaction, Bills, Hospital

1. INTRODUCTION

Before any surgery or clinical procedure takes place, estimates are given to make patient understand that how much they need to spend on a particular procedure (surgery) because if in case there is any fluctuation in the actual bills, it will ultimately leads to patients dissatisfaction. Cost estimation is the total fee that a patient can expect to pay for inpatient or day surgery treatment. It consists of hospital and doctors' fees. Charges that are incurred from an average hospital admission – laboratory, radiology, histology and other tests; and anaesthetist fees for procedures are also included. Estimates are rough estimates only. They are not a guarantee of the actual cost of the procedure. The numbers reflect our best knowledge of the potential cost of the bill.

Indian patients are notoriously price sensitive. And if the patients have to pay more than the estimates, it becomes real issues. Everyday cough syrups cost 20 per cent more than they did in 2007. High-end doctors who billed Rs 800 for a 15-minute consultation four years ago now charge Rs 1,500. Daily room charges exceed Rs 7,000 in some Delhi hospitals said by Damayanti Datta.

All costs estimations should be based on a statically average of hospital bills sizes for standard procedures from the past admissions, barring any complications. Actual bills varied widely from case to case, depending on the complications each patient experienced and the treatment that was rendered (Pinna, Atzeni, & Chiappa, 2016). The numbers, made public by the state's Health Services Cost Review Commission, do not include doctors' fees and some lab tests, which add costs that make comparisons even more complicated.

Here, the patient is counselled before getting into the surgery so that the attenders of the patient can prepare themselves financially for surgery. But again this is only going to help patients when the actual bills come out to be similar like of the estimates.

We are comparing the actuals bills from its estimates that are finding out the differences before and after the surgery of the bill amount of the patients. Also analyzing the factors causing deviations in the bills and providing measures to reduce the differences of estimates and actual bills. Data has been taken on convenient simple random sampling basis.

2. REVIEW OF LITERATURE

"It's like it's in Greek sometimes," said Dr. Walter H. Ettinger Jr., senior vice president and chief medical officer at the University of Maryland Medical System.

Patients and their families already know that private hospitals are dependable and convenient places to get medical care (Bamfo, & Dogbe, 2017; Begum et al. 2022). In addition, private hospitals are undoubtedly more popular in this area when compared to public hospitals in terms of waiting times for services and equipment innovation; nevertheless, all of these great services come at a considerable cost (Noyunsan, 2021; Hoxha et al. 2023).

After surgery, patients may get several invoices, which could surprise them if they were not properly informed or educated before the procedure. In order to determine whether surprise billing happens after shoulder rotator cuff repair and how it affects patient satisfaction, Zarei et al. (2014) conducted a study. Adult patients who had elective rotator cuff repairs between January 2020 and October 2021 were polled for the study. Following surgery, patients were questioned about if they received any unexpected costs and specifics about those expenses. Before surgery, patients were also questioned about their medical insurance provider, their understanding of the billing procedure, and how they thought it might be made better.

The bills of the hospital are increasing suddenly because of various factors like hospital consumables, investigations, bed stay and other factors also. Many cases are there where patients have to pay double and triple of the estimates amounts and thus increase dissatisfaction and mental pressure (Kwateng, Lumor, & Acheampong, 2019; Niakas & Mylonakis, 2005).

Looking to current condition there has been an increase in the actual bills of the hospitals (Owusu-Frimpong, Nwankwo, & Dason, 2010; Orgev, & Bekar, 2013). The real challenge for hospitals lies in the acquisition and retention of trained doctors, nurses and technicians. "Standards of care, protocols and quality of doctors in some of the larger Indian hospitals are of global standards," (Pervez Ahmed of Max Healthcare). Quality and protocols have added on to the costs of medical bills.

Hospital has a great responsibility towards creating a statistical data for making estimates so that it would not create a big difference while discharge of the patient. The average total medical care costs paid out-of-pocket by patients during hospitalization were over US\$ 270. Major drivers of the costs related to surgery (nearly 25%), diagnostic test/examination (24%) and drugs (23%).

3. OBJECTIVES OF THE STUDY

1. To know the current status of estimated and actual bills of CABG and PTCA patients.
2. To compare the estimated and actual bills of CABG and PTCA patients.
3. To analyze the factors responsible for creating differences between the estimated and actual bills.
4. To identify the measures that will help in reducing the differences in the estimates and actual bills.
5. To open a new vistas of knowledge for future.

4. RESEARCH METHODOLOGY

4.1 RESEARCH TYPE/DESIGN: The proposed study is quantitative by the nature due to primary and secondary databases used to analyze the estimated and actuals bills of the CABG and PTCA patients in the wockhardt heart hospital,

Nagpur. The design for the research is exploratory and descriptive as the patients' bill have been compared to check whether there is any difference exist or not.

4.2 SAMPLING METHOD: For the current study universe is wockhardt heart hospital, Nagpur and the population is the bills of all surgical patients while the sample is drawn from the population by using convenient simple random sampling that is 29 CABG patients and 29 PTCA patients, the total of 58 patients.

4.3 ANALYSIS TOOL: For the data analysis pie-charts and percentile methods has been used.

4.4 DATA COLLECTION TECHNIQUES: The study was carried out in wockhardt heart hospital, Nagpur on the patients of CABG and PTCA, both type of data sources that is primary and secondary are being used to compare and analyze the estimates and actual bills. Observation and data retrieval from HIS tools were used to collect the data.

5. RESULTS AND ANALYSIS

5.1 ANALYSIS OF (CABG) DATA COLLECTED AS PER BED CATEGORY

Following are the pie-charts representation of deviation according to bed category (from estimated):

5.1.1 ANALYSIS OF (CABG) DATA COLLECTED FOR MULTI-BED CATEGORY (CABG)

22% of the patients are paying up to 10,000 Rs. more than the estimates. 15% of the patients are paying 20,001-30,000 Rs. more than the estimates. 14% of the patients are paying 50,001-60,000 Rs. more than the estimates. 14% of the patients are paying 90,001-100,000Rs. more than the estimates. 14% of the patients are paying 100,001-200,000 Rs. more than the estimates. 7% of the patients are paying 40,001-50,000 Rs. more than the estimates. 7% of the patients are paying 10,001-20,000 Rs. more than the estimates.

5.1.2 ANALYSIS OF (CABG) DATA COLLECTED FOR SINGLE BED CATEGORY

25%of the patients are paying 0-10,000Rs. more than the estimates. 25% of the patients are paying 80,001-90,000Rs. more than the estimates. 50% of the patients are paying 80,001-90,000Rs. more than the estimates.

5.1.3 Analysis of (CABG) data collected for Twin sharing category 40% of the patients are paying 10,000Rs. more than the estimates. 20% are paying between 10,001 to 20,000Rs. more than the estimates. 20% are paying between 30,001 to 40,000 Rs. more than the estimates. 20% are paying between 90,001 to 100,000Rs. more than the estimates

5.2 FACTORS RESPONSIBLE FOR DEVIATION IN BILL AMOUNT

Maximum bed stay is 10 days (37% which is 2 days extra from the estimated days i.e.; 8 days) as shown in figure 1.

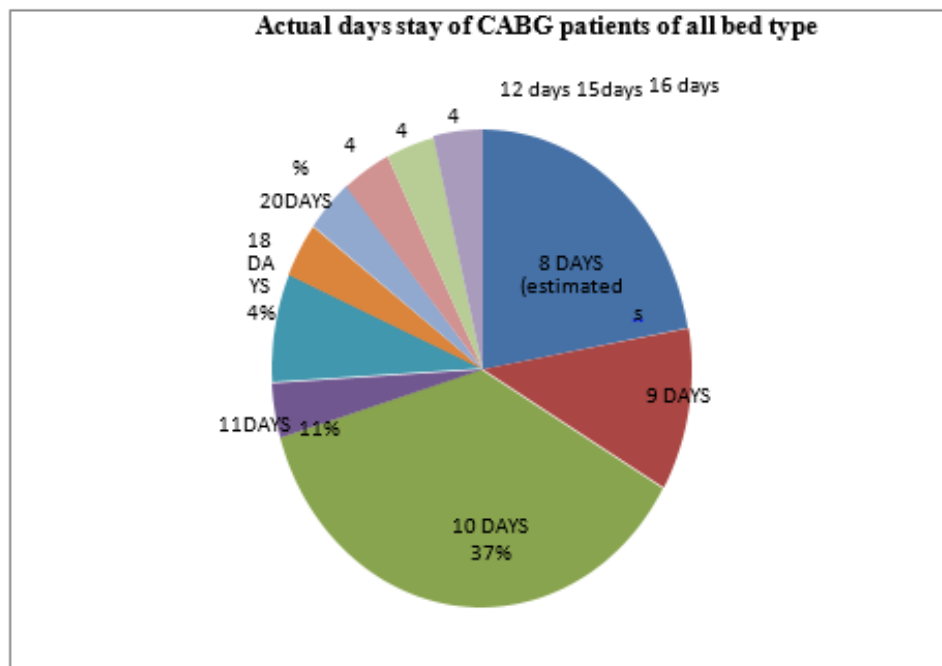


Figure 1. Actual days stay of CABG patients of all bed type

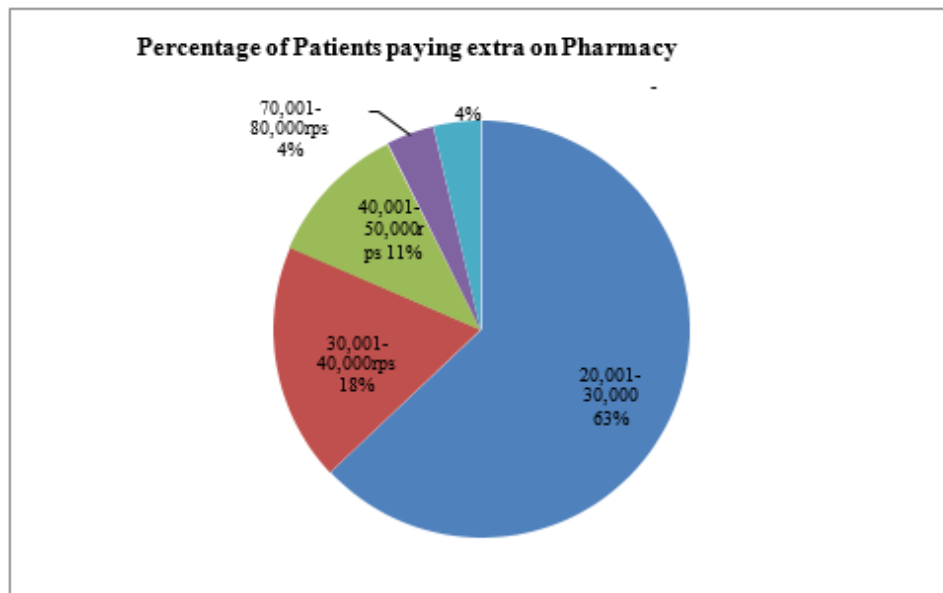


Figure 2. Percentage of Patients paying extra on Pharmacy

63% patients are paying around 20,000 to 30,000 rupees extra on pharmacy. 18% patients are paying around 30,001 to 40,000 rupees extra on pharmacy. 11% patients are paying around 40,001 to 50,000 rupees extra on pharmacy. 4% patients are paying around 70,001 to 80,000 rupees extra on pharmacy. 4% patients are paying around 80,001 to 90,000 rupees extra on pharmacy (Figure 2).

5.3 DATA ANALYSIS OF CONSUMABLES

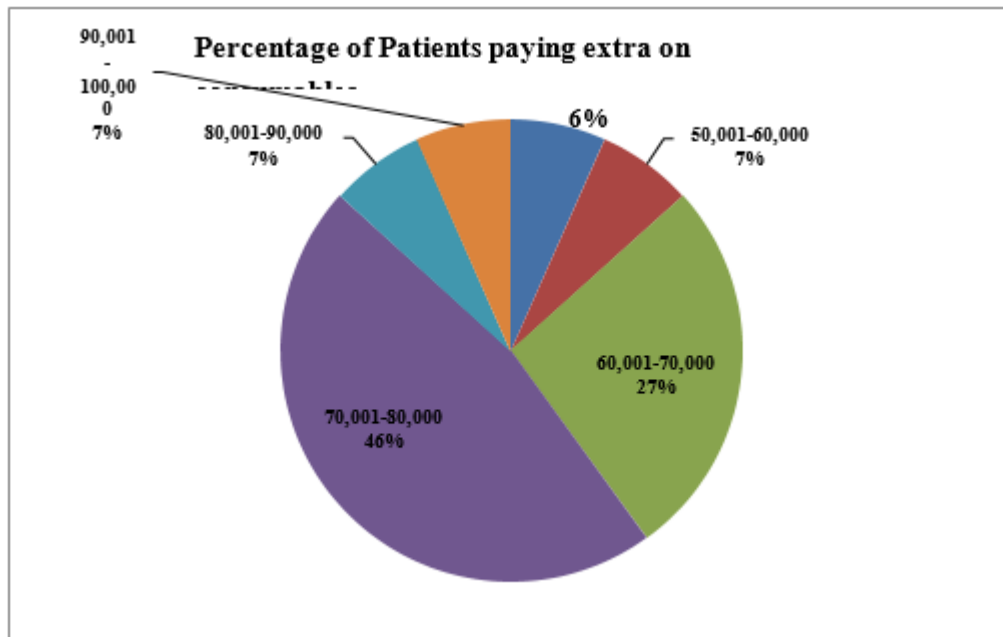


Figure 3. Pie chart showing Percentage of Patients paying extra on consumables

As shown in figure 3, 6% of patients were paying around 20,001 to 30,000 rupees extra on consumables 7% of patients were paying around 50,001 to 60,000 rupees extra on consumables. 27% of patients were paying around 60,001 to 70,000 rupees extra on consumables. 46% of patients were paying around 70,001 to 80,000 rupees extra on consumables. 7% of patients were paying around 80,001 to 90,000 rupees extra on consumables. 7% of patients were paying around 90,001 to 100,000 rupees extra on consumables.

5.4 DATA ANALYSIS OF INVESTIGATIONS COSTS

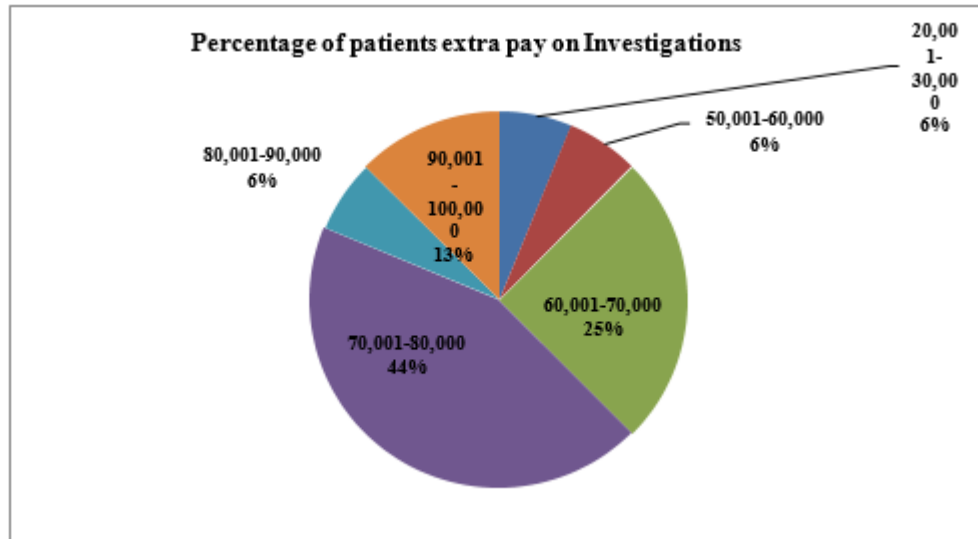


Figure 4. Pie chart showing Percentage of patients extra pay on Investigations

As shown in figure 4, 6% of patients were paying 20,001 to 30,000 rupees extra on investigations. 6% of patients were paying 30,001 to 40,000 rupees extra on investigations. 13% of patients were paying 40,001 to 50,000 rupees extra on investigations. 25% of patients were paying 50,001 to 60,000 rupees extra on investigations. 44% of patients were paying 60,001 to 70,000 rupees extra on investigations. 6% of patients were paying 70,001 to 80,000 rupees extra on investigations.

5.5 DATA ANALYSIS OF AGE AND BED STAY

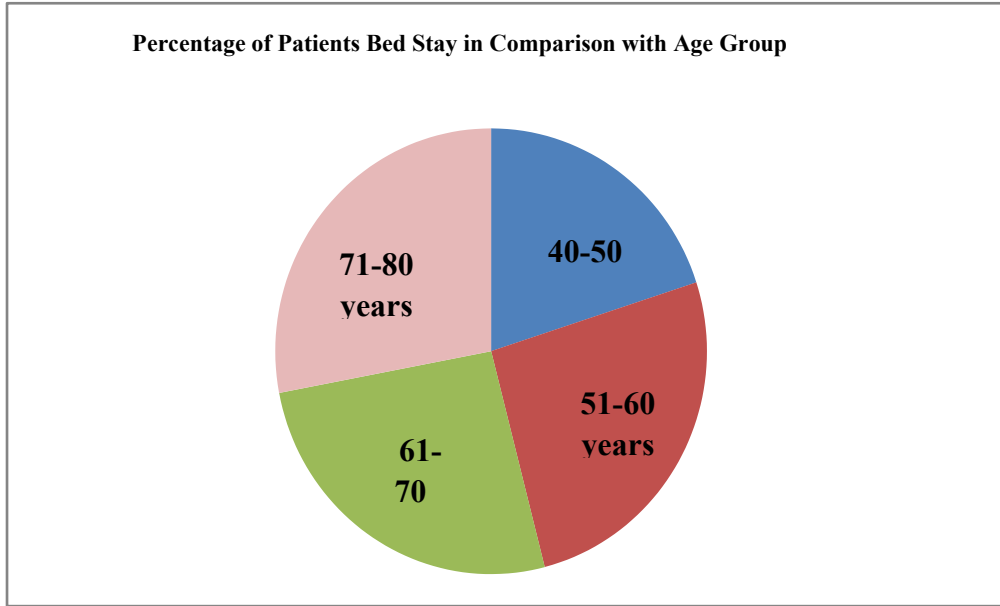


Figure 5. Pie chart of Percentage of Patients Bed Stay in Comparison with Age Group

As shown in figure 5, 28% of the patient's lies between 40 to 50 years of age group were staying 9 to 10 days more than the estimated bed stay. 36% of the patient's lies between 51 to 60 years of age group were staying 12 to 13 days more than the estimated bed stay. 36% of the patient's lies between 61 to 70 years of age group were staying 12 to 13 days more than the estimated bed stay. 28% of the patient's lies between 71 to 80 years of age group were staying 14 to 15 days more than the estimated bed stay (Table 1).

Table 1. Patients Bed Stay in Comparison with Age Group

Age group	Bed Stay
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40-50	10
51-60	13
61-70	13
71-80	14

5.6 EXTRA PAY ANALYSIS BED-CATEGORY WISE

5.6.1 Analysis of Data Collected of PTCA for Multi-Bed Category- (PTCA)

50% of the patients are paying 0-10,000Rs. more than the estimated amount. 33% of the patients are paying 10,001-20,000Rs. more than the estimated amount. 17% of the patients are paying 100,001-200,000Rs. more than the estimated amount.

5.6.2 ANALYSIS OF DATA COLLECTED FOR TWIN-SHARING CATEGORY

25% of the patients are paying 0-10,000 more than the estimates. 25% of the patients are paying 20,001-30,000 more than the estimates. 25% of the patients are paying 30,001-40,000 more than estimates. 25% of the patients are paying 100,001-200,000 more than the estimates.

5.6.3 ANALYSIS OF DATA COLLECTED FOR SINGLE CATEGORY-(PTCA)

25% of the patients are paying 0-10,000 Rs. more than the estimates. 25% of the patients are paying 10,001-20,000Rs. more than the estimates. 25% of the patients are paying 100,001-200,000Rs. more than the estimates 5% of the patients are paying 20,001-30,000Rs. more than the estimates.

5.6.4 DATA ANALYSIS OF CONSUMABLES (ALL BED CATEGORIES)

Kindly refer figure 6 for pie chart comparison of patients paying extra on consumables.

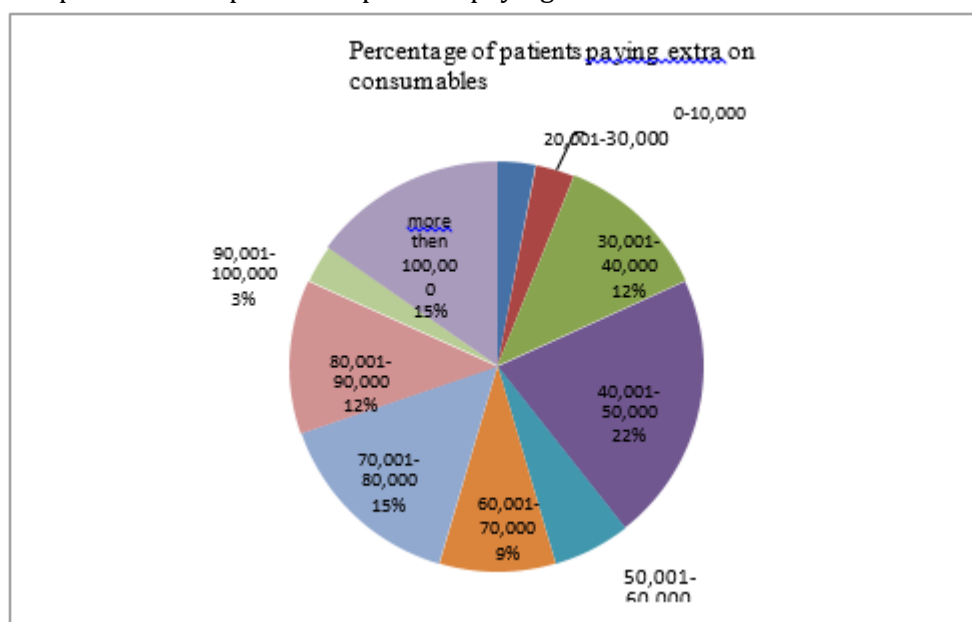


Figure 6. Pie chart of patients paying extra on consumables

5.7 DATA ANALYSIS OF PHARMACY (PTCA)

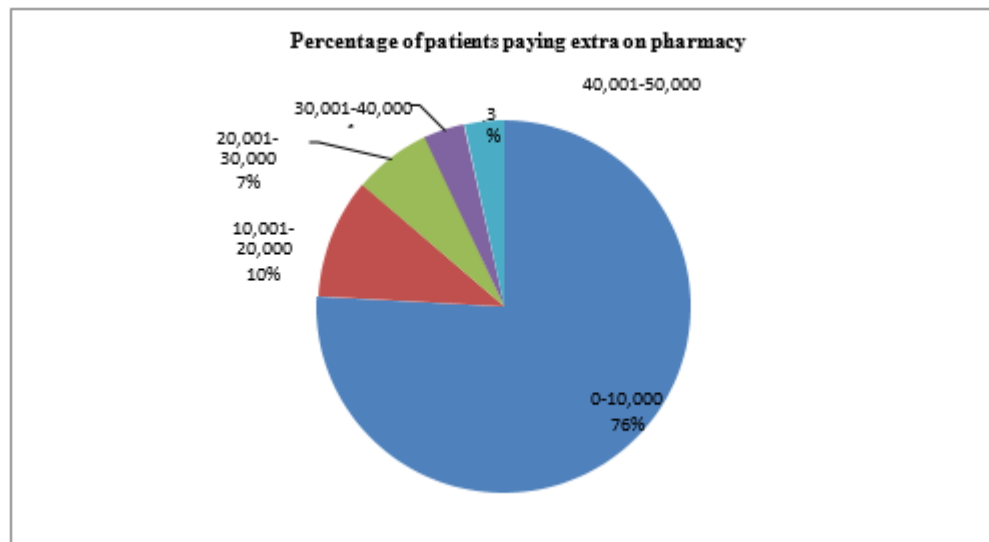


Figure 7. Pie chart of patients paying extra on pharmacy. Kindly refer figure 7 for pie chart comparison of patients paying extra on pharmacy

FACTORS CAUSING DEVIATIONS IN THE BILLS

- Bed stay More than the estimated stay
- Pharmacy: Expensive Drugs Administration
- Consumables: IABP/Bio pump/ Oxygenators/ Stent And Balloons Sizes Etc.
- Investigations: ECHO/ECG/Blood Investigations/ ABG Analysis etc.
- Emergency Post- Complication Need

Other factors responsible for deviations

1. Intensivists charges
2. Use of IABP/LVAD/BH device/Bio-pump
3. Visits of consultants of other speciality
4. Any stay beyond Packages as per actuals
5. In case of any complications occur resulting in extra stay/investigations /use of others drugs/store items etc.
6. OT clearance pending
7. Post procedural complications (Critical case / Septicaemia / Post-operative bleeding / DVT- Deep vein Thrombosis / Stroke / Stenosis / Pulmonary hypertension)
8. ABG analysis /investigation (critical investigation)

If in case doctors used IABP for the patient during the surgery on the demand of patient conditions need, it will add a cost of 60,000 rupees approximately. Because IABP cost rupees 60,000(Intra-aortic balloon pump) And if oxygenator and Bio-Pump is used then it will cost 30,000 rupees. Generally, the medical condition, type of treatment, length of stay, and doctors' fees will influence the actual bill size.

5.8 OVERALL FINDINGS

It has been observed that the current status of hospital estimated and actuals bills is found to have differences which means Out of 29 samples of CABG patients, 5 patients were such whose actuals bills was less than estimates. Rest 24 patients have increased actuals bills after comparing it with the estimates. Same for PTCA patients- Out of 29 samples of PTCA patients, 18 patients were such whose actuals bills were less than estimates. Rest 11 patients have increased actuals bills after comparing it with the estimates which leads to dissatisfaction. So, the current structure of estimates needs some improvements so as to make patients satisfied with the medical bills.

On comparing the estimates with its actuals results are: By comparing the bills of estimates and actuals it is confirmed that there is a difference in the estimated and actual bills of CABG and PTCA patients, but what are the main factors responsible for deviating/increasing bills from its estimates need to be studied. These deviations cause bills to get raised from its estimates amount.

Analyzing those factors of each case provides us the following data: That in case of bypass surgery the main factor responsible for increased costs is consumables (46% of the patients are paying 70,000 to 80,000 more than the estimated amount), pharmacy (63% patients are paying around 20,000 to 30,000 more than the estimates ,18% paying 30,000 to

40,000 more than the estimates) and investigations (44 % patients paying 70,000 to 80,000 more than the estimates, and bed stay (that incurred around 10,000 to 20,000 increase in the amount only if the stay is in ICU), creates deviations in the amount of bills. Here, the length of stay increases for those patients who are above 60 years and whose Euro-SCORE lie between moderate to high score.

For the angioplasty the main factors was pharmacy and investigations which incurred additional costs (Pharmacy- 76% patients paying up to 10,000 more than the estimates, 7% paying 20,000 to 30,000 more than the estimates), (Investigations- 83% patients are paying upto 10,000 more than the estimates, 7% patients are paying around 40,000 to 50,000 more than the estimated amount), (Consumables 22% patients are paying around 40,001 to 50,000 more than the estimates, 15% paying 70,001 to 80,000 rupees more than the estimates and so on). There are other factors also which are responsible for increase in the bills that has been discussed in the study. This study can open a large area of knowledge for hospitals to work upon the bills and proposed new ideas and innovations for increasing patients satisfactions towards medical bills.

6. CONCLUSION

Looking to the hospital as a whole one of the major component is the billing of the patients that too is problematic when the patients have to pay more than the estimated package. This study has increased the opportunities of understanding the deviations occurs in the bills and which results in patient's dissatisfaction. After analyzing the factors, we came to the conclusion that factors like bed stay (extra which is excluded from the package), consumables, pharmacy, investigations, Euro-SCORE (mortality indicator of by-pass patients), and age of the patients are the main factor responsible for the increase actuals bills of the patients.

In this case bills are increasing mainly because of consumables used during the procedure, investigations and bed stay (if the patients stay is in ICU rather than in ward). Because 37% of the patients are staying 2 days extra from the estimates and 7% patients are staying 4 days extra and in case if these 2 to 4 days is of ICU then it will incur more cost. For Investigations also 63% patients paying 20,001 to 30,000 rupees more than the estimates and 18% paying 30,001 to 40,000 rupees more than the estimates and 11% paying 40,001 to 50,000 rupees more than the estimates.

For pharmacy, 63% patients are paying around 20,000 to 30,000 rupees extra on pharmacy, 18% patients are paying around 30,001 to 40,000 rupees extra on pharmacy, 11% patients are paying around 40,001 to 50,000 rupees extra on pharmacy, and 4% patients are paying around 70,001 to 80,000 rupees extra on pharmacy. For consumables, 7% of patients were paying around 50,001 to 60,000 rupees extra on consumables, 27% of patients were paying around 60,001 to 70,000 rupees extra on consumables, and 46% of patients were paying around 70,001 to 80,000 rupees extra on consumables and others.

For Age and bed stay, 28% of the patient's lies between 40 to 50 years of age group were staying 9 to 10 days more than the estimated bed stay, 36% of the patient's lies between 51 to 60 years of age group were staying 12 to 13 days more than the estimated bed stay, 36% of the patient's lies between 61 to 70 years of age group were staying 12 to 13 days more than the estimated bed stay, 28% of the patient's lies between 71 to 80 years of age group were staying 14 to 15 days more than the estimated bed stay.

Whenever, an estimates is provided to the patients it is mentioned that the patients if incase is require to be inserted with the IABP /oxygenators than the patients has to pay extra charges for that. Clinically if we see, all less risk patients who are fine for surgery found to be having more length of stay (10-12days) of age group (47-60 year).

Reasons for increase length of stay for less risk patients;

- OT Clearance
- Operation postponed
- Critical investigations test
- Consumables usage (emergency basis)

Patient with moderate risk and high risk and their age lies between (60-80 years) also have increased length of stay (14-16 days).

Reasons for increase length of stay:

- Health condition of the patient
- Age factor
- Complication during the surgery
- Post-surgical complication

For PTCA- Percutaneous Trans luminal angioplasty: Consumables and investigations are the major factor that results in increasing the bills of the patient. For investigations, 83% patients are paying up to 10,000 rupees more than the estimates, 7% patients are paying 10,001 to 20,000 rupees more than the estimates, 7% patients are paying 40,001 to 50,000 rupees more than the estimates amount. Here, majority of the patients are paying more.

For the consumables, majority of the patients are paying around 40,001 to 50,000 rupees more than the estimates. For the bed stay, 52% patients are staying for 4 days which is 1 day extra from the estimated bed stay and 16% patients are staying around 5 days which is 2 days extra from the estimates. Bed stay creates trouble when it is of ICU than the amount of bills goes high by 20,000 and more.

Looking to the current scenario and the outcomes of this study there has to be a formation of Statistical base estimates formation based upon all these existing factors and some additional factors like Euro-SCORE for CABG patients and other clinical Score test for PTCA patients. This will add the clinical status of the patients in the estimates and according to that patient should be counselled.

7. SUGGESTION

7.1 CABG: CORONARY ARTERY BYPASS GRAFTING

Even though the patients is not clinically that serious (looking to its Euro-SCORE) we have found that the patient with less Euro-SCORE do pay more than the estimated cost. This means that somewhere the administrative issues are more like OT clearance, OT scheduling, machines management and consumables procurement (stent/balloon). Hospital can improve their procurement cycle and also proper OT scheduling of the patients.

Especially in the case when patient came from different state and takes prior appointment to get admitted, administration should first confirmed with the surgeons about surgical plans and then informed the patient to come and get admitted. Because sometimes the patient come to the hospital for admission and surgeon is not available due to which surgery postponed.

Patients with high euro-score have higher chances of increasing bills and also because their age lies in the range of 55-80 and they will have increase average length of stay for sure. But moreover, this is not counselled to the patient's attenders immediately after getting their Euro- SCORE condition.

There is a suggestion that immediately after the patients Euro-SCORE, attenders should be immediately counselled about the updated estimated bills status from the billing department. If incase the bills goes high even though the patient have less risk have high bills then there are various factors responsible for the raised bills.

1. FOLLOWING ARE THE CASES OF INCREASE BILLS –

- OT clearance of the patients: for the cases of CABG patient have to pay the full (100%) amount before any surgery, so that in any case of bills issues patient and hospital staff won't be able to face any further troubles and delays.
- Because of increasing bills from the given estimates there has to be some changes made in the counselling parameters.
- Currently if we see the case, patients are not counselled on the base of their clinical perspective that is Euro-SCORE instead counselled on the base of their chosen bed category and on consultant's advice; this will make the estimate more accurate and won't let patient's dissatisfaction.
- Patient should undergo Euro-SCORE analysis so that counsellor can counsel them on the basis of their clinical status that whether their case has higher chances of becoming critical during surgery due to which the charges may goes high.
- The bills will either goes high due to Euro-SCORE (clinical issues) or due to administrative issues.
- For administrative point of view, surgery dates and other investigatory items and consumables should be available on time as well their OT clearance. There shouldn't be any delay in the procedure of the patients from both the side: Administrative and surgical team side and by doing this actual bills will have no further deviations from its estimates.
- For counselling the patients there must be some clinical personnel who can let patients and it attenders know about their: Clinical condition of the patient and about the chances of increasing bill from estimates.

7.2 PTCA-PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY

Increase bills more than the estimated are because of investigations, pharmacy and length of stay (only when patients extra stay is in ICU). One day can be included in the estimates so as to make things balance or estimates for angioplasty can be revised.

Reasons for increase bills: May be patient has undergone some critical investigations like (ABG analysis) or blood investigations (expensive) and this has charged the patient more than the estimate. Investigations and average length of stay of PTCA patients has increased. Investigations and consumables are the major reasons for increase in the bills.

Suggestions for PTCA:

- To managed the materials and consumables every day.
- Take care of the elective surgical patients for balloon and stents arrangements.
- On an average if we see maximum patients are staying (4days) more than the estimated average length of stay (3days), therefore estimates can be revised and the Average length of stay should be change to 4 days rather than 3 days.
- There is a need to remodify the estimates based on the statistical results.
- To improve the current administrative process by proper OT scheduling, materials management and by changing the counselling parameters.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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