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Surgical Care Expenditures In Private And Public Healthcare System: A Comparative Study

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ABSTRACT

Aim: To estimate and compare the expenditure incurred by an household for surgical care for children in public and private health care systems.
Methods: Questionnaire was distributed to 200 patients admitted for surgery in public and private healthcare sectors. 7 datas were collected: 1) Direct formal costs in the form of surgical costs, consultation costs, drugs, laboratory tests and hospital expenses. 2) Indirect costs in the form of loss of wages to the care giver, transportation and food expenses. 3) Pre-surgical, surgical and post- surgical expenses. 4) Household income. 5) Out of pocket expenses. 6) Source of income. 7) Outcome.
Result: In our study there was a highly significant difference in expenses incurred to the patient in the private to that of the public sector. In compared to public sector, cost of surgical care was significantly high for direct, indirect and total charges per day. There was no significant difference in the indirect charges for an episode of hospitalization in both the sectors as duration of stay in private sector is less.
Conclusions: The expenditure incurred for the surgical care in private sector is significantly high compared to the public sector.

Key words: Surgical care, Health care system, expenditure, children, public .

INTRODUCTION:

With regard to global health concerns, in providing healthcare services to the populations in low and middle- income countries (LMIC's), one of the longstanding and polarized debate is the appropriate role and balance of the public and private sectors (Berendes S et al. 2011). In India, healthcare is dominated by private healthcare providers by 70% of all hospitals and 40% of total hospital beds (Katyal A et al 2015 and Bhat R et al. 1996). Furthermore it is observed from the data from the National Sample Survey (NSS) that there is a decrease in the share of utilization from pubic hospitals over the last two decades (Dilip TR et al. 2010).

Surgical care for children is an essential component of health systems but has generally been neglected within global public health despite the growing evidence documenting the cost-effectiveness of essential surgical care in low- and middle-income countries (LMICs) (Ozgediz D et al 2008 and Bickler SW et al 2002). In developing countries like India, where there is boom in the economic gap between rich and poor, it is extremely important to evaluate the quality and expenditure for essential surgical care services available at the

community level. This is a key concern and prime duty of any government in developing an equitable, affordable and accessible health care system to every strata of population (Tuan T et al. 2005).

Today in India, surgical services are provided mainly by private providers and funded largely through out-of-pocket spending (OOPS) of care-seekers and this situation is recognized both as inequitable and as a serious impediment to wider access to healthcare (Dror DM et al. 2008). It is well accepted that one episode of hospitalization is enough to account for 58% of per capita annual expenditure pushing 2.2% of people below the poverty line. Hence patient's affordability to access surgical care services becomes an important factor (Roy K et al. 2007).

Due to lack of standardized methodology and also dearth of studies with good scientific rigor that addresses surgical care costs , assessing the cost for surgical care remains a challenge (Edbrooke D et al. 1994).

Thus, the aim of the study is to estimate and compare the expenditure incurred by an household for surgical care for children in public and private health care systems.

METHODOLOGY:

This was a prospective hospital based study. The study was initiated after obtaining approval from the institutional ethics committee. Data were obtained from two settings: (1) **Public hospital:** The study hospital was a public private partnership module –Regional advanced pediatric care center, Wenlock hospital, Mangalore. The hospital was opened in 2009 funded by Infosys foundation and is main referral center for pediatric and neonatal care catering to nearly 7 districts in Karnataka and Kerala. (2) **Private Hospital:** The study hospital was a multi-specialty private hospital attached to Kasturba medical college, Mangalore of Manipal Academy of Higher Education, providing health care facilities and main referral Centre in the region.

The minimum sample size required to compare the two groups was 50 in each to obtain 95% confidence interval. Thus a sample of 75 cases in private and 125 cases in public health care systems with complete data was collected. All the children admitted in the above mentioned hospitals in pediatric surgery, who underwent a surgical procedure (major or minor) were included in the study (Minakshi Bhosale1 et al 2019). Children who were conservatively managed were excluded.

A questionnaire was constructed in English and then translated in Kannada and Malayalam (local languages). The questionnaire was pilot tested to assess its accuracy.

Some of the confounding factors identified during the course of pilot study were- 1) Number of days of admission for surgical care – hence average expenditure per day was calculated to make the data comparable. 2) Recall bias – the expenses were recorded daily from the hospital logs & from expenses worksheet maintained by the parents to reduce recall bias.

Data collected were- 1) Direct formal costs in the form of surgical costs, consultation costs, drugs, laboratory tests and hospital expenses. 2) Indirect costs in the form of loss of wages to the care giver, transportation and food expenses. 3) Pre-surgical, surgical and post- surgical expenses. 4) Household income. 5) Out of pocket expenses. 6) Source of income. 7) Outcome.

Outcome variables calculated were- 1) Direct costs-Average/day. 2) Indirect costs-Average/day. 3) Cost of hospitalization – For Major/minor surgery and average per day.

Statistical analysis was conducted with software packages SPSS and EpiInfo. Comparisons and correlations of data between the cases was done using Chi-square, Fishers Exact test, Mann Whitney U test and Kruskal Wallis test. A p value of <0.05 was considered as significant.

RESULT:

Of the total data collected during the study duration, only 200 households (125 from public and 75 from private sector) were recruited into the study which were statistically compared

even though the same size was different, for which the entire details of demography and expenditure were available.

Demographic details: The minimum age for private was 0.16 and maximum was 16 years with a standard deviation of 4.62 years and the minimum age in public was 0.02 and maximum was 16 years with a standard deviation of 4.63 years.There is no significant difference in the age group of people admitted in public and private health care systems. There was significant male preponderance in our study with 75.2% of male in public and 80% in private sector when compared with female which was 24.8% and 20% respectively.

There were significantly more number of people in a household in public sector with average income of 11328 compared to 23000 for a household admitted in private health care system. Households admitted in private health care system were predominantly of higher socio economic status contrary to low socioeconomic group in public sector which was statistically significant (P< 0.001). 48% of people admitted in Private health care system were insured, whereas 52% were below the poverty line and none were insured in the public health care system.

Surgical details: Duration of hospital stay was significantly larger in the public sector (9.71 days) in comparison with the private sector (5.49 days). This is probably due to significantly more number of major surgical cases. One third of cases admitted were referred to both hospitals with significantly more number of major and elective surgical cases were documented in Public health care system (44% and 110% respectively) in comparison with private (30.6% and 78.6% respectively). Minor and emergency surgical cases were more in private sector (69.4% and 12% respectively) in comparison with public health care system (56% and 11.4% respectively). Outcome after the surgical care illness was significantly same in both the health care systems.

Public sector expenditure data: There was a significant difference in the direct expenses between BPL (35 for major and 4 minor surgery) and Non BPL (197 for major and 63 for minor surgery) cardholders with no significant difference in indirect expenses in public health care system between BPL (479 for major for minor and 517 for minor) and Non BPL (680 for major and 458 for minor surgery) which is the major bulk of expenditure for the household admitted for surgical care. (Table 1)

In public health care system the major bulk of expenditure is for the transportation (11.1%), food (17.8%) and loss of wages (41.4%) for the hospital stay with no significant difference in BPL and Non BPL card holders.

Table 1: Public Sector- Expenditure Data

PUBLIC: Expenses per day in BPL v/s Non BPL group					
Charges Per Day (In Rs)	**BPL card Holders**		**Non BPL card Holders**		
	Major surgery	**Minor surgery**	**Major Surgery**	**Minor Surgery**	
Total Direct Expenses	35	4	197	63	**Significant**
Total Expenses	514	521	680	458	**Significant**
Average Expenditure and breakdown of costs per episode of hospitalization in Public hospital					
Total average expenditure per episode of hospitalization	Rs 5029	**% of total expenditure**	Rs5627	**% of total expenditure**	**Sig**

Drugs	Rs 168	3.3 %	Rs 282	5%	**Sig**
Investigations	Rs 33	0.6 %	Rs 224	3.9 %	**Sig**
Hospital Expenses	-	-	Rs 147	2.6%	**Sig**
Transport	Rs 1010	20.8 %	Rs 628	11.1 %	**Sig**

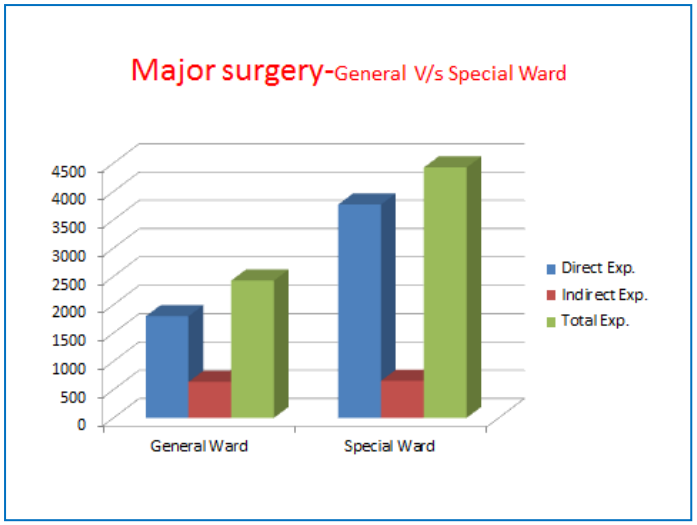
Private sector expenditure data: Direct charges are significantly high in special ward((3768 for major and 4078 for minor surgery) than the general ward (1793 for major and 1553 for minor surgery) , surgical and hospital expenses are significantly high in later group . There is no significant difference in the indirect charges for the surgical care between the general (632 for major and 646 for minor) and special ward (654 for major and 667 for minor) in private health care system ward.

Doctor charges (38%), hospital charges(20.5%) and investigations (9.3%) accounts for major bulk of expenditure with significantly higher expenses in special ward. (Table 2)

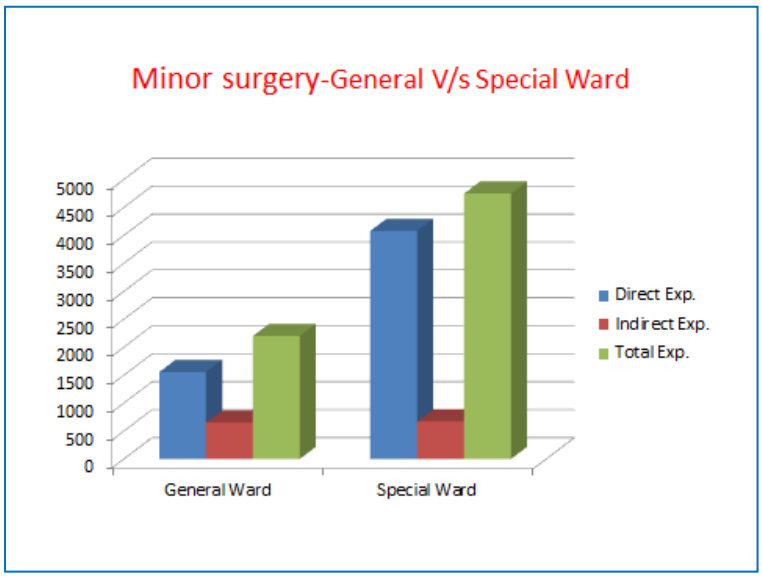
TABLE 2: Private Sector Expenditure Data

Expenses Per Day (In Rs)	**General Ward**		**Special Ward**		
	Major surgery	**Minor surgery**	**Major Surgery**	**Minor Surgery**	
Total Direct Expenses	1793	1553	3768	4078	**Significant**
Total Indirect Expenses	632	646	654	667	Not significant
Total Expenses	2425	2199	4422	4746	**Significant**
Average Expenditure and breakdown of costs per episode of hospitalization in private hospital					
	General ward		Special ward		
Total average expenditure per episode of hospitalization	Rs 13376	**% of total expenditure**	Rs20440	**% of total expenditure**	
Doctor Expenses	Rs 2013	15%	Rs 7830	38%	**Sig**
Drugs	Rs 1400	10.4 %	Rs 1172	5.7%	**Sig**
Food	Rs 2003	14.9%	Rs 1912	9.3 %	**Sig**
Transport	Rs 1383	10.3 %	Rs 927	4.5 %	**Sig**
Loss of wages	Rs586	4.3 %	Rs 185	0.9 %	**Sig**

Graph 1. Average Expenditure per day for major surgical care in Private sector in General and special ward



Graph 2. Average Expenditure per day for minor surgical care in Private sector in General and special ward



There is a highly significant difference in direct expenses for the households in private and public health care systems.There is no significant difference in amount of spending for indirect charges for an episode of hospitalization between direct and indirect expenses (Graph 1 and 2)

Expenditure Data – Public and Private Sector: Highly significant difference was noted for per episode expenditure details for total direct expenses for both private (7316.10) and public (1989.67). indirect expenses were not significant in both health care sectors (private- 2967.59 and public- 2949. 57 respectively). total expenses were again highly significant in both health care sectors with 9148.64 and 4323.65 in private and public health care sectors respectively. (Table 3)

It was observed that the households admitted in the public health care systems will be spending 5 times lesser compared to that in private health care system on an average per day for an episode of hospitalization for surgical care with direct expense per day for private is 1299.98 and indirect expenses is 100.31. the indirect expenses per day was observed to be 338.45 and 180.79 in private and public health care sectors respectively and total expenses per day being 1334.9 and 208.8 in private and public health care sector respectively. All these

finding were highly significant. (Table 3)

Table 3 . Expenditure Details per Episode of Hospitalization – Private and Public sector

Expenditure Details per Episode of Hospitalization – Private and Public sector									
	Hospital	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Median**	**p value**	
TOTAL DIRECT EXPENSES	Private	75	3529	34218	11372.73	7316.094	8996.00	.000	**HS**
	Public	125	0	14655	871.28	1989.662	175.00		
INDIRECT EXPENSES	Private	75	350	15030	3887.20	2967.582	2800.00	.076	NS
	Public	125	210	16050	4445.08	2949.563	3800.00		
TOTAL EXPENSES	Private	75	5079	40986	15259.93	9148.635	12737.00	.000	**HS**
	Public	125	500	24330	5316.36	4323.651	4120.00		
Expenditure Details per day for Hospitalization – Private and Public sector									
	Hospital	**N**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Median**	**p value**	
DIRECT PER DAY	Private	75	910	6618	2278.60	1299.978	1813.00	.000	**HS**
	Public	125	0	491	63.92	100.208	31.00		
INDIRECT PER DAY	Private	75	116	1556	701.29	338.445	633.00	.000	**HS**
	Public	125	52	900	462.49	180.782	477.00		
TOTAL EXPENSESPER DAY	Private	75	1403	7280	2980.24	1334.900	2661.00	.000	**HS**
	Public	125	125	1028	526.68	208.833	525.00		

Source of expenditure: Significant number of households were in debts in public healthcare system(33.6%) compared to private health system (14.7%) where insurance was a major component of expenditure (58.7%). other source of income were significantly high for public health care sector (43.2%) when compared to private health care sector (6.7%) . Even though spending on health is more in households admitted in private health care system, out of pocket expenses were more in households admitted in public health care system and pushing more households below poverty levels (Table 4).

Graph 3: SOURCE OF EXPENDITURE

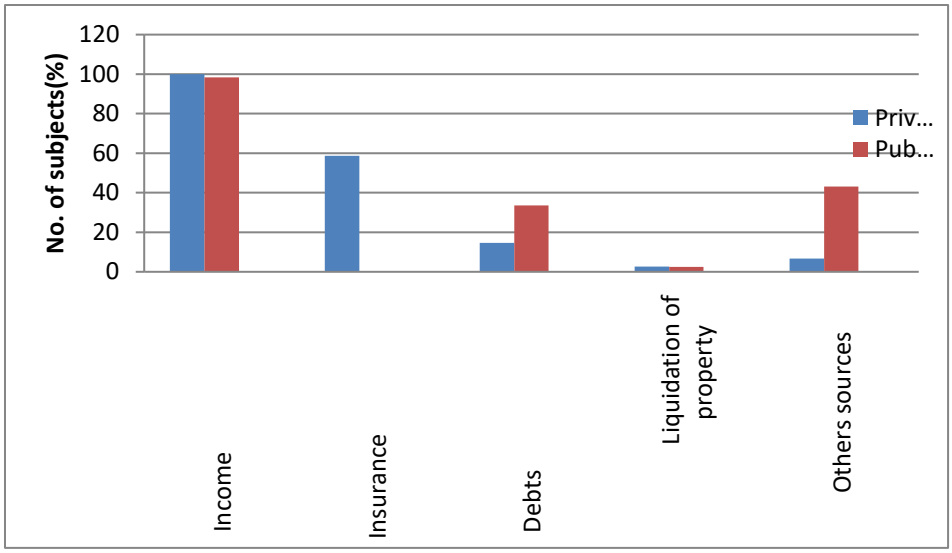


Table 4:- Expenditure as percentage of annual income percapita in private-Public healthcare system

	Average per capita annual	Average expenditure per	Total Expenditure as percentage of annual
Public	29748	5316	17.87 %
Private	62424	15259	24.44 %

DISCUSSION:

Surgical diseases are becoming a large share of financial burden to India because of its rate of 369 per 100,000 and also the total number of surgeries being 37,04,446 – 44,38,792. About 5.5% of the total household expenditures is spent on healthcare and medicines. Thus worsening the existing poverty (Balasubramanian D et al 2015).

Surgical care can be provided either through public, which is provided by the government through national health care systems and through private which is provided through non government providers (Basu S et al. 2012).

There was male preponderance in the study group in both the hospitals.This may be probably due to high incidence of urological problems in male population requiring surgical intervention. In our study in the public sector out of 125, 65(52%) had BPL cards (Table 1) of which most had annual income above Rs11000 (cutoff levels for eligibility for procuring BPL card), making them free for the treatment indicating the need to revise the criteria for obtaining BPL cards. In private sector out of 75 (Table 2), 36(46.7%) were insured enabling them to get the meet for the direct expenses for the surgical services and avoiding them from debts and curtailing them to fall below the poverty threshold. Same was explained in a review by Gambhir R S et al. 2019, wherein he stated that in order to improve the health care reforms and reduce poverty, Indian health care planners have advocated for the expansion of health insurance schemes and this can be achieved only by implementing universal health insurance which is the major step in reducing health disparities and OOP (Out of pocket) expenditures.

OOP expenditures for healthcare services are most comprehensively divided into direct medical costs, direct nonmedical costs, and indirect costs. Hospitalization cost, medicines and medical supplies cost, and visit fees are included in the direct medical cost. Direct non medical costs includes patients' and their next of kin's transportation, meals, and accommodation costs. Finally, indirect costs refer to the lost income of patients or of their next of kin due to absenteeism from work during their stay in the hospital (I. Hennessee et al. 2017 and I.R. Ortega-Sanchez et al. 2012).

In public sector (Table 3) most of the households were from of class IV (63.3%) and class III (24.8%) whereas in private sector are from class III (76.3%) and Class II (23.3%) This high significant difference in the Socio economic status accounted for more people going below the poverty threshold in public hospital compared to the private hospital. There was no significant difference in the outcome in the private and the public sector. In private sector apart from the income, insurance was the major source to meet for the expenses. In public sector apart from the income, debts were the major source of expenditure indicating the low socio economic status of the people and need for more regionalization of surgical care centers as bulk of expenditure has been spent on transportation and loss of wages leading to further impoverishment.

Regionalization is often argued to be the most cost-effective approach for these surgical procedures due to economies of scale, but the financial burden on patients (transportation and out-of-pocket costs) should be carefully considered (Prinja S et al 2015 and Menke TJ et al. 2001).

There was significant difference in the duration of hospital stay (Table 3), more in public sector accounting for increased indirect expenses in form of loss of wages and food probably due to the significantly large no of major surgical cases in the public sector. (Table 3 and 4)

Comparison of Public to Private health care systems

In our study there was a highly significant difference in expenses incurred to the patient in the private to that of the public sector. In compared to public sector, cost of surgical care was significantly high for direct, indirect and total charges per day. There was no significant difference in the indirect charges for an episode of hospitalization in both the sectors as duration of stay in private sector is less.

In the our study there was significant statistical significance for the average surgical care expenses per day for direct, indirect and total expenses with high costs incurred in the private sector. There is no statistical significance for the indirect charges in private and public sector for the average total charges per hospitalization as duration of stay in public sector was significantly high.

Perception of level of satisfaction

Satisfaction levels are not comparable among the public and private health care systems in our study as households of different socioeconomic classes and different hospitals were interviewed. Even if though, there is no significant statistical difference between the satisfaction level for the quality of care provided in public and private in our study except for the overall satisfaction level in public hospital was better than the private sector as the households in the study population were more satisfied with equipment and comfort provide during the overall stay.

CONCLUSION

- The expenditure incurred for the surgical care in private sector is significantly high compared to the public sector.
- Inspite of free treatment provided in the public hospital, indirect expenses incurred to the households and this expenditure led to further economic burden on the weaker sections of the society.
- Expenses on food, consumables, transportation and loss of wages form major components of healthcare expenditure in public hospital compared to hospital charges, investigations and drugs in private hospital indicating the need of regionalization of more surgical care centers as thereby reducing the indirect charges and finally the total expenses for surgical care specifically for weaker sections of the society.
- As the government creates and maintains the surgical care facilities, surgical care can be provided to poor

families in public healthcare hospital at nearly one fifth the costs to the families when compared to private institution

CONFLICT OF INTEREST: Nil

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