

Original Article

Cost and outcome of caesarean section in a public and private hospital in Dhaka city

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Abstract:

Introduction: Caesarean section (CS) is one of the most common surgical interventions to ensure safe delivery and outcome. Cost of CS is comparatively higher in private hospitals but it is not verified that this higher cost could influence the better outcome in private over a public hospital. **Objectives:** To compare cost and outcome of caesarean section between a public and private hospital. **Materials and Methods:** This cross-sectional comparative study was carried out among 130 clients of CS from Dhaka Medical College Hospital (DMCH) and Holly Family Red Crescent Hospital (HFRCH). Data were collected by face-to-face interview and reviewing medical documents. Cost of CS was estimated in terms of direct and indirect cost of CS incurred by the women while outcome was assessed by finding the health condition of the mother and newborn. **Result:** Majority of the women had CS as per doctor's advice. Majority (61.5%) had different kind of problems after CS including lower abdominal pain (86.0% in HFRCH and 69.2% in DMCH) and fever (10.7% in HFRCH and 17.3% in DMCH). Average cost of CS was significantly higher in HFRCH (Tk.36852.90±8396.38) than in DMCH (Tk.7344.23±5081.67) [t(128), p<0.01]. Both direct and indirect cost of CS were significantly lower in DMCH than in HFRCH [t(128), p<0.01]. Outcome of CS was significantly better to mothers in DMCH than of HFRCH [χ² (7.9)=0.048, p<.05]. **Conclusion:** Cost of CS was higher in private hospital while outcome was better in public hospital. Effective measures are recommended for reduction of cost of CS to make it cost-effective.

Key words: Caesarean section, Cost, Outcome, Public and Private hospital.

Introduction

Childbearing is a normal phenomenon but it is nevertheless associated with risk of life. Caesarean section is one of the operative procedure where by the fetuses after the end of 28th week are delivered through an incision on the abdominal and uterine walls.¹

It is a very expensive procedure in the perspective of the developing country like Bangladesh. There are two aspects of cost of caesarean section that are direct and indirect costs. Direct cost includes all cost directly involved in caesarean section. This kind of cost directly affects the treatment facilities.

This has a core role in treatment. Direct cost

includes: Bed rent, Food cost, Operation cost, Conveyance, Hospital charges, Doctors fee, etc. The cost of specialist is much more in private hospital than govt. hospital, which was 41% in private and 3% in govt. hospital.² Direct cost per operation is about double in private hospital because the specialist do the operation in private hospital on contractual basis.

Indirect Cost is not directly included in health service. But indirect costs have an import role in patient's life. It includes: Tips, Loss in regular income.³

In Bangladesh the current level of maternal mortal-

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ity rate is 1.94 per 1000 live birth, which is greater than the level of developed countries.⁴ The major cause of death is due to complications in pregnancy period such as, hemorrhage, abortion, eclampsia, puerperal sepsis and obstructed labor. If women do not die they suffer from various types of short and long term illnesses. Not only mother but the baby may not reach their first birth day. Due to these post partum complications, women not only suffer physically but in many cases they suffer mentally and socially. A vast majority of maternal death could be prevented if women had access to and used skilled and cost-effective obstetric care during child birth. To avoid complications of mother and fetus, a cesarean section is often carried out which is the most common hospital surgical procedure. To avoid pain of delivery, clients also prefer the procedure because good and strong analgesics are used during caesarean section. Beside these, caesarean section allows the women to keep the anatomy and physiology of the reproductive tract and perineum.⁵

However the trend of Caesarean section is increasing day by day. In the United States the Caesarean rate has risen 48% since 1996, reaching a level of 31.8% in 2007. China has been cited as having the highest rates of C-sections in the world at 46% as of 2008.² In Bangladesh, caesarean section rate was between 4.1% and 8.4% (average 6.4%).⁶ High proportion of women in the country do not receive essential obstetrics service even in life threatening situation because each year 4 million women become pregnant and 600000 develop complications. Only 8% of total births take place in medical facilities and only 2.23% undergo caesarean section.³ Considering these realities, this study was designed to compare the costs and outcome of caesarean section between public and private hospitals. The study findings will contribute to provide caesarean section service as a cost-effective surgical intervention for the pregnant women throughout the country considering their ability to pay and quality outcome.

Materials & Methods:

All the respondents who were admitted in the department of Obstetrics and Gynecology of DMCH and HFRCH and had done caesarean section were considered as study population. Considering the resource constraints, convenient type of non-probability sampling technique was used for selection and inclusion of the respondents. Before data collection, informed written consent of each respondent and permission of the administrative authority respective hospital were obtained. Data were collected by face-to-face interview and reviewing medical documents with the help of a semi-structured questionnaire and checklist respectively. Total 130 respondent (80 from DMCH and 50 from HFRCH) were included in the study. Quality control of data was performed both in the field and during data processing and analysis. The collected data was analyzed with the help of statistical package for social science (SPSS, Version 18.0). Both descriptive and inferential statistics were done during data analysis. Descriptive statistics included frequency, mean, proportion, SD, variance etc. while inferential statistics included 't' test and chi square test to find out statistical significance

Ethical Consideration:

Prior to commencement of the study, the research protocol was approved by the ethical committee and the clearance was taken from ethical committee of NIPSOM, Dhaka, Bangladesh.

Results:

The mean age of respondents (pregnant women) in DMCH was 26.10 (± 3.727) years while it was 25.69 (± 3.986) years in the respondents of HFRCH. Most of them were Muslim 119(91.5%) by religion and majority i.e. 100(77.5%) were housewives by occupation. By education, majority i.e. 33(41.3%) of DMCH had secondary level while majority i.e. 22(44%) of HFRCH were graduates. Average monthly income of respondents of DMCH was Tk.14675.00 (± 5784.692) and that of the respondents of HFRCH was TK.35300.00 (± 9127.778) table -1.

Table -1: Demographic characteristics of the respondent (n=130)

Characteristics	Hospital		Total
	DMCH	HFRCH	
Mean (\pm SD) age	26.10(\pm 3.72)	25.09(\pm 3.98)	
Religion			
• Muslim	70(87.5%)	49(98%)	119(91.5%)
• Christian	06(7.5%)	1(2%)	7(5.4%)
• Hindu	04(05%)	00(00)	04(3.1)
Occupation			
• House wife	70(87.5%)	31(62%)	100(77.5%)
• Service	10(12.5%)	19(38%)	29(22.5%)
Education			
• Illiterate	03(3.8%)	01(02%)	04(3.08)
• Primary	11(13.8%)	02(04%)	13(10.0)
• Secondary	33(41.3%)	04(08%)	37(28.46)
• SSC	24(30%)	12(24%)	36(27.69)
• HSC	06(7.5%)	06(12%)	12(09.23)
• Graduate	02(2.5%)	22(44%)	24(18.46)
• Post Graduate	01(1.3%)	03(06%)	04(03.08)
Monthly Income Tk			
• Mean (\pm SD)	14675(\pm 5784.69)	35300(\pm 9127.77)	

In DMCH majority i.e. 36 (45%) had their total direct cost in between TK. (1001-5000) is followed by 6 (7.5%) respondents required less than TK. 1000 . On the other hand in HFRCH. 40 (80%) respondents required TK. (30,001-45000) It is shown in table -2

Table -2: Distribution of the patients by total direct Cost

Direct cost (Tk.)	Types of Hospital		Total
	DMCH	HFRCH	
	f%	f%	f%
< 1000	6 (7.5)	0 (.0)	6 (4.61)
1001-5000	36 (45)	0 (.0)	36 (27.69)
5001-15000	36 (45)	1 (2)	37 (28.5)
15001-30000	2 (2.5)	9(18)	11 (8.46)
30001-45000	0 (.0)	40 (80)	40 (30.8)
Total	80 (100)	50 (100)	130 (100)
Mean	5222.38 (\pm4662.806)	30133.80 (\pm11872.439)	

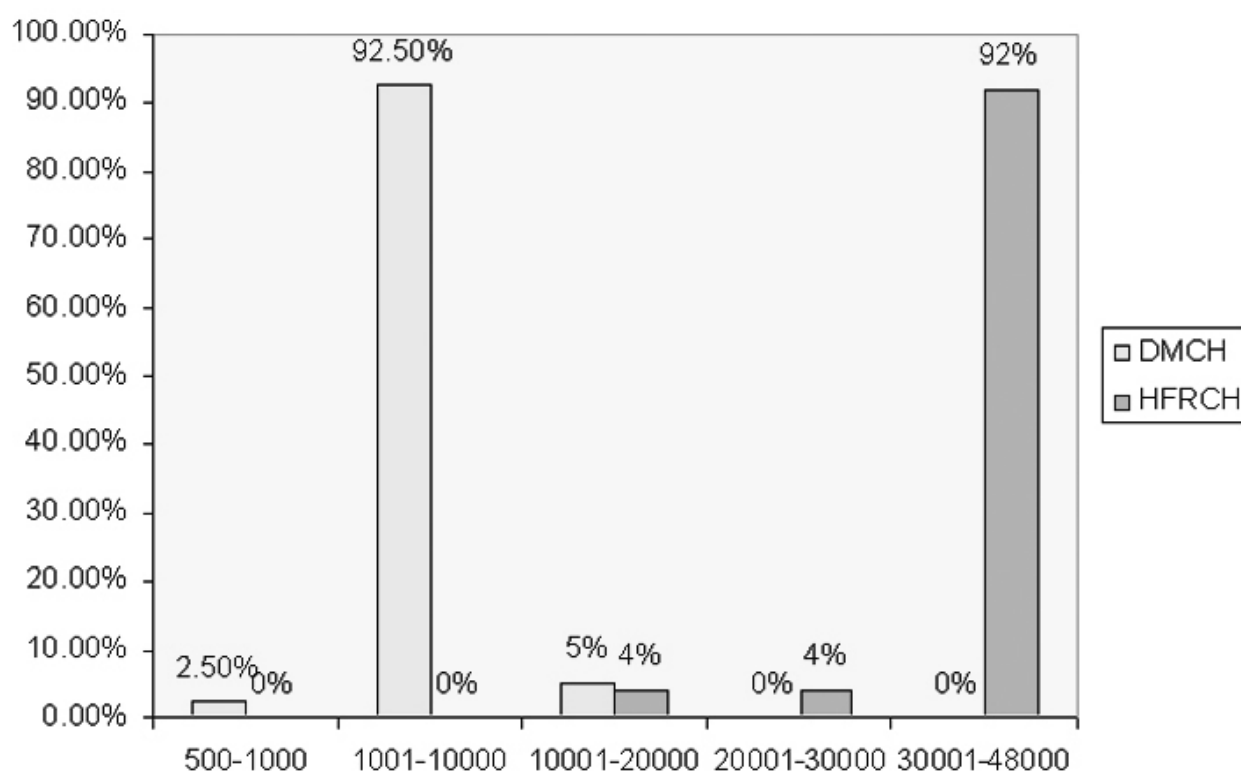
In DMCH majority i.e. 35 (46.1%) of respondents had their total indirect cost between TK. (2001-4000) followed by 22 (28.9%) paid between TK. (1001-2000). On the other hand in HFRCH majority i.e. 67 (54.0%) respondents had their total cost between TK. (2001-4000) followed by 22 (17.7%) paid between TK. (1001-2000), 19 (15.3%) between TK. (500-1000) and 16 (12.9%) between TK. (4001-6000). It is shown in table-3.

Table-3: Distribution of patients according to total indirect cost

Indirect Cost (Tk.)	Types Of Hospital		Total
	DMCH	HFRCH	
	f (%)	f (%)	f(%)
500-1000	17 (22.4)	2 (4.2)	19 (15.3)
1001-2000	22 (28.9)	0 (0)	22 (17.7)
2001-4000	35 (46.1)	32 (66.7)	67 (54)
4001-6000	2 (2.6)	14 (29.2)	16 (12.9)
Total	76 (100)	48 (100)	124 (100)
Mean	2045.72(±1042.126)	3946.94 (±1097.746)	

In DMCH majority i.e. 74 (92.5%) of respondents had their total cost between TK. (1001-10000) followed by 4 (5%) paid between TK. (10001-20000), 2 (2.5%) between TK. (500-1000). On the other hand in HFRCH majority i.e. 46 (92.0%) of patients had their total cost between TK. (30001-48000) followed by 2 (4.0%) paid between TK. (10001-20000), 2 (4.0%) between TK. (20001-30000). It is shown in figure-1.

Figure-1: Distribution of Total Cost of caesarean section



Out of 28 healthy mother majority i.e. 5 (83.33%) were in the group of total cost TK. (10001-20000), 23 (31.9%) were in the TK. (1001-10000). Indicated in DMCH majority of mother who incurred higher cost were healthy. On the contrary, in HFRCH out of 28 unhealthy mother, majority i.e. 27 (57.4%) were in the group of total cost TK. (30001-48000), 1 (33.3%) were in the TK. (20001-30000), while among 22 healthy mother majority i.e. 2 (66.6%) were in the group of TK. (200001-30000) and 20 (42.5%) were in the group of TK. (30001-48000). indicated in HFRCH majority of mother who incurred more higher cost were not healthy. We tried to figure out this relationship in a χ^2 test. Here for DMCH $\chi^2=7.90$ where $p<0.5$. Similar result is in HFRCH where $\chi^2=2.71$ and $p<0.5$ which was found statistically significant. It is shown in table-4

Table-4: Relationship between cost of caesarean section and out come to mother by hospital
Hospital Total cost

Hospital	Total cost (Tk.)	Out come to mother		Total f%	χ^2	χ^2 test	
		Unhealthy f%	Healthy f%			df	p-value
DMCH	500-1000	2 (100.0)	0(.0)	2 (100.0)	7.9	3	0.048
	1001-10000	49 (68.1)	23 (31.9)	72(100.0)			
	10001-20000	1(16.66)	5 (83.33)	6 (100.0)			
Total		52 (65.0)	28 (35.0)	80(100.0)			
HFRCH	20001-30000	1(33.3)	2(66.6)	3(100.0)	2.71	2	0.0258
	30001-48000	27(57.4)	20(42.5)	47(100.0)			
Total		28(56.0)	22(44.0)	50(100.0)			

Discussion

The cross sectional comparative study was aimed to assess the cost of caesarean section and outcome of mother and new born baby in a government and private hospital. In the past 30 years, the incidence of caesarean section has increased considerable. A study on 454,668 births in Ontario (a popular province of Canada) in the year 1979-1982 found that caesarean birth rates increased from 16.5 per hundred deliveries in 1979 to 18.7 in 1982.⁶ The World Health Organization recommends the rate of Caesarean sections between 10% and 15% of all births in developed countries. However, in 2004, the Caesarean rate was about 20% in the United Kingdom, while the Canadian rate was 22.5% in 2001-2002.⁵ A 2008 report found that fully one-third of babies born in Massachusetts in 2006 were delivered by Caesarean section. In Brazil's public health network, the rate reaches 35%, while in private hospitals the rate approaches 80%. China has been cited as having the highest rates of C-sections in the world at 46% as of 2008.⁵

The mean age of the caesarean patients in DMCH was 25.69 (± 3.986) while mean age of patients in HFRCH was 26.10 (± 3.727). In the both hospitals majority i.e. 86(66.2%) of the patients were in the age group of (25-30) years.

It was seen that average monthly income of the caesarean section patients in DMCH was TK. 14675.00 (± 5784.692) while patients in HFRCH was TK. 35300.00 (± 9127.778). in DMCH, majority i.e. 49 (61.25%) were from the income group of TK. (10001-20000) On the contrary, in HFRCH, majority i.e. 31 (62%) highest income group TK. (30001-50000). This findings are similar with the study findings conducted by Ministry of Health & Family Welfare where 80% patients

in private hospital were high income (TK. >10000 per month) whereas 40% patients in government hospital were low income group (TK 5000 per month) and 21% were high income group.⁵ Most of the patients i.e. 123 (94.6%) utilized antenatal care during their pregnancy period. It is similar with the study conducted by Dr. shaheen Akther. Where she got 60.3% antenatal care in public and 95.2% in private hospital.⁶ The fact behind it was consciousness about health status of mother during pregnancy.

Among all the patients in DMCH most of them like to chose the government hospital for available doctor 28 (35%), better treatment facilities 28 (35%) and low cost of treatment 19 (23.75%). On the other hand patients chose private hospital i.e. HFRCH for available doctors 21 (42%), better treatment facilities 18 (36%) and emergency health care facilities 10 (7.6%).

The cost is categorized into two groups, direct and indirect cost. Direct cost is divided into drug cost, bed charge, investigation cost travel cost etc. and indirect cost includes loss of income, tips etc.

The study incurred that the total direct cost, total indirect cost and total cost in DMCH was average TK. 5222.38 (± 4662.806), 2045.72 (1042.126), and 7344.23 (± 5081.666) and in HFRCH it was TK. 30133.80 (± 11872.439), 3946.94 (± 1097.746), 36852.90 (± 8396.378) respectively clearly showed that all these cost were much higher in HFRCH than DMCH . Total direct cost [$t(128) = 0.001, p < .05$], total indirect cost [$t(122) = 0.001, p < .05$], and total cost [$t(128) = 0.001, p < .05$] which proves that the result is statistically significant. No statistical significant difference could be found between outcome of new born baby with cost of caesarean section.

In DMCH most of the mothers 5 (83.33%) were healthy when their total cost of caesarean section was TK. (10001-20000). Similarly 23 (31.9%) mothers were healthy when the cost of caesarean section was TK. (1001-10000). It indicated that patient who incurred higher cost, were healthy. On the contrary, in HFRCH majority i.e. 2 (66.6%) mothers were healthy when their total cost of caesarean section was TK. (200001-30000) and 20 (42.5%) mothers were healthy when their cost was

TK. (30001-48000). It was found that mothers, who incurred higher cost of caesarean section, were not healthy. The study showed that in DMCH the outcome to mother was better. Which was statistically significant [$\chi^2(7.9) = 0.048, p < .05$]. Finally the study revealed cost influence the outcome of mother. In DMCH the patients who incurred higher cost for caesarean section were healthier.

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