Analysis of Out-of-Pocket Expenditure in Utilization of Maternity Care Services in Urban Slums of Rajkot City, Gujarat

Sandeep Sharma1, Pramod B. Verma2, Ankit P. Viramgami3, Mayur C. Vala4, Kaushik K. Lodhiya5
1Epidemiology, ICMR-National Jalma Institute of Leprosy and Other Mycobacterial Diseases, Agra, Uttar Pradesh, 2Community Medicine Department, GMERS Medical College, Himmatnagar, 3Clinical Epidemiology, ICMR - National Institute of Occupational Health, Ahmedabad, 4Community Medicine Department, GMERS Medical College, Junagadh, Gujarat, India

Abstract

**Background:** India contributes 20% global maternal deaths every year. An important reason of such maternal mortality is due to cost of maternity services which makes it inaccessible to the poor. Knowledge of maternity-related expense and its determinants is useful for health authorities to focus public resources and target financial assistance or exemption guidelines toward the “neediest.” **Methodology:** It was a cross-sectional descriptive study conducted amongst 180 women living in urban slums and who had delivered a baby within 1 year of the interview date. **Results:** The mean cost of delivery was around Rs. 8880. The average delivery cost of private institutions was significantly higher than that of government hospitals or home delivery. Around 75% of women delivered in private institution had health expenditure of more than 10% of total annual family income – catastrophic expenditure. **Conclusion:** In spite of significantly higher maternity care-related costs in private institutes than government hospitals, majority of mothers had utilized services from private clinics and had suffered catastrophic expenditures during utilization of maternity care services. This study highlights the need for birth preparedness counseling as well as effective implementation of maternity benefit schemes to prevent families from pushing downward to the poverty line.

**Keywords:** Catastrophic health events, cost, maternity care, out of pocket expenditure, urban slums

**INTRODUCTION**

India contributes to 20% (78,000) of the global maternal deaths (358,000) occurring every year.

The lifetime risk of maternal mortality (MM) is about one in 24 in the poorest part of the world as compared to one in twelve thousand in Japan. High MM Ratio (MMR) of 212/100,000 live births in India may be attributed to home-based deliveries in majority (52.3%) with only 5.7% of them were attended by skilled health personnel. In Gujarat, over 42% of the women had delivered at home with skilled attendance at the birth of only 5%. MMR of Gujarat being 148/100,000 live births, Gujarat still lags behind millennium development goals target of achieving MMR of <100/100,000 by 2015.

Under-utilization of maternal health-care services is an important factor of MM with cost as an important factor. Despite accessible maternal care services in urban areas, the maternal child health indicators of urban slums are poorer than those of overall urban areas. As per the 12th 5 years plan, total expenditure on health including public, private and household out-of-pocket was about 4.1% of total gross domestic. However, the public expenditure on health was only 27% of the total expenditure which is very low by any standard. Not only the direct cost of the services (registration, medicines, consumables, bed, laboratory investigations, anesthesia and surgery charges if any, food, gifts to attendants, charges due to lack of availability of drugs and supplies in government

**Address for correspondence:** Dr. Sandeep Sharma, National Jalma Institute of Leprosy and Other Mycobacterial Diseases, MRHRU Ghatampur (ICMR), Jahanabad Road, Ghatampur, Kanpur Nagar, 209 206, Uttar Pradesh, India. E-mail: drsandeepsharma82@yahoo.in

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facilities, transportation cost, and dai charges in case of home delivery), the indirect cost (cost of the mother and caretakers in terms of loss of daily wages) also plays an important role in the utilization of the services. This cost impacts most at the margin of the poverty line and push them further below the poverty line (BPL) increasing the socioeconomic and psychological pressure on the family.

The World Health Statistics 2012 signify that nearly 60% of total health expenditure of India was paid by the common man from his own pocket in 2009. The cost of services in the private sector makes it unaffordable for the poor and the underprivileged.

Knowledge of maternity-related expense and its determinants is useful for health authorities to focus public resources and target financial assistance or exemption guidelines toward the “neediest.”[9] As limited data are available from Gujarat state, the study was conducted for exploring various costs incurred during Utilization of Maternity Care Services in Urban Slums of Rajkot City.

**Methodology**

This was a cross-sectional descriptive study conducted in slums of Rajkot Corporation from March 2011 to March 2012. The study participants were women who had delivered a baby within 1 year of the interview date along with the head of their families. The sample size was calculated using the formula 4pq/P, where P = 69.75% (the prevalence of full antenatal care [ANC] [three] coverage in Rajkot corporation).[10] L is the allowable error which is taken as 10% of P, i.e., 6.975. The calculated sample size was 174, but 190 families were interviewed considering 10% nonresponse rate. We were able to obtain complete information from 180 families as from remaining ten families, some of the required information was missing, and so their interview records were discarded.

**Sampling method**

The samples were collected using multistage sampling method: one slum area having a maximum population from each of the 23 wards of Rajkot Corporation was selected. Each of the selected slum area was again divided into four quadrants and two families wherein the mother had delivered in the past 1 year were randomly selected from each of the quadrants. Hence, the final sample size was 184. This was six short of our calculated sample size of 190. Six slums from previously selected 23 slums were again selected randomly, and an extra family (total 6) was selected to complete the sample size.

**Methods of data collection**

Each participant was clearly explained the purpose of the study, and their consent was taken. They were interviewed using a pretested semi-structured questionnaire from house to house visits and information on socioeconomic status of family and maternity care services related expenses were collected. The head of the family was interviewed to cross-check the information. Available medical records and bills were also verified.

Ethical clearance was obtained from the Institutional Ethical committee. The data were entered and analyzed using the Microsoft office excel 2010 (Redmond, Washington USA).

**Results**

Seventeen (9.4%) of the mothers were married before reaching the age of 18. Using Kuppuswamy socioeconomic Classification modified for 2011, majority 159 (88.32%) mothers were from lower class and the remaining 21 mothers belonged to middle class.[11] In the present study, 45% of the mothers were BPL card holder. In the educational status of mothers, majority (51.66%) have a primary education with only 3% mothers were found to have graduate degree. The result showed 25.55% illiterate mothers among our study sample. We found 91.12% of mothers as homemaker, 4.44% as laborers and service field each.

There was no association between socioeconomic class of the mothers as well as hospital stay after delivery to the place of

| Table 1: Association of the place of delivery in relation to socioeconomic class, mode of delivery, and hospital stay after delivery of mothers |
|---------------------------------------------|
| **Place of delivery** | **Significance at 5% level** |
| **Government hospital** | **Private hospital** | **Home** | **Total** | **P** |
| **Socioeconomic class of the mother (Kuppuswamy classification)** | | | | |
| Middle class | 7 (11.86) | 13 (12.5) | 1 (5.88) | 21 (11.66) | 0.73 |
| Lower class | 52 (88.14) | 91 (87.5) | 16 (94.12) | 159 (88.34) | |
| **Mode of delivery** | | | | |
| Vaginal/assisted | 51 (86.44) | 73 (70.19) | 17 (100.00) | 141 (78.33) | 0.02* |
| Surgical | 8 (13.56) | 31 (29.81) | 0 (0.00) | 39 (21.67) | |
| **Hospital stay after delivery** | | | | |
| <48 h | 40 (67.80) | 75 (72.12) | NA | 115 (70.55) | 0.56* |
| 48 h or more | 19 (32.20) | 29 (27.88) | NA | 48 (29.45) | |
| Total | 59 | 104 | NA | 163* |

*p2* between deliveries in government and private institutes; †17-Home deliveries. NA: Not applicable
delivery while the mode of delivery was highly significantly associated to the place of delivery [Table 1].

One of the most important functions of ANC is to counsel the mother and caretaker regarding birth preparedness activities such as financial savings, transport, and choice of institution for delivery to avoid any unnecessary delays in seeking emergency obstetric care. In the present study, over half of the mothers (50.56%) did not had any kind of birth preparedness.

Using independent t-test for the out-of-pocket expenditure incurred during ANC Visits at government and private health set up, it was found that there was highly significant difference between governments and private expenditures for registration, Ultrasonography (USG), laboratory tests, medicines ($P < 0.0001$) and transportation ($P = 0.001$). The average cost of utilization of antenatal services in private institutions was nearly three times that in government institutes [Table 2].

Table 3 shows that the mean cost of delivery was around Rs 8880. The average delivery cost of private institutions was two to three times higher than that of government hospitals or home delivery. This difference was statistically highly significant for direct delivery cost and total cost. Any financial assistance received by mothers from various maternity benefit schemes was deducted from the direct cost incurred to the mother for utilization of maternity services. The mean expense for a normal vaginal delivery ($n=141$) was Rs. 2855, being much higher in a private hospital (Rs 3921) compared to a government hospital (Rs 1509) or a delivery in the home (Rs 1888).

On comparing out-of-pocket health expenditure incurred as percentage of total annual income of family ($n = 180$) for mothers according to place of delivery, it was found that around 75% of those women who had delivered in private institution had health expenditure of more than 10% of total annual family income, while the same was around 58% and 34% for home deliveries and deliveries in government institutions, respectively. Health expenses are often termed “catastrophic” if they consume more than 10% of Family income. In total, around 59% deliveries among all sites were catastrophic health event in terms of out-of-pocket health expenditure. This difference was statistically significant.

**Discussion**

Early marriages and early childbirth are a serious risk factor to the health of mothers. As per NFHS4, the statistics of girls being married by the age of 18 in urban areas of India is higher by a few points than that in the present study. This clearly shows poor enforcement of child marriage act.

As compared to similar studies conducted earlier the literacy level of the participants in the present study was much higher leading to improved health seeking behavior by creating health awareness, greater knowledge of available health services and empowering them in making health-related decisions. These encouraging results are obtained due to government efforts in the form of Sarva Siksha Abhiyan, which provide free and compulsory education up to 14 years of age and also various schemes for increasing female literacy status.

We could not find any significant association between the socioeconomic status of the mother and place of delivery. A number of studies have reported a positive association between economic status and use of medical settings for delivery whereas others have not found such an association.

Institutional delivery is the single most important factor to reduce the MMR. In the present study, institutional deliveries were more than 90% which is a very encouraging finding as compared to the findings of NFHS-4 and comparable to the findings of earlier study among the institutional deliveries, 58% were in private set–up. The reasons could be easy availability and accessibility of the private hospitals in urban areas, the effect of Chiranjeevi Yojana empowering BPL mothers to deliver in private institutions and lack of trust in Government facilities.

The lower segment cesarean section rate in our study was 21.6% which was higher than what is recommended by the World Health Organization that cesarean section rates should be in the range of 5%–15% of all deliveries to minimize maternal and neonatal mortality and morbidity (AMDD Working Group on Indicators 2004). In the present study as compared to government hospitals, private hospitals

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**Table 2: Distribution of out-of-pocket expenditure (Rs.) incurred during antenatal care visits**

|                        | Government setup ($N=92$) | Private setup ($N=81$) |
|------------------------|---------------------------|------------------------|
| **$n$ (%)**             | **$n$ (%)**                |
| Registration (inclusive of loss of working hours) | 93 (8.7) | 742 (23.17) |
| USG                    | 285 (26.69) | 573 (17.89) |
| Laboratory investigations | 103 (9.64) | 430 (13.42) |
| Drugs                  | 388 (36.33) | 1113 (34.74) |
| Transport              | 199 (18.63) | 345 (10.77) |
| **Total**              | 1068 (100) | 3203 (100) |

**Table 3: Comparison of cost of delivery (Rs.) to place of delivery**

| Place of delivery | Home  | Government | Private | Mean cost | ANOVA ($F, P$) |
|-------------------|-------|------------|---------|-----------|----------------|
| Direct cost       | 3460  | 4114       | 8380    | 6517      | 12.97, <0.001  |
| Percentage        | 92.73 | 71.79      | 72.83   | 73.38     |                |
| Indirect cost     | 270   | 1,625      | 3,125   | 2364      | 1.42, 0.243    |
| Percentage        | 7.23  | 28.31      | 27.16   | 26.62     |                |
| **Total cost**    | 3732  | 5738       | 11,506  | 8880      | 9.01, <0.001   |
| Percentage        | 100   | 100        | 100     | 100       |                |

ANOVA: Analysis of variance
had 3.87 times higher rate of surgical delivery. The observed difference was statistically significant at 5% level. The reasons could be complicated cases being referred more to the private hospital, more money earned by private hospitals by doing LSCS as compared to vaginal/assisted deliveries, less risk-taking behavior of private institutes.

In spite of these clear-cut guidelines to keep the mother under observation for at least 48 hours after delivery; in the present study, 67.80% of mothers delivered in government hospitals and 72.12% in private hospitals, were discharged before 48 hours. Combined with lack of postnatal visits, this could seriously threaten the life of the mother during the postnatal period [Table 1].

In the present study, 40% of the families had to borrow money to meet the delivery-related expenses, and 25% of them had borrowed money on interest indicating lack of birth preparedness or poverty. Vyas et al., 2011[18] found that 21% of families had to take debt to meet the expenses of delivery. Earlier studies in urban Bangladesh and Burkina Faso had very comparable findings of over 50% of the families not having sufficient money to meet the delivery-related expense and had to consequently borrow money.[19,20]

The mean cost of vaginal delivery in the present study was Rs. 2855 being high in private set up (Rs. 3921) than in government (Rs. 1509) or home delivery (Rs. 1888). Lower expenditure in government set up as compared to home delivery could be explained by the fact that mothers delivering in government institutes were more likely to receive financial benefits under maternity benefit schemes which would ultimately decrease the direct expenditure incurred to the mother. In a similar study done by Gupta et al.,[16] 2009 in south Delhi, it was found that the mean expense for a normal vaginal delivery (n = 182) was Rs. 15866, being much higher in a private hospital (Rs. 44,298) compared to a government hospital (Rs. 2615) or a delivery in the home (Rs.2367). The difference in findings is due to the difference in settings under which the studies were conducted as well as the implementation of maternity benefit schemes.

Health expenses are often termed “catastrophic” if they consume above a threshold level of income. Some authors have considered costs that consume more than 10% of family income to be catastrophic.[21-23]

Over 58% of the mothers in our study had suffered from catastrophic event, majority of whom 74.07% were delivered in private institution followed by those delivered at home (58.82%) and government institution (33.9%). Higher rate of catastrophic health events in those delivered at home could be explained by the fact that they had a lower annual family income as compared to those delivered in government institutions. Also to be noted is that those women delivering in institutions were more likely to be benefitted from maternity benefit schemes and were more likely to be aware of birth preparedness activities.

The result shows that families with private hospitals health payments spent 20.00% of their annual income on health payments, while families with government hospital payments spent 7.82% of their annual income on health payments. In case of noninstitutional delivery, it was 9.32%.

Bonu et al.[24] had comparable findings with 79% of those having catastrophic events had institutional deliveries while 21% of they had noninstitutional deliveries.

**Conclusion**

In spite of government-sponsored maternity benefit schemes, still, there were a few home deliveries the reasons for which needs to be explored and relevant actions should be taken.

Maternity care related costs are significantly higher in private institutes than government hospitals. The possible reasons need to be found and corrected for improving the availability and quality of services to improve deliveries in government setups. Counseling regarding birth preparedness needs to be addressed to increase the savings for delivery-related expenses thereby preparing the families for any unforeseen emergencies requiring them to borrow money and reduce the direct cost.

**Limitation of the study**

As the expenditure, the calculation was based on recall method; there were the chances of recall bias.

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**Conflicts of interest**

There are no conflicts of interest.

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