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Maternal Health Care Expenditure Pattern Among Rural Women in Chitradurga District of Karnataka State

KEYWORDS: Maternal Health Care Expenditure

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ABSTRACT *Women have an option to choose the 'MHC service providers' which will suit their requirements. Out of Packet Expenditure on MHC services is one of the most important determinants of choice of MHC service providers. This study is an attempt to document the MHC expenditure incurred by women to different MHC service providers. The study reveals the fact that Economic status of the respondents found to be influencing the choice MHC service providers. The percentage of respondents receiving MHC services from the private hospital is highest among the rich whereas from the public hospital it is highest among poor. MHC expenditure is significantly more in private hospital compared to public hospitals. The total expenditure on normal deliveries in Private Hospital was about four times more than the expenditure on delivery in public health institutions like PHCs, CHCs and DH. Coefficient of variation in most of the MHC expenditure was more in public hospitals compared to the private hospitals.*

1. Background of the Study

Maternal health is the health of women during pregnancy, childbirth and the postpartum period. 'Antenatal Care (ANC)', health care during the pregnancy,intended to the early detection of potential complications of pregnancy, if any, to prevent them, if possible, and to direct the women to the appropriate specialist medical services. Clean and safe delivery service is a most important component of maternal and child health care. Postnatal care (PNC) begins after the delivery of the baby and ends when the mother's body has nearly returned to its pre-pregnant state. It involves the mothers' progression through many changes which needs experts' observation and advice on nutrition, breastfeeding, family planning and so on.Maternal Health Care (MHC) not only helps in the 'Safe and HealthyMotherhood' but also helps in the 'economic well-being' of the people.

It has been well documented that safe motherhood initiatives are cost-effective and they ensure high social and economic returns.Expenditureon MHC not only improves the health of women but also improve the health of the future generation. Hence, MHC has emerged as an important public health goal at all the levels.Improvement of maternal health is one of the eight UN Millennium Development Goals (MDGs). All the 189 United Nations member countries, including India,at the time of preparation of MDGs, and about 23 international organizations, committed to make efforts for the improvement of maternal health.Thus, Governments at different levels have taken several initiatives to provide MHC services in India. Public sector health institutions like Primary Health Centers (PHCs), Community Health Centers (CHC), and District Hospitals (DH) are providing ANC, PNC as well as delivery services. In addition to the public sector health institutions a large number of private clinics and hospitals are also providing these services. At present, women have an opportunity to choose the MHC service providers which will meet their requirement.

MHC service facilities, availability of skilled professionals, intensity of health care and price of MHC services are different across the different MHC service providers. In principle, public sector health institutions like PHC, CHC and DHs are providing most of the MHC services without any fee. Government of India has made provision for these services through huge budgetary allocation. Private sector health institutions have to recover the MHC service cost from the users of these services. There are women who have not at all utilised the ANC services and delivered at home without the assistance of skilled professionals and those utilising these services preferring one MHC service provider over the others. Consumers' choice of 'MHC service provider' depends on many socioeconomic factors. Expenditure which need to be borne by women and their family for MHC services popularly known as Out-of Packet expense is one of the most important factor influencing the choice of 'MHC service providers'. In this backdrop, this study out of packet expenditure penditure incurred for ANC, delivery care services and PNC.

2. Research Gap

Progress in improving maternal health critically depends on the availability, affordability and effective use of reproductive health services(Srinivasan et.al, 2007).Despite the fact that maternal health care services are provided free-of-charge in public health facilities in India nearly 50 percent of women who have delivered at home in Biharstate have responded that the financial constraint is the reason for not opting for institutional delivery care (NFHS-3). This is because informal payments for antenatal, delivery and postnatal services are widespread in the Indian public health sector mainly as a result of service bias, social exclusion and impoverishment (Pathak et.al, 2010; Sharma, 2005). The study conducted by Leone et.al. (2013) has also demonstrated clear evidence that many Indian families still pay above the minimum threshold for MHC services, especially those living in the poorest strata. Perhaps the high out of packet expenses associated with delivery care explains the lack of progress in the uptake of institutional births in India.In recent years several schemes like Janani Suraksha Yojana(JSY), PrasootiAraike, Madilu schemeshave been implemented by the Government's Health Department. ASHA (Accredited Social Health Activist) programme has emerged as the largest community health worker programme in the world, and is considered a critical contribu-

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tor to enabling people's participation in health. These initiatives are expected to bring change in the utilisation of MHC services and their expenditure pattern. This study is an attempt to empirically analyse thisparticular aspect.

3. Research Issue

This study is an empirical investigation to know; what is the extent of difference in out of packet expenditure on MHC services between the different health institutions? What is the extent of difference in out of packet expenditure on MHC services between the different economic groups?These questions have been investigated in rural areas of Chitradurga district of Karnataka State. It is one of the backward districts of Karnataka state. The district has six taluks out of which four are more backward and one is most backward taluk (High Powered Committee for Redressal of regional Imbalances). Scheduled Caste and Scheduled Tribe population together account for 39.7 percent of total population. Majority of district population (80.2%) live in rural areas.

4. Methodology

This study is based on the primary data collected from women who have had either live birth or still birth during 2013. These respondents have been selected by using multistage random sampling procedure. In the first stage five villages have been randomly selected from list of villages of each taluks. List of women who have had either stillbirth or live birth during 1st January 2013 to 31st December 2013 and available in the village during the survey period has been prepared for each of the selected villages. Such lists have been prepared in consultation with anganwadi workers and ASHA of the respective villages. Eight women have been randomly selected from each village. Thus totally 240 respondents have been randomly selected.Primary data on the relevant variables have been collected from the respondents by using well structured, pretested schedule prepared for this purpose. Survey work has been carried out during March to May months of 2014. The Data collected from the respondents have been analysed by using appropriate statistical techniques and results have been presented in the tabular form. Respondents choice of 'MHC service providers' and 'MHC expenditure' pattern has been analysed in relation to the economic status of the respondents.

Income is one of the most important determinants of MHC expenditure. But, it is very difficult to collect data on income from the people working in unorganized sectors. Short term fluctuations in income appear to have weak association with MHC expenditure. Wealth index indicates long run economic status of the people will have strong association with MHC expenditure. Therefore, recent studies prefer wealth index instead of income. Steps followed in construction of Wealth Index are as follows; in the first step wealth variables which indicate the standard of living have been selected. Wealth variables like size of landholding, area under horticulture crop, wells/tube wells, bullock pairs, nature of house, sanitation facilities, drinking water facilities, fuel used for cooking, ownership vehicle, refrigerator have been used for the construction of wealth Index. In the second step, factor loading have been computed by using principle component analysis. In the third step Z scores were computed to standardize the indicator variable. Household Wealth index values were computed by using indicator values and factor loadings. In the last step, households were arranged in the descending order of the Household index values to classify the household into different categories. The top 1/3rd were categorise into rich, next 1/3rd families into middle class and bottom 1/3rd families into poor families. This is a relative concept and relevant only for this particular study.

5. Results

Maternal Health Care comprises of ANC, delivery service and PNC. Primary Health Centers (PHCs), District Hospital (DH) and Private Hospitals/Clinics (PH) are providing these MHC services in Chitradurga district of Karnataka state. 'Economic status of the respondents influences their choice of MHC service providers' is one of the hypothesis of this study. Based on the wealth index respondents' families were classified into different economic groups; poor, middle class and rich category.Respondents of different economic groups receiving the MHC services from different service providers are given in table-1. It reveals that maximum number of respondents received ANC from PHCs (100) followed by CHCs (75) and PH (54). The percentage of respondents receiving ANC from PHC decreases with the improvement in economic status.The percentage of the poor receiving ANC from PHC (60.0) is much more than the rich receiving ANC from the PHC (28.8). The percentage of respondents receiving ANC from private hospital is highest among the rich (32.5%) and lowest among the poor (12.5%). The percentage of respondents receiving ANC from PH increases with improvement in economic status.PHCs are nearest public health institutions for majority of rural women whereas DH is farthest.

The Chi-square value calculated to test the significance of association between the economic status of the respondents and choice of ANC service providers (21.746) found to be statistically significant at one percent probability level. Therefore, it could be inferred that the choice of ANC service providers depends on the economic status of the respondents' family. The maximum percent of respondents with poor economic status have chosen PHCs for ANC. The percentage of respondents receiving ANC services form the PH is highest among the respondents belonging to the rich group.

Table-1: Economic Status of the Respondents and Choice of MHC Service Provider

MHCS	Economic Status	MHC Service Provider					Chi-square Value
		PHC	CHC	DH	PH	Total	
ANC	Poor	48 (60.0)	21 (26.3)	1 (1.3)	10 (12.5)	80 (100)	21.746*
	Medium	29 (36.3)	27 (33.8)	6 (7.5)	18 (22.5)	80 (100)	
	Rich	23 (28.8)	27 (33.8)	4 (5.0)	26 (32.5)	80 (100)	
	Total	100 (41.7)	75 (31.3)	11 (4.6)	54 (22.5)	240 (100)	
Delivery	Poor	40 (53.3)	19 (25.3)	8 (10.7)	8 (10.7)	75 (100)	17.219*
	Medium	24 (31.6)	25 (32.9)	8 (10.5)	19 (25.0)	76 (100)	
	Rich	23 (28.8)	21 (26.3)	9 (11.3)	27 (33.8)	80 (100)	
	Total	87 (37.7)	65 (28.1)	25 (10.8)	54 (23.4)	231 (100)	

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PNC	Poor	29 (48.3)	16 (26.7)	7 (11.7)	8 (13.3)	60 (100)	16.156*
	Medium	15 (22.4)	24 (35.8)	8 (11.9)	20 (29.9)	67 (100)	
	Rich	16 (23.9)	18 (26.9)	9 (13.4)	24 (35.8)	67 (100)	
	Total	60 (30.9)	58 (29.9)	24 (12.4)	52 (26.8)	194 (100)	

Note: Figures in parenthesis indicate the percentage to respective row total

* indicate the significance at one percent probability level

Majority of the respondents reported the institutional delivery (96.25%). It is higher than institutional delivery reported by DLHS-4 (88.7). It indicates the recent improvement in the institutional delivery. Out of 240 deliveries 231 were reported to be taken place in different health institutions. The number of deliveries taken place in home was reported to be maximum among poor (5) followed by the respondents belonged to medium economic status Category (4). No home deliveries were reported among the rich. Maximum number of Institutional deliveries taken place in PHCs (87) followed by CHCs (65) and PH (54). The percentage of deliveries taken place in PHCs was found to be maximum among the poor (53.3) where as it is minimum among the rich (28.8). The number of deliveries in PH is maximum among the rich. The chi-square test revealed the significant association between economic status and place of delivery.All most all the respondents who have reported the institutional delivery underwent postnatal checkups during their stay in the hospital. A respondent is considered to be received the PNC only if she has consulted the skilled professional for PNC within six weeks from the date of delivery and it is excluding the PNC at the time of birth. Only 80.8 percent of respondents received the PNC. Majority of the respondents received the PNC from the 'MHC service provides' where they delivered. The selection of PNC service provider closely associated with the selection of health institution for delivery.

MHC expenditure comprises of expenditure on ANC, Delivery and PNC. MHC expenditure incurred by the respondents of different economic groups is given in table number 2. The expenditure details are given separately for normal and caesarean deliveries. Out of 240 deliveries 204 were normal deliveries and remaining 36 were caesarean deliveries. The number of caesarean deliveries found to be increasing with improvement in economic status. It might be because with the improvement in economic status 'preference for immediate caesarean delivery to the risky waiting for normal delivery' may increase. However, it needs further investigation with still higher sample size focusing on this particular issue.

The total MHC expenditure in caesarean deliveries is about 3 times more than the total MHC expenditure in normal deliveries in the respective economic group. Irrespective of the type of delivery the total MHC expenditure increases with the improvement in economic status. The total MHC expenditure for normal deliveries incurred by the respondents belonged to rich (₹6409.8) is significantly higher than the expenditure incurred by the respondents belonged to poor (₹3678.7) and middle class respondents (₹ 5302.2). These arithmetic mean values are statistically significant at one percent probability level. Similarly, the total MHC expenditure for caesarean deliveries incurred by the respondents belonged to rich (₹15523.5) is more than the expenditure incurred by the respondents belongs to poor (₹13734.4) and Middle class (₹14601.4). These values are not statistically significant.

Table-2: Details of Maternal Health Care Expenditure among different Economic Group

Variable of Expenditure		Economic Status of the Respondents			F Value
Poor		Middle Class	Rich		
Normal Delivery	Number of Respondents	72	69	63	
	Expenditure on ANC	1531.8 (41.6)	2019.0 (38.1)	2340.2 (36.5)	25.056*
	Expenditure on Delivery	1964.6 (53.5)	3019.9 (57.0)	3786.9 (59.1)	8.742*
	Expenditure on PNC	182.3 (5.0)	263.3 (5.0)	282.6 (5.0)	8.420*
	Total	3678.7 (100)	5302.2 (100)	6409.8 (100)	14.766*
Caesarean Deliveries	Number of Respondents	8	11	17	
	Expenditure on ANC	1968.8 (14.3)	2052.7 (14.1)	2776.8 (17.9)	3.735**
	Expenditure on Delivery	11412.5 (83.1)	12145.5 (83.2)	12358.8 (79.6)	0.070
	Expenditure on PNC	353.1 (2.6)	403.2 (2.8)	387.9 (2.5)	0.375
	Total	13734.4 (100)	14601.4 (100)	15523.5 (100)	0.212

Note: Figures in parenthesis are parentage to total MHC expenditure in respective strata

* and ** indicate significance at one and five percent respectively

Expenditure on delivery is a major component of MHC expenditure. It account for about 60 percent of total MHC expenditure in case of normal deliveries and about 80 percent in case of caesarean deliveries. Expenditure on ANC is the second largest component of MHC expenditure in both types of deliveries. Expenditure on PNC accounts for only about 5 percent of total MHC expenditure in case of normal deliveries and less than 5 percent in case of caesarean deliveries.The MHC expenditure for normal deliveries under all the three heads was highest among the rich followed by the respondents belong to the middle class and poor. The difference in these mean values is statistically significant at one percent probability level. Such inference could not be drawn with respect to the caesarian deliveries because of inadequate sample size.

Antenatal Care (ANC) involves health care services like supervision by medical professionals, laboratory tests, ultra sound scanning, prescription of various medicines and so on. Hence, details of ANC expenditure are given under the four heading (Table-3).The arithmetic mean expenditures under these heading are given separately for different ANC service providers. Coefficients of Variation (CV) have also been computed to know the extent of variation in these mean values. In order to test the significance of difference in mean values between different service provid-

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ers F values have been computed and given in the table.

Table-3: Details of Expenditure on Antenatal Care

Variable of Expenditure	Expenditure on ANC in different Hospitals				F Value
	PHC	CHC	DH	PH	
Doctor/Hospital Fee	209.5 (51.4)	170.3 (82.53)	138.6 (98.56)	496.3 (31.18)	78.063*
Lab Fee	324.0 (40.9)	514.0 (11.9)	536.4 (15.1)	650.9 (5.1)	150.490*
Medicine	621.1 (35.8)	901.9 (25.1)	995.5 (27.6)	1221.8 (22.4)	76.976*
Miscellaneous	207.2 (59.7)	493.3 (45.6)	652.3 (62.7)	684.3 (20.6)	91.569*
Total	1361.8 (29.5)	2079.5 (20.5)	2322.7 (24.8)	3053.2 (15.4)	180.918*

Note: Figures in parenthesis are coefficients of variations

* Indicates the significance at one percent probability level

The total expenditure on ANC in PH (₹3053.2) is more than two times of the expenditure in PHCs (₹1361.8). The F value calculated to test the significance of difference in the mean value of total expenditure on ANC between different service providers is found to be statistically significant. Thus, there is statistically significant difference in the mean value of total expenditure on ANC between different service providers. Almost similar difference could be found between different service providers for all the sub-head of ANC. In spite of lower arithmetic mean valuesof all the heads of expenditure on ANC in public health institutions like PHCs, CHCs and DH compared to private hospital CV were found to be more in public health institutions. It indicates the fact that there is a larger variation in the expenditure incurred on ANC from public health institutions.

The Details of expenditure on delivery has been given separately for normal delivery and caesarean delivery (Table-4). The total expenditure on caesarean delivery is about 2 to 3 times higher than the total expenditure on normal deliveries. The total expenditure on normal deliveries in Private Hospital (₹8703) is about four times more than the expenditure on delivery in public health institutions like PHCs (₹1677.6), CHCs (₹1982.7) and DH (₹ 2310). The difference in the total expenditure on normal deliveries in different health institutions is statistically significant at one percent probability level. The total expenditure on caesarean deliveries in Private Hospital is about three times more than the total expenditure in public hospitals. The calculated F value was highest for Doctor/Hospital fee followed by expenditure on medicine in both the type of deliveries.

Table-4: Details of Expenditure on Delivery

	Variable of Expenditure	Expenditure on Delivery in different Hospitals				F Value
		PHC	CHC	DH	PH	
Normal Delivery	Doctor/Hospital Fee	526.4 (29.0)	572.7 (22.4)	595.0 (18.5)	4854.5 (13.4)	1951.751*
	Lab Fee	25.8 (152.8)	24.5 (248.7)	20 (178.9)	69.7 (267.2)	2.372
	Medicine	705.7 (34.3)	707.3 (31.2)	800.0 (26.6)	2442.4 (13.9)	425.423*
	Miscellaneous	419.5 (31.9)	678.2 (25.2)	895.0 (22.8)	1336.4 (14.1)	264.759*
	Total	1677.6 (24.0)	1982.7 (19.9)	2310 (16.6)	8703 (9.7)	1707.556*
Cesarean Deliveries	Doctor/Hospital Fee	NA	1130 (39.4)	1080 (54.9)	10476.2 (23.7)	100.1*
	Lab Fee	NA	33 (212.1)	140 (156.5)	119 (142.1)	1.318
	Medicine	NA	2800 (19.2)	2500 (20.0)	4047.6 (13.5)	27.966*
	Miscellaneous	NA	1750 (16.2)	2100 (31.0)	1966.7 (15.1)	1.951
	Total	NA	5710.1 (18.4)	5820 (18.6)	16609.5 (14.5)	130.939*

Note: Figures in parenthesis are Coefficient of Variation

* Indicates significance at one percent probability level

Doctor/Hospital fee includes the service charges of doctor and/or hospital, bed charges or room rent, operation theater charges and so on. Expenditure on this item in Private hospitals for normal deliveries (₹4854.5) is about eight times higher than the similar expenditure in public hospitals like PHC (₹526.4), CHCs (₹572.7) and DH (₹ 595). Similar difference between public and private hospital could be found for caesarean delivery. The difference in these arithmetic values is statistically significant at one percent probability level. The expenditure incurred on medicine is significantly higher in private hospitals compared to the public hospital both for normal and caesarean deliveries. Most of these medicine are available at free of charges in public hospital only when they are not available in the hospitals in-patient have to buy them. Coefficient of variation in expenditure on Doctor/hospital fee, medicine as well as total expenditure on delivery is more in public hospitals compared to the private hospitals for both normal and caesarean delivery. It is because, most of the maternal care service charges are free except some nominal fee for registration and operation theater charges in case of caesarian deliveries but they are informal and without any receipt only those who wish to retain the good-will of the service provider will make payment for this service other may decline to make such payment.

Expenditure on miscellaneous head is significantly different between different health institutions in case of normal delivery whereas it is not so in case of caesarean delivery. The miscellaneous head includes expenditure on transportation, food, accommodation and etc. Expenditure under this head is significantly low in PHCs (₹419.5) compared to private hospitals (₹1336.4) in case of normal delivery. The proximity with PHCs is very close to the majority of the respondents such proximity could not be found with other health institutions like CHs and DH. Caesarean deliveries are not done in PHCs such patients are referred to hospi-

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tals with the required facilities. Patients have to bear higher miscellaneous expenditures in PH as well as in CHCs and DH.

6. Conclusion

Maternal Health Care expenditure is one of the most important variables which influence the choice of 'MHC services' and their 'service providers'.Economic status of the respondents found to be influencing the choice MHC service providers. The percentage of respondents receiving MHC services from the private hospital increase with the improving economic status whereas the percentage of respondents receiving MHC services form the PHCs is highest among the poor.Irrespective of the type of delivery the total MHC expenditure increases with the improvement in economic status. MHC expenditure is significantly more in private hospital compared to public hospitals. The total expenditure on normal deliveries in Private Hospital was about four times more than the expenditure on delivery in public health institutions like PHCs, CHCs and DH. Coefficient of variation in most of the MHC expenditure was more in public hospitals compared to the private hospitals. It is because, most of the maternal care service charges are free except some nominal fee for registration and operation theater charges in case of caesarian deliveries but they are informal and without any receipt only those who wish to retain the good-will of the service provider will make payment for this service other may decline to make such payment.

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