International Journal of Community Medicine and Public Health
Tellis SB et al. Int J Community Med Public Health. 2018 Aug;5(8):3553-3558
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20183097

Original Research Article

Utilization of antenatal care and out of pocket expenditure on delivery care in Dakshina Kannada

Sharal B. Tellis, Priyanka D. Rent*, Mackwin K. Dmello

Department of Public Health, K.S. Hegde Medical Academy, Mangaluru, Karnataka, India

Received: 19 May 2018
Accepted: 27 June 2018

***Correspondence:**
Dr. Priyanka D. Rent,
E-mail: priyankadsouza@nitte.edu.in

ABSTRACT

Background: Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. Factors like education, economic status and out of pocket (OOP) expenditure can affect utilization of maternal health services. Hence this study aims to assess the utilization pattern of maternal health care and the out of pocket expenditure for delivery services in a public maternity hospital.
Methods: A cross sectional study was conducted using primary data from women who delivered in public maternity hospital, Mangaluru during January –February 2018. Study respondents were interviewed using pre-tested, interview schedule. The data was analysed using SPSS 20.0 version.
Results: 78.3% of the respondents visited the health care provider during first trimester of pregnancy. 97.3% of the mothers attended ≥4 antenatal visits. The time of the first ANC visit, consumption of Iron folic acid (IFA) tablets, choice of provider for ANC are significantly associated with caste, education of the respondents and their husbands. The mean expenditure for delivery care, including indirect expenditure was ₹2875. Expenditure during delivery was significantly associated with respondent's education and type of delivery.
Conclusions: Socio demographic characteristics like caste and education did seem to have an effect on the utilization of ANC especially consumption of IFA. Education and communication campaigns may aid to improve this. Good implementation of government schemes can help to reduce the direct OOP expenditure for delivery care. The indirect cost associated with maternity care may still be a burden for poor families.

Keywords: Utilization pattern, Antenatal care, Out of pocket expenditure, Public health facility

INTRODUCTION

Maternal mortality is recognized as the leading cause of premature disability and death for women of the reproductive age groups in developing countries.[1] Of all the human development indicators commonly used, the maternal mortality ratio indicates the greatest difference between developing and developed countries.[2] The lifetime risk of maternal death in high-income countries is 1 in 3,300, compared to 1 in 41 in low-income countries.[3] Based on the World Health Statistics (WHS) 2015-16, the MMR of India is 174/100,000 live births which makes it major health concern.[4] With the aim of improving access to maternal healthcare services the government has launched many schemes to improve access and reduce expenditure faced for maternal health care yet, many studies have shown that patients have had to pay for services while accessing care in public facilities.[5] This study aims to assess the Utilization pattern of antenatal health services and measure the out of pocket expenditure incurred for delivery services at a public healthcare facility.

METHODS

A hospital based cross sectional study was conducted to evaluate the utilization of antenatal care services and expenses incurred for delivery care. Out of the 5 taluks in Dakshina Kannada district, Mangaluru taluk was purposively selected as it is the administrative headquarters of Dakshina Kannada district. Mangaluru taluk has only 1 tertiary maternity government hospital where this study was carried out. Data was collected during the period of January to February 2018. A pre-tested questionnaire was administered to post-natal women who had delivered in the hospital during the period of data collection. A brief introduction of the researcher and purpose of the study was explained before taking informed consent. Patient information sheet was given to the respondents. For questions pertaining to expenditure the respondents were assisted by husband or family member who was knowledgeable about expenses incurred.

Based on proportion from previous literature confidence level at 95%, absolute precision of 0.05, and formula $n=4pq/d^2$, the sample size was calculated to be 368. Considering 10% non-response rate of 37, the sample size was calculated to be 405.

Ethical approval was obtained from the Institutional Ethics Committee (IEC), of the K.S. Hedge Medical Academy. Also, permission was obtained from the public hospital, prior to conducting the study.

At the end of every interview the study was checked to ensure that all the information was entered. The data was analysed using SPSS version 20 (Released 2011. IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp). It was summarised using descriptive statistics such as Frequency, Percentage, Mean and Standard Deviation (S.D). Inferential statistics such as chi square test and likelihood ratio were used to find the association between the utilization of ANC and other independent variables. Since data was not following normality non-parametric tests Mann-Whitney U test and Kruskal Wallis test were used.

RESULTS

Majority of the respondents belonged to the 24-28 age group with mean age 27.59±4.24. 54% belonged to the general category and 46.6% of the women reported family size ranging from 1-4 members.

55.5% of the respondents lived in nuclear families and 44.2% were from joint families. Majority (66%) of women belonged to below poverty line families. In this study half of the respondents belonged to Upper Lower class (60%), followed by lower middle (35), upper middle (4.5) and lower class (0.5%) (Table 1).

Table 1: Socio-demographic characteristics of the respondents.

Socio-demographic variables (n=405)	Frequency (%)
Age (years)	
19-23	67 (16.5)
24-28	185(45.7)
29-33	117(28.9)
34-38	34 (8.4)
39-43	2 (0.5)
Area of residence	
Urban	51 (12.5)
Rural	354 (87.5)
Caste	
General	218 (54)
OBC	107 (26)
SC/ST	80 (20)
Respondent's education	
Literate	12 (3)
Primary School certificate	20 (5)
Middle school certificate	108 (27)
High school certificate	158 (39)
Intermediate / Post high school diploma	86 (21)
Graduate or Post Graduate	21 (5)
Husband's education	
Literate	10 (2.5)
Primary School certificate	21 (5.2)
Middle school certificate	13 (32.5)
High school certificate	186 (46)
Intermediate / Post high school diploma	50 (12.3)
Graduate or Post Graduate	6 (1.5)

Antenatal care utilization

All respondents reported visiting the health care provider at least once for antenatal care. As per WHO guidelines pregnant women should have minimum 4 visits for ANC, those with less than 4 visits are considered to have incomplete ANC.[6] Hence, those with ≥4 ANC visits are considered as receiving full ANC and those with less than 4 ANC visits are considered as partial ANC. Majority (97.3%) of the respondents visited the healthcare provider 4 or >4 times for antenatal care during their pregnancy.

Details of ANC visits, type of provider and IFA consumption is provided in Table 2. This study did not find any association between the number of ANC visits and socio-demographic characteristics of the respondents.

Three fourth (80%) of the respondents visited government facilities for ANC and the most common reason for attending this health facility was that the facility was close to their house (55%) followed by it being inexpensive (44.19%). Choice of provider for ANC was significantly associated ($p\leq0.05$) with area of

residence, caste, respondent's education, husband's education, type of family, type of ration card, type of house and ownership of house.

Table 2: Details of number of ANC visits, type of health institution visited, time of first ANC visit and consumption of IFA tablets.

Service utilization (n=405)	Frequency (%)
Number of ANC visits	
Full ANC coverage (≥4)	394 (97.3)
Partial ANC coverage (1 to 3)	11 (2.7)
Type of health institution visited for ANC	
Only government	324 (80)
Only private	5 (1.2)
Both	76 (18.8)
Time of first antenatal visit	
1st trimester	317 (78.3)
2nd trimester	86 (21.2)
3rd trimester	2 (0.5)
Number of IFA tablets consumed	
>120 tablets	333 (82.2)
120-90 tablets	56 (13.8)
<90 tablets	16 (4)

78.3% of the respondents visited the healthcare provider during the first trimester. The time of the first ANC visit was significantly associated with respondent's age at marriage and education, husband's education, type of family, type of ration card and ownership of house. Reasons for not availing ANC services during first trimester were not knowing about pregnancy (58%) followed by already having 2 children so respondents did not find it necessary (29.5%). 94.3% of the respondents reported receiving the government issued mother and child protection card (Thayi card).

97.3% of the respondents had monitored their blood pressure, 97% had their weight and 93.6% had their hemoglobin measured more than 4 times during antenatal visits. 99.08% respondent received two doses of Inj.Tetanus Toxoid (TT). All respondents were monitored for height and had undergone Veneral disease research laboratory (VDRL)/Rapid plasma Reagin (RPR), Hepatitis B surface Antigen (HBsAg), Human Immunodeficiency Virus (HIV) tests as a part of antenatal services. Most (93.6%) of the respondents underwent thyroid tests once and 0.5% of them underwent thyroid test more than 4 times. 93.1% of respondent underwent urine sugar and 99.3% underwent urine albumin tests (Table 3).

Table 3: Details of antenatal services/tests utilized by the respondents.

	Number of times services utilized				
Services used (n=405)	≥4	3	2	1	0
Blood pressure	394 (97.3)	8 (2.0)	3 (0.7)	-	-
Weight	393 (97)	8 (2.0)	4 (1)	-	-
Height	-	-	-	405 (100)	-
Hb%[a]	379 (93.6)	17 (4.2)	9 (2.2)	-	-
Blood sugar	15(3.7)	6 (1.5)	18 (4.4)	366 (90.4)	-
VDRL/RPR[b] HBsAg[c], HIV[d]	-	-	-	405(100)	-
Thyroid test	2 (0.5)	4 (1)	9 (2.2)	379 (93.6)	11 (2.7)
RH[e] incompatibility	-	-	-	359 (88.6)	46(11.4)
Urine sugar test	5(1.2)	3 (0.7)	19 (4.7)	377 (93.1)	1(0.2)
Urine albumin test	-	-	2 (0.5)	402 (99.3)	1(0.2)
Abdominal USG[f]	168 (41.5)	151(37.3)	76 (18.8)	10 (2.5)	-

[a]Hemoglobin concentration; [b]Veneral disease research laboratory/Rapid plasma Reagin; [c]Hepatitis B surface Antigen; [d]Human Immunodeficiency Virus; [e]Rhesus; [f]Ultrasonography.

All the respondents reported that they received Iron and Folic Acid (IFA) and calcium tablets during pregnancy. 90.9% of the respondents got both the tablets free from the public center where they attended antenatal care. Among respondents of 82.2% consumed all the IFA tablets whereas 4% consumed very few (less than 90) IFA tablets. Those who reported consuming half or less than half of the tablet were asked for reasons for not consuming the tablets, 41.6% respondents answered that they were scared to consume IFA tablets and 39% did not like medicine. There was a significant association ($p \leq 0.05$) between consumption of IFA tablets with respondent's caste and education, husband's education and occupation, socio economic status, type of family, type of ration card, type of house and ownership of house. 83.7% of the respondents met the health workers during the antenatal period and got information regarding complication of pregnancy, nutrition and diet during pregnancy, place of delivery, government schemes, postnatal care, baby care and breast feeding.

Out of pocket expenditure (OOP) on delivery care:

51.9% of the respondents had normal delivery and others underwent caesarean section.

62% of the respondents reported using government schemes for delivery care. 54.3% of them used Janani

Suraksha Yojana followed by Pradhan Mantri Matru Vandana Yojana and Thai Bhagya Plus scheme. 91.4% of the women reported being housewives. Among those who are currently employed 62.86% could avail maternity leave of 180 to 90 days with wage whereas 37.14% of women were not eligible for any maternity leave and would incur loss of pay. The mean wage loss incurred by the women was ₹ 39461.54±17614.46, minimum being 21000 and Maximum 72000.

Table 4: Out of pocket expenditure of the respondents on delivery care.

Component	Frequency	Mean (₹)	Median (₹)
Direct cost	13	19.23	20
Indirect cost	233	3033.45	500
Companion cost	264	976.28	800
Total expenditure	336	2875.1	1150

Table 4 describes the out of pocket expenditure on delivery care. It was observed that among 405 subjects, only13 people reported incurring any direct expenditure for delivery care. Direct expenditure included expenses incurred on registration, consultation, bed charges, investigations, medication and blood transfusion. All those who incurred direct expenditure did so only for registration for which the mean amount was ₹19.23.

233 respondents reported incurring indirect cost which includes food, transport and wage loss faced by the respondents. The mean amount spent was ₹3033 and Median was ₹500.

Companion cost which is the cost incurred by the person accompanying the respondent to the hospital includes the amount paid for food, transport, accommodation if any and wage loss was incurred by 264 respondents during hospitalization. The mean amount was ₹ 976.28 minimum being ₹50 and maximum ₹4200.

Total expenditure which included all of the above specified elements i.e direct cost, indirect cost and companion cost was incurred by 336 respondents. The mean amount spent was ₹2875.10±8240.59, median was ₹1150. Total expenditure during delivery was significantly associated ($p \leq 0.05$) with respondent's education and type of delivery.

DISCUSSION

Among the respondents, 80% used government facility for ANC services. Vidler et al found that utilization of maternal health care services in public facilities like availability of drugs and provisioning under schemes in Karnataka improved after implementation of NRHM.[7]

A study done by Griffiths et al in Maharashtra found that socio demographic status was not a barrier for service use when women perceived the service to outweigh the cost and service was within reasonable distance from the area of residence whereas our study found that socioeconomic status is significantly associated with some aspects of utilization of ANC especially consumption of IFA tablets.[8]

97.3% women had full ANC coverage and 78.3% visited the healthcare provider in 1st trimester. This study found an association between respondent's education with choice of provider, time of 1st ANC visit and consumption of Iron folic acid tablet. Similar study done in Peru found that formal education of the women influences the use and access the maternity service.[9] Bolam et al also found that mothers level of education and employment status influences the use of ANC and delivery services.[10] Similar study done by Das et al showed women's education level influences the utilization of ANC and antenatal visit during 1st trimester.[11] Among respondents, 94.3% mothers had registered for Thayi card, 78% of women availed antenatal service during 1st trimester, 97% had full ANC coverage, 99% received Inj.TT and 82% women consumed IFA tablets. The findings of our study are better than that of National Family Health Survey (NFHS 4) Dakshina Kannada which found very low percentage (7.5%) of women registered for Mother child protection card, only 64.6% availed ANC during 1st trimester, 67.2% of women had full ANC coverage, 83.1% received Inj.TT and 41.1% consumed IFA tablets.[12] This difference may be attributed to the fact that NFHS survey is conducted within the community whereas this study was conducted in a health institution so higher utilization may be expected. Also, this study has a lower representation of people from urban areas compared to NFHS.

In this study 100% women received IFA tablets and 96% women consumed more than 90 IFA tablets. Consumption of IFA tablets was significantly associated with respondent's caste and education, husband's education and occupation, socio economic status, type of family, type of ration card, type of house and ownership of house.

Similar study done in Bihar found that the 37% pregnant received IFA tablets and 24% consumed IFA tablets; women were likely to receive IFA tablets if women attended early ANC visits.[13]

97.3% of mothers received full ANC (≥4 visits). Studies conducted in Karnataka by Vidler et al and Imeda found that regular antenatal care or coverage of 4 or >4 ANC will help to diagnosis and initial treatment of the mother which can reduce maternal complications.[7,14]

Half of the respondent used JSY (54.3%) and other governmental schemes (27.3%) to reduce out of pocket expenditure. Similar study done in Rajasthan found that 44% respondents used JSY scheme for coverage of institutional deliveries and reduce the financial burden on

delivery care.[15] Under NFHS -4 Dakshina Kannada only 13% usage of JSY scheme was reported.[12] A systematic review done by Hunter BM shows cashless transfer helps the mother utilize maternity services and increase institutional deliveries.[16] A higher percentage of respondents used JSY in our study compared to NFHS 4 and the Rajasthan study. As this was a more recent study, implementation of JSY may have improved.

Present study shows 80% of women visited to the government (public) setup for antenatal care services. A study done by Nagarajan in 2015 also found there was increased utilization of public health facilities post NRHM.[17]

The mean expenditure for delivery was ₹2875 which included the direct and indirect expenditure. Cost of delivery was significantly associated with type of delivery and education status of the mother. Similar studies done in Pakistan maternity government hospital[18] and India also found that there were costs associated with delivery in public hospitals, which may burden for poor families.[19] Mohanty et al analyzed DLHS -3 data found OOP expenditure for a delivery in public health center was US $39. The predicted expenditure for caesarean was six times higher than that for normal delivery.[20] A from Bangladesh found that mothers eligible for free maternity care also incurred hidden cost while using services.[21]

A study done by Sahu et al in an urban slum of Bhubaneswar, Odisha found median OOPE for delivery to be ₹2100. They also found that the cost for maternal healthcare was lower as many respondents accessed benefits received from Janani Shishu Suraksha Karyakram, Janani Suraksha Yojana, and "Mamata" schemes of the government.[22]

Proper utilization of ANC among pregnant women is one of the most important factors to reduce maternal morbidity and mortality. The findings of this study suggest improved utilization of ANC in Dakshina Kannada district with 97% of the respondents visiting the healthcare provider ≥4 times for ANC coverage. Majority of the respondents also used ANC services like checking blood pressure, weight, Hb, USG. A very small percentage of the respondents reported incurring any direct expenditure for delivery care and many could avail the government schemes implemented by the government. It may be concluded that good monitoring and proper implementation of government schemes have led to the low out of pocket expenditure incurred by the respondents in informal sectors.

From the findings of this study it may be inferred that that correct implementation of programs can in fact help to reduce the burden faced by people for accessing maternal healthcare and can serve as a model for providing services.

This study has certain limitations which may not make the study generalizable to the whole population. The study was limited to one public maternity care hospital because of which utilization may be high and it may not represent the community. There may be self-reported bias and recall bias while answering the questions though all answered were cross-checked with documents. This study is limited to patient and their companion's cost till discharge from the hospital. It may be assumed that patient's incurred significant costs during ANC and after discharge as well which have not been included in this study.

ACKNOWLEDGEMENTS

We would like to thank the Medical Superintendent and staff of Government Lady Goschen Hospital, Mangaluru for their cooperation and support during the process of data collection.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJ, editors. Global Burden of Disease and Risk Factors. Washington (DC): World Bank; 2006.
2. Wycliffe K. Social Factors Influencing Nutrition Status of Expectant Women Admitted At Pumwani Maternity Hospital, Nairobi, Kenya. 2013;4 (10):3.
3. Maternal Mortality in India. Academike. 2017 Available at: https://www.lawctopus.com/ academike/maternal-mortality-india/. Accessed on 11 April 2018.
4. WHO. Maternal health. WHO. Available at: http://www.who.int/maternal-health/en/. Accessed on 11 April 2018.
5. Skordis-Worrall J, Pace N, Bapat U, Das S, More NS, Joshi W, et al. Maternal and neonatal health expenditure in mumbai slums (India): A cross sectional study. BMC Public Health. 2011;11:150.
6. WHO. New guidelines on antenatal care for a positive pregnancy experience. WHO. Available at: http://www.who.int/reproductivehealth/news/antenatal-care/en. Accessed on 13 April 2018.
7. Vidler M, Ramadurg U, Charantimath U, Katageri G, Karadiguddi C, Sawchuck D, et al. Utilization of maternal health care services and their determinants in Karnataka State, India. Reprod Health. 2016;13(Suppl1):37.
8. Griffiths P, Stephenson R. Understanding Users' Perspectives of Barriers to Maternal Health Care Use In Maharashtra, INDIA. J Biosocial Sci. 2001;33(3):339–59.
9. Elo IT. Utilization of maternal health-care services in Peru: the role of women's education. 1992;2(1):20.

10. Bolam A, Manandhar DS, Shrestha P, Ellis M, Malla K, Costello AM. Factors affecting home delivery in the Kathmandu Valley, Nepal. Health Policy Plan. 1998;13(2):152–8.
11. Das S, Alcock G, Azad K, Kuddus A, Manandhar DS, Shrestha BP, et al. Institutional delivery in public and private sectors in South Asia: a comparative analysis of prospective data from four demographic surveillance sites. BMC Pregnancy Childbirth. 2016;16.
12. KA_FactSheet_575_Dakshina Kannada.pdf. Available at: http://rchiips.org/NFHS/FCTS/KA/KA_FactSheet_575_Dakshina%20Kannada.pdf. Accessed on 4 April 2018.
13. Wendt A, Stephenson R, Young M, Webb-Girard A, Hogue C, Ramakrishnan U, et al. Individual and facility-level determinants of iron and folic acid receipt and adequate consumption among pregnant women in rural Bihar, India. PLoS ONE. 2015;10(3):1-25.
14. Imeda CP. Use of Antenatal and Skilled Care during Delivery: A Systematic Review and Meta-analysis of Effectiveness of Interventions Implemented in Developing Countries.:71.
15. Govil D, Purohit N, Gupta SD, Mohanty SK. Out-of-pocket expenditure on prenatal and natal care post Janani Suraksha Yojana: a case from Rajasthan, India. J Health Popul Nutr. 2016;35(1):15.
16. Hunter BM, Harrison S, Portela A, Bick D. The effects of cash transfers and vouchers on the use and quality of maternity care services: A systematic review. PLOS ONE. 2017;12(3):e0173068.
17. Nagarajan S, Paul VK, Yadav N, Gupta S. The National Rural Health Mission in India: its impact on maternal, neonatal, and infant mortality. Semin Fetal Neonatal Med. 2015;20(5):315–20.
18. Khan A, Zaman S. Costs of vaginal delivery and Caesarean section at a tertiary level public hospital in Islamabad, Pakistan. BMC Pregnancy Childbirth. 2010;10:2.
19. Douangvichit D, Liabsuetrakul T, McNeil E. Health care expenditure for hospital-based delivery care in Lao PDR. BMC Res Notes. 2012;5:30.
20. Mohanty SK, Srivastava A. Out-of-pocket expenditure on institutional delivery in India. Health Policy Plan. 2013;28(3):247–62.
21. Nahar S, Costello A. The hidden cost of "free" maternity care in Dhaka, Bangladesh. Health Policy Plan. 1998;13(4):417–22.
22. Sahu KS, Bharati B. Out-of-Pocket health expenditure and sources of financing for delivery, postpartum, and neonatal health in urban slums of Bhubaneswar, Odisha, India. Indian J Public Health. 2017;61(2):6773.

Cite this article as: Tellis SB, Rent PD, Dmello MK. Utilization of antenatal care and out of pocket expenditure on delivery care in Dakshina Kannada. Int J Community Med Public Health 2018;5:3553-8.