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Original Research Article

Characteristics and utilization of ante natal care services amongst women of rural Punjab, India - a community based study

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ABSTRACT

Background: India has high maternal and infant mortality. The maternal mortality ratio (MMR) in India (2013) was 167 per 100 000 live births and infant mortality rate (IMR) was 40 per 1000 live births. In rural Punjab, the MMR and IMR were 155 and 26 respectively. Ante natal care (ANC) services are crucial in reducing MMR and IMR but still there are barriers to the reach and utilization of ANC services. The objective of present study is to assess the characteristics and utilization of antenatal care (ANC) services in rural areas of Punjab, India
Methods: A total of 820 women were interviewed in a community- based analytical cross sectional study from 20 villages of Amritsar, Punjab (India) in 2005-06 by standard cluster sampling.
Results: About 93% respondents had received at least one ANC during last birth. Almost 92% of women received injection tetanus toxoid (TT) and 56.34% received iron folic acid (IFA) tablets as ANC services. But only 49.75 % of the respondents had at least ≥3 ANC visits. 59.15% respondents did not receive any health advice from health worker during pregnancy.
Conclusions: The majority of respondents, although availed the ANC services, but did not availed the full ANC package. The literacy of women has significant bearing on utilization of ANC. Health education is observed to be the most neglected aspect. The role of local health workers and community participation would be crucial in improving the utilization of ANC services at ground level.

Keywords: Anaemia, Ante natal care, Health education, Iron folic acid tablets, Pregnancy, Primary health care, Tetanus toxoid injection

INTRODUCTION

Social indicators like infant mortality rate (IMR) and maternal mortality ratio (MMR) were one of the important components of millennium development goals (and now sustainable development goals) and are indirect indicators for any country's social and economic growth. The Maternal Mortality Ratio (MMR) in India (2013) was 167 per 100 000 live births and Infant Mortality rate (IMR) was 40 per 1000 live births.[1] In rural Punjab, the MMR and IMR were 155 and 26 respectively.[2] Worldwide, every day in 2013, about 800 women died due to complications of pregnancy and child birth. Of the 800 daily maternal deaths, 500 occurred in sub-Saharan Africa and 190 in Southern Asia, compared to 6 in developed countries. The risk of a woman in a developing country dying from a maternal-related cause during her lifetime is about 23 times higher compared to a woman living in a developed country.[3] At the country level, the two countries that accounted for one third of all global maternal deaths are India at 17% (50,000) and Nigeria at 14% (40,000).[4] Each death or long term complication represents personal suffering for the women and her family.

The number of women dying due to complications during pregnancy and childbirth has decreased by 45% from an estimated 5.23 Lakhs in 1990 to 2.89 Lakhs in 2013. The progress is notable, but the annual rate of decline is less than half of what was needed to achieve the Millennium Development Goal (MDG) target of reducing the maternal mortality ratio by 75% between 1990 and 2015, which would require an annual decline of 5.5%. But this 45% decline since 1990 translates into an average annual decline of just 2.6%.[4] So to achieve these targets, the ANC component needs urgent attention. In India, ANC has always been an important component of maternal and child health care. The Reproductive and Child Health Programme of Government of India (GOI) aims to provide at least four antenatal check-ups which should include a weight and blood pressure check, Laboratory investigations, abdominal examination, immunization against tetanus, iron and folic acid (IFA) prophylaxis, as well as anaemia management.[5]

As about 70 % of the population of India resides in rural areas, the peripheral health workers like multi-purpose health workers (MPHW- Males and Females) and accredited social health activists (ASHA) are key members in provision of primary health care at village level including all maternal and child health (MCH) services. ASHA is a village level female health functionary who works as a link between rural people and health service delivery system.

Each ASHA is selected to serve a population of 1000 and helps the village community in availing the basic primary health services. Due to their proximity to the community, these health workers have better understanding of villager's health problems. The MPHW-Female (MPWH-F) is required to undertake village visits, attend to immunization sessions, domiciliary and institutional deliveries, disseminate health information, oversee work of the Trained Birth Attendant (TBA), conduct household surveys, attend review meetings in Primary Health Centres (PHCs) and maintain records. She has to coordinate with the anganwadi worker (AWW) who is a village level worker appointed under Integrated Child Development Services (ICDS) for providing preschool education to children, growth monitoring, health check-ups and distributing IFA tablets and supplementary nutrition to mothers.[6]

The quality of ANC services depends upon the competency and work load of the MPHW-F. A survey by World Health Organization (WHO) reported that a MPHW-F spent about 45% of her time in giving medical care, 40% in travelling, 5 % in paper work and 10% in performing other duties.[7] During an observational study of MPHW-F in India, none of them performed excellently in ANC, delivery, post-natal care (PNC), immunization and contraception. While about 80% scored a satisfactory grade for delivery, immunization and family planning, 44% scored poorly in ANC. Similar findings have been reported by others where it has been reported that the MPHW-F primarily focus remains on family planning and immunization, leading to attrition of skills in other areas.[8] An important prognostic determinant for the outcome of pregnancy is anaemia. Conditions like abortions, pre-mature births and low birth weight are associated with anaemia. It is also an aggravating factor in haemorrhage, sepsis and toxaemia. In India, 19% of maternal deaths were found to be due to anaemia.[7] Approximately 50% of all pregnant women worldwide are anaemic.[9] At the national level, 57.8% of pregnant women of 15-49 years were anaemic and the corresponding figure from Punjab was 41.6%.[10] Out of these 10 % were moderately anaemic (7.0-9.9 g/dl), but 01 % were severely anaemic (less than 7.0 g/dl).[11]

A study conducted by National Nutrition Monitoring Bureau (NNMB) from India reported that the iron intake by pregnant and lactating women was 36.8% and 48.7% of recommended dietary allowances (RDA) respectively.[12] So supplementation by Iron and Folic acid tablets (IFA) is necessary to combat anaemia. IFA tablets are prescribed for anaemic women under Nutritional Anaemia Prophylaxis Programme. One tablet of IFA containing 100 mg of elemental iron (300 mg of ferrous sulphate) and 0.5 mg of folic acid is prescribed daily for a minimum of 100 days so as to replenish the iron stores of the body.[7] About 52.0% of Indian mothers received ≥3 ANC checkups while in neighbouring developing countries like Sri Lanka, Singapore and Thailand, this figure was more than 90%.[7,10] Low birth Weight (LBW) closely reflects the health and nutritional status of mother. The percentage of LBW babies in India is around 28 % of all live births, as compared to some developed countries where it is around 4%.[7]

But this is only half part of the whole picture. In India, even when women received ANC, not all the observations required to monitor their pregnancy were necessarily undertaken. In Punjab, only 72-76% of women who attended for ANC had abdominal examinations, urine and blood tests, and measurement of their blood pressure and even fewer were weighted. Only 18-28% of women who received any ANC were told about pregnancy complications and 59% were told where to go if they had pregnancy related complications.[11]

Another factor influencing the provision and utilization of ANC is the deficiency in health infra structure and manpower. At the national level, about 5.3 % of the SCs were without an MPHW-F, about 46.5% SCs were without a MPHW-M. There was a shortfall of 5.2% and 63.8% posts of MPHW-F and MPHW-M respectively. The large shortfall in Male Health Workers results in overburdening MPHW-F, resulting in deficient ANC services.[13] Because of this extra burden, the health education component of primary health care is often neglected by these workers.

It has been reported that more than 80% of maternal deaths could be avoided through effective and affordable

actions, even in marginalised economies. Surveys from Egypt show that the quality of ante natal care (ANC) provided to the women was the key determinant in maternal outcome and simple practices can save lives.[14] Health education imparted by health workers play an important role in increasing awareness and thus utilization of ANC services. MMR and ANC coverage were also the important key indicators of MDG-5 which is related to improving maternal health and pregnancy outcome. The MMR is directly influenced by the level of ANC coverage. With so many factors influencing the optimum availability and utilization of ANC services, a need was felt to study to assess the ground level delivery and utilization pattern of ANC services. This study was planned in rural areas of Amritsar District of Punjab (India).

METHODS

Study area

This study was conducted in the Punjab state of India during 2005-06. Amritsar is one of the 20 districts of Punjab. Verka block of Amritsar District was selected for conducting the study. In mid-2005, the population of this block was 2,19,555. Out of 94 villages of the block, 20 were selected by the standard cluster sampling technique. Amongst these, there was a PHC in 3 villages, a Subsidiary Health Centre (SHC) in 6 villages and a Sub-Centre (SC) in 4 villages. No government health centre was available in 7 villages.

Study period

From 2005 to 2006. Total study period was one year.

Study design

Community based Analytical cross-sectional study.

Sample size

The prevalence of full ANC package among participants was found to be 30% in the pilot study. The sample size of the population was determined by the formula, n= z2 1-α/2 p (1-p) / d2, where p (prevalence) = 30% and d (absolute error)= 3% and α= 5%.[15] Thus the sample size was calculated to be 820 participants. It was decided to select 50 houses from each cluster and thus a total of 1000 houses were covered. This was decided so as to exclude non-response participants, those women who had never been pregnant, those who were not having any children. Women where were more than 45 years of age were excluded from the analysis.

Study participants

Thus, after applying the exclusion criteria, a total 820 eligible women of reproductive age group (15-45 years) were interviewed, each from a separate household. In multiple households, only one eligible respondent was interviewed as the health seeking behaviour of a family is usually the same for every member.

Study tools and technique

The community visits were planned in consultation with the medical officer/MPHW of the village. On the prefixed date, time and place, the study was conducted. Selection of houses was done through systematic random sampling. If no woman was present in the selected house at the time of visit, then next house was included. The respondents were told about the study, assured about confidentiality and after answering all their queries, their witnessed, informed, written consent was taken. Their responses were filled in a pre-tested questionnaire in local language. ("Primary Health Care Management Advancement Programme" modules by Aga Khan University.[16] The interns were trained to conduct interviews in the field, under the supervision of principal investigator (PI). Data compilation, filtration, entry, analysis and interpretation were done by the Principal Investigator.

Statistical analysis

The data collected were entered in an Excel spread sheet. Chi Square test, proportions and percentages were used to analyse the quantitative data. $P<0.05$ was considered to be significant.

RESULTS

The demographic profile of 820 respondents showed that more than half i.e. 418 (50.97 %) were from the age group of 26-35 years. Almost 161 (19.63%) and 241 (29.39 %) were in the age group of 18-25 and 36-45 years respectively. Education wise, 197 (24.02%), 101 (12.31%), 176 (21.46%) and 22 (2.68%) of the respondents had education up to primary, middle, senior secondary and graduates and above respectively while 324 (39.51%) were illiterate.

Majority 740 (90.24%) of the respondents were housewives and 702 (85.6%) respondents reported having the nearest government health facility within 2 km distance. Majority i.e. 760 (92.68%) of respondents accepted having received the ANC during their last pregnancy. When asked about the place where ANC was availed, 568 (69.26%) answered the nearby government health centre, and 144 (17.56 %) replied private hospitals (Table 1).

One visit for ANC was reported by 37 (4.51%), 2 visits by 315 (38.41%), ≥3 visits by 408 (49.75%) of the respondents (Table 1). The majority, i.e. 752 (91.7%) of the respondents, received a TT injection and 462 (56.34%) received IFA tablets as part of ANC (Table 1) and 455 (55.48 %) of the respondents received both a TT injection and IFA tablets. More than half i.e. 485

(59.15%) did not receive any health advice from local health functionaries during pregnancy.

TABLE 1: Distribution of respondents according to types of health facility availed, ANC visits, ANC received and advice imparted by health workers (n=820).

Type of Health Facility	
Government health Centre	568 (69.26%)
Private practitioner	144 (17.56%)
Outreach services	43 (5.24%)
Other Government Hospitals	05 (0.61)
No ANC received	60 (7.31%)
Number of ANC visits	
None	60 (7.32%)
One	37 (4.51%)
Two	315 (38.41%)
Three	273 (33.29%)
Four and above	135 (16.46%)
ANC service received	
Received TT Injections	752 (91.7 %)
Received IFA tablets	462 (56.34 %
Advice imparted by Health Workers	
Diet during Pregnancy	298 (36.34%)
Rest	90 (10.97%)
ANC / health check ups	62 (7.56%)
Hygiene	13 (1.58%)
No advice	485 (59.15%)

298 (36.34%) and 90 (10.97%) received advice on proper diet and rest during pregnancy respectively (Table 1).

Table 2 shows that 158 (98.13%) respondents from the age group less than 25 years of age availed ANC services as compared to 203 (84.64%) from the age group of 36-45 years (X2= 34.28, df= 2, p< 0.001, significant). ANC services were utilized by 171 (97.15 %) of senior secondary educated respondents as compared to 285 (87.96%) of illiterates (Table 2) (X2= 19.32, df= 4, p< 0.0007, significant).

Table 3 shows the distribution of number of ANC visits according to age group and education status. No ANC was received by 37 (15.35%) respondents of age group 36-45 years as compared to only 03 (1.86%) from age group less than 25 years.

On the other hand, 3 and more ANC visits were observed in 81 (50.31%) respondents of 18-25 years age group as compared to 104 (43.14%) of age group 36-45 years (X2= 48.87, df= 8, p< 0.001, significant). Table 3 shows that about one eighth, i.e. 39 (12.03%) illiterate women did not receive any ANC as compared to 5 (2.85%) respondents who were senior secondary educated. 142 (43.82 %) illiterate women received ≥3 ANC as compared to 106 (60.22%) of secondary educated (X2= 47.59, df= 16, p< 0.0001, significant).

Table 2: Age & education wise distribution of respondents who received antenatal care (n= 820).

	ANC received			Chi-square (df)	p-value
	Yes (760)	No (60)	Total (820)		
Age (yrs)					
< 25	158 (98.13%)	03 (1.86 %)	161 (100.0%)		
26 – 35	398 (95.21%)	20 (4.79 %)	418 (100.0%)	34.28 (2)	0.0000
36 –45	203 (84.64%)	37 (15.35%)	241 (100.0%)		
Education Status					
Illiterate	285 (87.96%)	39 (12.03%)	324 (100.0%)		
Primary	187 (94.92%)	10 (5.07%)	197 (100.0%)		
Middle	95 (94.05%)	06 (5.94%)	101 (100.0%)	19.32 (4)	0.0007
Senior Secondary	171 (97.15%)	05 (2.85%)	176 (100.0%)		
Graduate & above	22 (100.0%)	00 (0.0 %)	22 (100.0%)		

DISCUSSION

It was observed in the study that 60.5% respondents were literate. Officially, the literacy rate in Punjab was 76.7%. The literacy rate in rural Amritsar was 77.2% and among women of Amritsar it was 72.8 %.[17] We observed that the majority of the respondents, i.e. 93 %, received ANC. In India and Punjab, 77 % and 91 % of pregnant women had received any antenatal check-ups.[11] Thus the level of ANC is greater than the national average in the current study.

About two thirds respondents, i.e. 69 %, accessed ANC from the nearby government health centre as compared to 18% who received it from private hospital facilities. According to the Human Development Report of Punjab (2004**)**, the public medical facilities are the main source of ANC.[18] Thus government health centres are the first

choice for ANC services for majority of women in Punjab. In the present study, 98.13 % and 95.21% women from the age group of <25 and 26-35 years received ANC services respectively. In Punjab, 72.7% women <20 years and 75.6% in age group 20-34 years have been reported to have received ANC services.[11] In this study, ≥3 ANC visits were reported by about 50 % of the respondents. According to National Health Profile -2010, 52.0% of Indian mothers received ≥3 ANC checkups; compared to 74.8 % in Punjab. The corresponding figure of rural India and rural Punjab were 44 % and 71.2 %. The percentage of women who had ≥3 ANC visits ranges from 17% in Bihar and 27% in Uttar Pradesh to at least 90% in Kerala, Goa, and Tamil Nadu. [10, 11] Another study estimates that at the national level, number of visits for ANC reported was none by 34%, one visit by 8.2%, 2-3 visits by 27.6% and 4 or more by 29.5%.[9] Thus in the present study, ≥3 ANC visits were almost similar to national average but below the state average. No ANC was received by 15.35% of 36-45 year age group as compared to only 1.8% from the age group <25 years. Thus, it was observed that utilization of ANC services was higher in the comparatively younger age group. This suggests that earlier women were not as aware of the importance and availability of ANC services as now when the young generation is opting for ANC.

Table 3: Age and educational distribution of the respondents according to the number of ANC visits during last pregnancy (n= 820).

	Number of ANC visits						Chi-square (df)	p-value
	0	1	2	3	4 and more	Total		
Age (yrs)								
< 25	03 (1.86%)	07 (4.34%)	70 (43.47%)	46 (28.57%)	35 (21.73%)	161 (100.0%)	48.87 (8)	0.0000
26-35	20 (4.78%)	16 (3.82%)	159 (38.03%)	145 (34.68%)	78 (18.66%)	418 (100.0%)		
36-45	37 (15.35%)	14 (5.81%)	86 (35.68%)	82 (34.02%)	22 (9.12%)	241 (100.0%)		
Education status								
Illiterate	39 (12.03%)	16 (4.93%)	127 (39.19%)	106 (32.71%)	36 (11.11%)	324 (100.0%)	47.59 (16)	0.0001
Primary	10 (5.07%)	13 (6.59%)	84 (42.63%)	55 (27.92%)	35 (17.76%)	197 (100.0%)		
Middle	06 (5.94%)	05 (4.95%)	35 (34.65%)	38 (37.62%)	17 (16.83%)	101 (100.0%)		
Senior Secondary	05 (2.85%)	02 (1.14%)	63 (35.79%)	68 (38.63%)	38 (21.59%)	176 (100.0%)		
Graduate & above	00 (0.0%)	01 (4.54%)	06 (27.27%)	06 (27.27%)	09 (40.90%)	22 (100.0%)		

We observed that about 44% of illiterate women had ≥3 ANC visits as compared to 68% of graduate and above. In another study it has been reported that 43.7% of the illiterate women and 84.4% of the graduates had attended 3 ANC visits.[19] According to NFHS-III, in India and Punjab, 62.0% and 52.4 % of illiterate women attended at least 3 ANC checkups respectively. Thus the percentage of illiterate women attending ANC was less in the present study compared to state and national figures. The majority, i.e. 92 %, of the respondents received a TT injection and 56 % received IFA tablets while attending ANC services but when considered together, only 55 % of the respondents had received both TT and IFA. According to National Family Health Survey -III, in Punjab**,** the mothers who received 2 TT injections and IFA were 84 % and 66% respectively. According to the same report, in Punjab, out of those women who received IFA supplementation, however only 28 % women actually consumed IFA for the recommended 90 days or more. According to a study in Lucknow district, only 17% of the mothers received IFA in rural area.[20] Another study revealed that 68 % and 60 % of the pregnant women received 2 doses of TT injections and IFA tablets respectively.[21] In our observations, more than half (59.15%) did not receive any advice from MPHW-F during pregnancy. In a study from Uttar Pradesh, advice about nutrition and rest was given to 35% women in rural area.[20] According to NFHS-II, in Punjab, dietary advice was given to mothers in 83% of cases, delivery care (47%), newborn care (41%), danger signs of pregnancy (32%) and family planning in (28%).[22] Thus the important components of health education during pregnancy were ignored by the MPHW, which if properly

imparted could change the health seeking behaviour and practice of the maternal population.

CONCLUSION

In spite of the fact that Punjab is one of the prosperous and educated state of India, the utilization of full ANC services was far from expectations. The MDG -5 includes the ante natal coverage as one of the important indicators for improving maternal health. Without full ANC coverage, the MMR would continue to be on higher side. The consumption of IFA tablets is not taken seriously by respondents. It could improve if benefits of IFA supplementation along with their side effects are explained to the women. Health education during pregnancy period was neglected by the health workers. Education plays an important role in increasing the awareness and thus utilization of ANC services. Although majority of the women accessed ANC services, half of them did not take the full ANC package (≥4 Ante natal visits, TT injection and a minimum of 90 days intake of IFA tablets). The current study indicates that full ANC coverage is still far from satisfactory in Punjab and thus needs further improvement.

Recommendations

The traditional birth attendants (Dai), who conduct deliveries, are close to the families and can influence the MCH services; hence their services should be utilized to strengthen the existing system so as to improve ANC.

As adolescents are future parents, their knowledge and attitude should be targeted for change for sustained benefits. Of every 100 children who drop out of school, 66 are girls.[23] As most of these drop outs occur during middle-high School, the information about maternal and child health (MCH) programs should be part of early school curriculum. Leading women celebrities should be involved in spreading the message about ANC through audio-visual media. In India, the mother-in-law is the most powerful decision maker in MCH, influencing the health seeking behaviour of their young women. Hence they should be targeted and rewarded to propagate the message of ANC. Local elected bodies like Panchayati Raj Institutions (PRIs) should be encouraged to propagate the message of ANC. The incentives to PRIs must be linked to the indicators of family planning and MCH services.

Regular monitoring and evaluation of the health programs particularly related to MCH services is lacking and should be strengthened. Community monitoring of the health programs will help in availability of the quality health services in the long run.

In India, the maternity benefit scheme i.e. Janani Suraksha Yojana (JSY) under National Rural Health mission (NRHM) was launched in India in 2005 for promoting institutional deliveries along with provision of ANC services by providing cash assistance to mother and the local health functionary. The monetary incentive part should not be linked to the place of delivery alone. Rather it should be linked / shared with ANC services also. The outreach sessions (conducted for immunization of children and pregnant women) could be better utilized by arranging a meeting with all the pregnant women of the village. The women self-help groups in villages should be motivated to command greater influence in changing the knowledge, attitude and practice (KAP) of the population.

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