ORIGINAL ARTICLE

Enablers and Barriers of Antenatal Health Utilization among Pregnant Women in India: A Comparative Scrutiny from NFHS-4 & 5

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ABSTRACT

Background: The use of effective antenatal care (ANC) plays a important role for minimizing maternal and child mortality and morbidity. Antenatal care (ANC) is the use of suitable and successful screening, preventive, or treatment interventions to minimize the risk of unfavorable health outcomes for mother and child during pregnancy and childbirth. **Aims & Objectives:** This study assesses the dynamic nature of various predictors associated with optimal ANC utilization in India. **Methodology:** A secondary data analysis was done based on NFHS-4 & NFHS-5. A uniform sample design, which is representative at the national, state/union territory and district level, is adopted in each round of the survey. Each district is stratified into urban and rural areas. Effect size with a p-value <0.05 were declared as significant factors associated with ANC utilization in both NFHS-4 & 5. This study is based on secondary data so not required IEC approval. **Results:** ≥4 ANC visits by women during pregnancy increases from around 51% to 58% from NFHS-4 to NFHS-5. However, higher household wealth status, women with higher education and exposure to the media were coming out to be enablers while women with higher birth order, women belonging rural setup, distance to health facility coming out to be significant barriers in both the rounds of NFHS for the recommended ANC (≥4) visit through with varying effect sizes. **Conclusion:** According to our research, sociodemographic and health policy interventions, such as enhancements to social services and education, as well as community health education, particularly for women living in rural areas, can reduce obstacles to the advised use of ANC services in India.

KEYWORDS

Education; Antenatal Care; Utilisation; Demographic and Health Survey

INTRODUCTION

Although global maternal mortality declined by 38% between 2000 and 2017, it remains unacceptably high with nearly 810 women dying every day during and following pregnancy and childbearing (1). A vast gap in maternal mortality ratios (MMR) still exists between rich and poor countries as more than 90% of global maternal deaths occurred in low- and middle-income countries (LMICs) (2). In particular, India had 35,000 maternal deaths in 2017 which is 12% of the global share (1). Furthermore, there exists a significant degree of heterogeneity in maternal health metrics throughout Indian states, as well as in the distribution of these indicators between rural and urban areas, affluent and poor socioeconomic strata, educational attainment, and access to healthcare services. While the mortality rate in India decreased to 122 per 100,000 live births between 2015 and 2017, a significant amount of work remains to be done to meet the target outlined in the Sustainable Development Goals (SDGs). It is well documented that the use of maternal health care services, specifically antenatal care (ANC) during pregnancy plays a significant role in reducing maternal deaths (3-6). The main

purpose of ANC is the prevention and early diagnosis of pregnancy complications. It also serves as a counselling platform to improve the understanding of women and her family about the pregnancy, childbirth, and care of the new-born (7). Recommended number of four or more ANC visits has increased from 51% (NFHS-4) to 68% (NFHS-5).The aim of this study is to compare NFHS-4 and NFHS-5 in identifying enablers and barriers of antenatal health utilization among pregnant women in India.

Objective: This study assesses the dynamic nature of various predictors associated with optimal ANC utilization in India.

MATERIAL & METHODS

Study type & design: It was a nationally representative, cross-sectional household survey conducted by the International Institute for Population Science (IIPS) under the guidance of the Ministry of Health and Family Welfare (MoHFW), Government of India. A uniform sample design, which is representative at the national, state/union territory and district level, is adopted in each round of the survey.

Study Setting: The survey covers a representative sample of women in the age group 15–49 years and provides reliable estimates of fertility, family planning practices, reproductive health, maternal and child health care utilization and quality of health and family planning services and other related indicators across all the states/ union territories and India as a whole. (8, 9)

Study population: In this study a data on 174607 & 174483 women who had given live birth in the last 5 years preceding survey after eliminating the missing observations from one or more variables under consideration from 4th & 5th round of National Family Health Surveys.

Study duration: the data was extracted, screened, compiled and analysed from September 2023-March 2024.

Sample size calculation: In NFHS-4, 29 states were included. NFHS-4 was also include all six union territories for the first time and was also provide estimates of most indicators at the district level for all 640 districts in the country as per the 2011 census. NFHS-4 sample size was expected to be approximately 568,200 households, up from about 109,000 households in NFHS-3. This was expected to yield a total sample of 625,014 women and 93,065 men eligible for the interview. In these households information on 265,653 children below age 5 will be collected in the survey. Data was collected using Computer Assisted Personal Interviewing (CAPI) on mini-notebook computers.

The NFHS-5 sample was designed to provide estimates of all key indicators at the national and state levels, as well as estimates for most key indicators at the district level (for all 707 districts in India, as on 31 March, 2017). The total sample size of approximately 610,000 households for India was based on the size needed to produce reliable indicator estimates for each district. The rural sample was selected through a two-stage sample design with villages as the Primary Sampling Units (PSUs) at the first stage (selected with probability proportional to size), followed by a random selection of 22 households in each PSU at the second stage. In urban areas, there was also a two-stage sample design with Census Enumeration Blocks (CEB) selected at the first stage and a random selection of 22 households in each CEB at the second stage. At the second stage in both urban and rural areas, households were selected after conducting a complete mapping and household listing operation in the selected first-stage units.

Inclusion criteria: In NFHS-4 participants was between 18 to 60 years old. In NFHS-5 all women aged 15–49 and men aged 15–54 in the selected sample households were eligible for interviewing.

Exclusion criteria: In NFHS-4 people who work for advertising, market research, tobacco, food and beverage companies. In NFHS-5, HIV testing was dropped from the NFHS-5.

Strategy for data collection: The study utilized data from the fourth and Fifth rounds of National Family Health Survey (NFHS) conducted during the years 2015-16 (NFHS-4), and 2019-21 (NFHS-5). NFHS is the Indian version of the Demographic Health Survey (DHS). This study used number of ANC visits by women as an indicator to measure the utilization of maternal health care services. Keeping in mind the World Health Organization's recommendation and availability of information across both the survey rounds, it has been divided into two categories viz, women who had four or more antenatal visits and less than 4 visits. Demographic and socioeconomic characteristics of women included as independent variables in the analysis were current age of women, education level, religion, caste, educational level, wealth quintile, distance to health facility, area of residence, birth order. These variables were selected because they have been found as significant predictors of maternal healthcare service utilisation in the literature (10-15). Descriptive statistics were obtained for the demographic and socioeconomic characteristics of women aged 15– 49 years who had a live birth in the last 5 years preceding the surveys according to no. of antenatal visits. Various

Enablers and barriers of antenatal visits were examined separately for the survey period NFHS-4 (20015–16) and NFHS-5 (2019-21). Effect size with a p-value <0.05 were declared as significant factors associated with ANC utilization in both NFHS-4 & 5.

Statistical Analysis: Software SPSS-25 trial version package were used for analysing the data throughout the study. Binary logistic regression analysis was done for comparing the data NFHS-4 & 5.

Ethical Approval: This study is based on secondary data so not required IEC approval. National Family and Health Survey is already ethically approved study.

RESULTS & DISCUSSION

Table 1 show distribution of selected socio-demographic variables in utilizing recommended ANC visits in NFHS-4 and NFHS-5. Both NFHS-4 and 5 has lesser women in age 35-49 years who had four and above ANC visits viz; 38.6% and 55.1% respectively compared to younger women. Proportion of 4 and more Visit increasing with education level of mother in both surveys. Almost 2/3rd of the mother with secondary level of education had recommend no. of visits in both NFHS 4 and 5. Higher is child birth order, lower is the proportion of required no. of ANC visit in NFHS 4 and 5, however it is comparatively more in NFHS-5. For instance, only 15.1% in NFHS-4 had More than 4 visit compared to 36.1% in NFHS-5. Also, for religion, visits are comparatively more in recent survey compared to earlier one except for religion other than Hindu and Muslim. For all the categories under caste required no. of ANC visit is more in NFHS-5. Proportion of ANC visits is also increasing with increase in wealth quintile of a family, however it is greater in NFHS-5 compared to NFHS-4 survey. Women having distance to health facility as big problem has 40% recommended no. of visit in NFHS-4 compared to almost half of the mother in NFHS-5.Urban women had better visit compared to their rural counterparts and is also greater in NFHS-5 compared to NFHS-4 survey.

Table-1: Distribution of selected socio-demographic variables in utilizing recommended ANC visits in NFHS-4 and NFHS-5.

Variables	Variable's categories	NFHS-4	NFHS-5
		≥4 Antenatal visit; (%)	≥4 Antenatal visit; (%)
Current age of women	15-19	54.5	56.8
	20-34	52.4	59.0
	35-49	38.6	55.1
Education of women	No	27.7	43.5
	Primary	45.5	52.7
	Secondary	61.2	62.2
	Higher	73.4	71.0
Child birth order	1st	62.0	64.6
	2nd or 3rd	52.1	58.9
	4th or 5th	28.5	44.9
	≥6	15.6	36.1
Religion	Hindu	51.1	59.4
	Muslim	47.0	59.1
	Others	65.1	53.3
Caste	SC	48.9	55.6
	ST	46.3	55.4
	OBC	48.6	58.6
	Others	61.3	65.6
Wealth quintile	Poorest	24.8	43.9
	Poorer	44.2	54.3
	Middle	57.1	62.8
	Richer	66.0	68.4
	Richest	73.8	72.7
Distance from health facility	No problem	62.0	64.8
	Not big problem	50.6	56.9
	Big problem	40.7	52.1
Place of residence	Urban	66.8	69
	Rural	44.7	55.7

Table 2 showing associations between selected Predictors and number of Antenatal Visit in NFHS-4 and NFHS-5. Older women are more likely to had recommended visits compared to younger one. For instance, 35-49 years women were 8% and 27% more likely to had 4 or more visits with reference to

15-19 years. Education is having positive and significant contribution in no. of ANC visits in both NFHS-4 and 5. However, compared to no education, women with even primary level of education had 56% and 21% more likely to had recommended no. of visits in fourth and fifth round of survey respectively. Women with 6 and above child birth order were 73% less likely to had 4 and more ANC visits in NFHS-4, while it was and 50% less likely in 5th wave of NFHS survey, with reference to women with 1st child birth order. Compare to Hindu women, Muslims were 8% less likely to had 4 and more ANC visits in NFHS-4, however it was not coming out to be significant in NFHS-5. Also, compared to SC categories women, OBC categories women were 0.18 times less likely to had 4 and more ANC visits, though it was not statistically significant in NFHS-5. Wealth quintile is having positive impact on ANC visits in both 4th and 5th wave of survey. Though likelihood of odds ratio is varying in both the survey. For instant, with reference to poorest wealth quintile, women in richest wealth quintile were 3.53 times and 1.91 times more likely to had recommended number of visits. Distance to health facility is coming out to be significant barrier for no. of ANC visits in NFHS-4 and 5. Also, rural women were less likely to had 4 and more ANC visit compared to their counterparts in both round of survey. However, likelihood of ANC visits is 24% less in NFHS 4 and was 13% less in NFHS-5.

Table 2: Associations between selected Predictors and number of Antenatal Visit in NFHS-4 and NFHS-5.

Variables	Variable's categories	Ordinary logistic regression model			
		NFHS-4		NFHS-5	
		OR	95% CI	OR	95% CI
	Intercept	0.59*	0.48-0.67	0.76*	0.64-0.81
Current age of women	15-19	Ref.		Ref.	
	20-34	0.95	0.90-1.01	1.06*	1.01-1.15
	35-49	1.08*	1.01-1.16	1.27*	1.18-1.36
Education of women	No	Ref.		Ref.	
	Primary	1.56*	1.51-1.62	1.21*	1.17-1.26
	Secondary	1.99*	1.93-2.05	1.34*	1.30-1.38
	Higher	2.24*	2.14-2.34	1.43*	1.37-1.49
Child birth order	1st	Ref.		Ref.	
	2nd or 3rd	0.79*	0.77-0.81	0.85*	0.83-0.87
	4th or 5th	0.46*	0.44-0.48	0.64*	0.62-0.66
	≥6	0.27*	0.25-0.29	0.50*	0.47-0.54
Religion	Hindu	Ref.		Ref.	
	Muslim	0.92*	0.89-0.95	1.02	0.98-1.05
	Others	1.32*	1.25-1.38	0.67*	0.64-0.69
Caste	SC	Ref.		Ref.	
	ST	1.24*	1.20-1.29	1.38*	1.33-1.42
	OBC	0.82*	0.80-0.84	0.98	0.96-1.01
	Others	1.04*	1.01-1.08	1.13*	1.09-1.17
Wealth quintile	Poorest	Ref.		Ref.	
	Poorer	1.85*	1.79-1.91	1.23*	1.20-1.27
	Middle	2.59*	2.50-2.68	1.53*	1.48-1.58
	Richer	3.12*	3.00-3.24	1.75*	1.69-1.82
	Richest	3.53*	3.38-3.70	1.91*	1.83-2.01
Distance from health facility	No problem	Ref.		Ref.	
	Not big problem	0.85*	0.83-0.87	0.87*	0.84-0.89
	Big problem	0.74*	0.72-0.76	0.80*	0.78-0.82
Place of residence	Urban	Ref.		Ref.	
	Rural	0.76*	0.74-0.78	0.87*	0.85-0.90

** Significant at α=5%*

CONCLUSION

Our study by looking at the result from both the survey suggests that barriers to the recommended ANC service use in India can be amended by socio-demographic and health policy interventions, including improvements in education and social services, as well as community health education especially women residing in rural areas on the importance of ANC. Efforts to improve antenatal care and other maternal health service utilization in India must take into account these factors.

RECOMMENDATION

While making new health policies for pregnant women who visit ANC services, these socio-demographic factors and selected predictors must be acknowledged.

Relevance of the Study

The study will be helpful for health policy interventions, social services, as well as community health education system.

Authors Contribution

All authors have contributed equally.

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Nil.

Conflict of Interest

There are no conflicts of interest.

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Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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