Original Research Article

Utilization and Determinants of Maternal and Child Health Services in Tribal Communities of Panvel, Raigad District, Maharashtra: A Community Based Cross-Sectional Study

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ABSTRACT

Background: Maternal and child health (MCH) remains a critical indicator of National Development. Despite numerous government initiatives, tribal populations in India continue to face barriers to Health Service Utilization. This study aimed to assess the utilization patterns and determinants of MCH services in the tribal areas of Panvel, Maharashtra.

Methods: A community-based descriptive, cross-sectional study was conducted among 220 married women who were either currently pregnant or had delivered within the last three years. Data were collected via a structured questionnaire. Statistical analysis was performed using Chi-square tests to identify associations between socio-demographic factors and service utilization.

Results: Most women (51%) were aged 15–25 years, and 91.4% were unemployed. Early ANC registration was reported by 86.4% of participants, while 96.8% had at least three ANC visits. Coverage of Td Immunization and iron–folic acid supplementation was 99.1% and 98.2%, respectively. Institutional delivery was reported by 85% of women, and 69.1% had normal vaginal deliveries. Only 13.6% received adequate postnatal visits. Early initiation of breastfeeding was practiced by 88.6% of mothers, and 70% reported exclusive breastfeeding. Full immunisation coverage among children was 81.1%. Nearly half of the women (46.8%) were not using any contraceptive method. Maternal and husband's education, occupation, socioeconomic status and accessibility of services were significantly associated with MCH service utilisation (p<0.05).

Conclusion: Although antenatal care coverage and institutional delivery rates were satisfactory, utilisation of postnatal care and contraceptive services remained suboptimal. Socioeconomic and educational factors significantly influenced service uptake. Targeted interventions focusing on postnatal follow-up, family planning and accessibility are required to improve the continuum of maternal and child healthcare in tribal populations.

Keywords: Maternal and Child Health, Tribal Population, Antenatal Care, Postnatal Care, Health Services Utilization

INTRODUCTION

Maternal and child health (MCH) remains a key global public health priority, particularly in low and middle-income countries. Despite substantial progress in recent decades, preventable maternal and neonatal deaths continue to occur, largely due to inadequate access to quality antenatal, intranatal and postnatal care. According to the World Health Organization (WHO) and partner agencies, an estimated 287,000 women died globally from pregnancy-related causes in 2020, with the majority of deaths occurring in resource-limited settings.[1] India alone contributes a substantial share of the global maternal and child health burden because of its large population and regional disparities. [2]

India has made significant improvements in maternal and child health indicators over the past two decades. The maternal mortality ratio declined from 130 per 100,000 live births in 2014–16 to 97 per 100,000 live births in 2018–20. [3] Similarly, under-five mortality declined from 48 per 1,000 live births in 2015 to 28 per 1,000 live births in 2023.[4] However, these national averages mask considerable variations across states, districts and socio-demographic groups. [2]

The National Family Health Survey-5 (NFHS-5) reported improvements in antenatal care coverage, institutional deliveries and immunization, yet gaps persist in early antenatal registration, postnatal care utilization and equitable access to services among disadvantaged populations. [2] Socio-economic factors such as education, occupation, caste, income and accessibility of health facilities have been shown to significantly influence the utilization of MCH services. [5]

Understanding local patterns of service utilisation and their determinants is essential for planning targeted interventions and improving maternal and child health outcomes. Therefore, the present study was undertaken to assess the utilization of selected Maternal and child health services (MCH) and to find out the demographic, socio-economic and cultural determinants that affect the utilization of MCH services in reproductive aged women of tribal areas.

MATERIALS & METHODS

The present study was a community-based, descriptive, cross-sectional study conducted to assess the utilization of maternal and child health (MCH) services in tribal areas of Panvel Taluka, Raigad District, and to identify the demographic, socioeconomic, and cultural factors influencing the utilization of maternal and child health (MCH) services.

Study area

The study was carried out in five villages of the Tara Group Gram Panchayat, a tribal belt in Panvel Taluka. These villages included Taragaon, Barapada, Kalhe, Bandhanwadi, and Dolghar. The total population of the area was approximately 3,282, comprising around 627 families. These villages formed part of the field practice area of the Rural Health Training Centre (RHTC) of the Department of Community Medicine.

Study sample and sampling technique

Out of the total population, there were 1,603 females. Among them, 263 married women who were permanent residents and had been pregnant either currently or within the last three years were identified as eligible participants.

However, 43 women could not be included due to reasons such as refusal to participate, migration, miscarriage, or absence during data collection. Finally, 220 women were enrolled in the study using convenient sampling.

Inclusion criteria

- Married women who were currently pregnant or had been pregnant within the past three years.
- Permanent residents of the Tara Group Gram Panchayat.

Exclusion criteria

- Women not willing to participate.

- Women who were sick or hospitalized.
- Temporary residents of the area.
- Married women who had never been pregnant.

Study tool
Data was collected using a predesigned, pretested, structured questionnaire prepared in English and Marathi. The questionnaire contains information on demographic and socioeconomic factors such as age, education, occupation, income, religion, and caste of the respondent and her husband. It also covered cultural practices related to antenatal care (ANC), breastfeeding, complementary feeding, immunization, and contraception.
Adequate utilization of MCH services was defined as:

- Early registration for ANC
- At least four ANC visits
- Receipt of required tetanus diphtheria toxoid injections
- Consumption of at least 100 iron and folic acid tablets
- Postnatal check-up within the first week after delivery

Information was also collected on place and type of delivery, complications, birth weight, infant feeding practices, immunization, contraception, accessibility of services, and reasons for partial or non-utilization.

Pilot study
The questionnaire was pilot tested among 25 women to assess clarity and feasibility. Necessary modifications were made, and the tool was validated by experts.

Ethical considerations and data collection
Ethical clearance was obtained from the Institutional Ethics Committee. Written informed consent was obtained from all participants, and confidentiality was assured. Women with any morbidity were referred to the RHTC for management.
With the help of Anganwadi workers, eligible women were identified and visited at home. After obtaining consent, the questionnaire was administered, and basic health assessments were conducted.

Statistical Analysis: Data were recorded daily, compiled, and entered into Microsoft Excel & Appropriate tests of significance were used. Results were presented as frequencies, percentages, means, and standard deviations. The chi-square test was used to assess associations, and a p-value of less than 0.05 was considered statistically significant.

RESULT
The total population of the area was approximately 3,282, comprising around 627 families, out of the total population, there were 1,603 females. Among them, 263 married women who were permanent residents and had been pregnant either currently or within the last three years were identified A total of 220 married women who were either currently pregnant or had been pregnant in the last three years were included in the study. However, 43 women could not be included due to reasons such as refusal to participate, migration, miscarriage, or absence during data collection.
Most of the participants, 112 (51%), were in the age group of 15–25 years, followed by 102 (46.3%) women aged 26–35 years, while only 6 (2.7%) women were in the age group of 36–45 years. The mean age of the women was 26.82 ± 4.49 years, whereas the mean age of their husbands was 30.52 ± 5.41 years. In terms of education, nearly half of the women, 108 (49.09%), had studied up to high school. A total of 42 (19.09%) had studied up to middle school, 27 (12.27%) up to primary school, and 27 (12.27%) were illiterate. Only 11 (5%) had completed a diploma and 5 (2.28%) were graduates. Similarly, most husbands, 148 (67.27%), had studied up to high school, and only 8 (3.63%) were graduates. Regarding occupation, a large majority of women, 201 (91.36%), were unemployed. Only a small proportion were engaged in unskilled work or farming (5 women each),

while 4 (1.82%) were semi-skilled and 3 (1.36%) were skilled or semi-professional. Among husbands, 60 (27.27%) were engaged in unskilled jobs, 55 (25%) in semi-skilled work, and 23 (10.45%) were farmers. Most women, 174 (79.09%), were Hindus, while 46 (20.91%) were Muslims. With regard to caste distribution, 146 (66.36%) belonged to the OBC category, followed by 25 (11.36%) in the open category, 18 (8.18%) in SBC, 15 (6.81%) in ST, 13 (5.9%) in SC, and 3 (1.36%) in VJNT. Almost all women, 216 (98.2%), were married. Only 2 (0.9%) were separated and 2 (0.9%) were widowed. The mean age at marriage for women was 19.5 ± 2.53 years, while for husbands it was 23.19 ± 2.18 years. According to the BG Prasad socioeconomic scale, most women belonged to the lower-middle and lower classes. A total of 78 (35.45%) belonged to Class IV, 65 (29.54%) to Class III, 40 (18.1%) to Class II, 36 (16.36%) to Class V, and only 1 (0.45%) belonged to Class I.

In relation to antenatal care, 190 (86.36%) women had early registration during pregnancy. Most women, 213 (96.81%), had at least four ANC visits. Almost all participants had received diphtheria tetanus immunization, with 218 (99.09%) women

taking the required doses. Similarly, 216 (98.18%) women had received iron and folic acid supplementation during pregnancy. Anemia was the most common risk factor and was observed in 38 (63.33%) women. Other risk factors included previous cesarean or instrumental delivery in 14 (23.33%) women, short stature in 10 (16.66%), pregnancy associated with other medical diseases in 5 (8.33%), prolonged pregnancy in 4 (6.66%), and previous stillbirth or manual removal of placenta in 4 (6.66%). Addiction to tobacco in the form of masheri (tobacco toothpaste) was reported by 42 (19.09%) women, while 5 (2.28%) reported alcohol consumption during pregnancy. Most women received information about ANC services from nearby sub-centers or PHC staff (198; 90%). Other sources included Anganwadi workers (175; 79.54%), media (150; 68.18%), RHTC staff (140; 63.63%), general practitioners (80; 36.36%), and friends or relatives (50; 22.72%). The most common ANC complication was pallor, reported by 138 (62.72%) women, followed by hypertension in 60 (27.27%). Edema was reported by 56 (25.45%), headache by 24 (10.9%), vaginal discharge by 21 (9.54%), and malpresentation by 4 (1.81%) women.
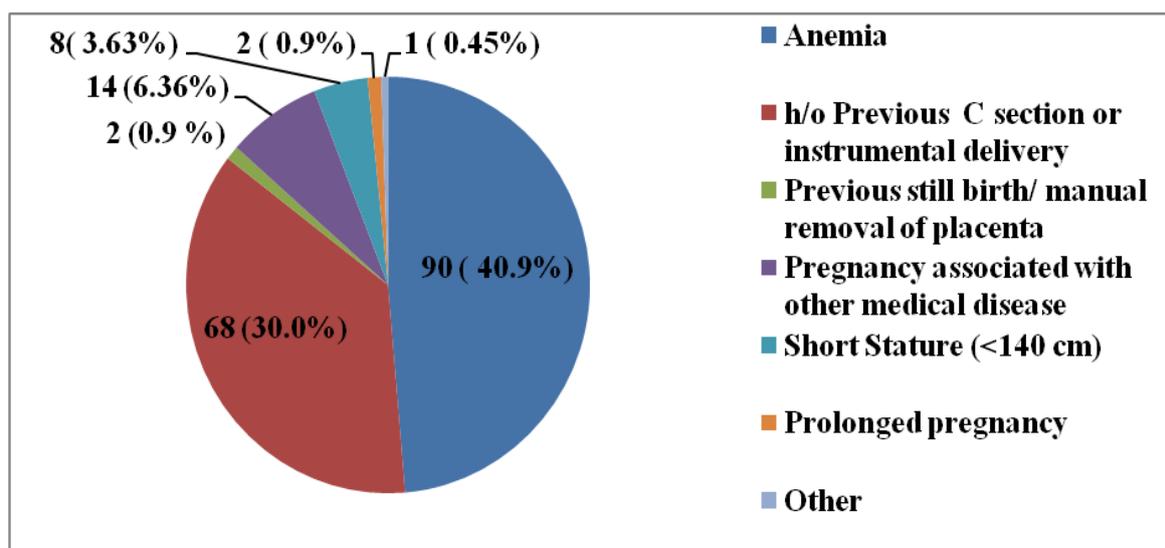

Figure 1: Distribution of High-Risk ANC mother (n = 220)

Figure 1shows the distribution of High-Risk ANC mother (n = 220). Regarding delivery,

187 (85%) women had institutional deliveries, while 33 (15%) delivered at

home. Normal vaginal delivery was reported by 152 (69.09%) women, cesarean section by 48 (21.81%), and assisted or forceps delivery by 20 (9.1%). Most women, 200 (90.9%), had full-term deliveries, while 20 (9.1%) had preterm births. Among the newborns, 175 (79.54%) had normal birth weight, whereas 45 (20.46%) were low birth weight. Deliveries were conducted by trained personnel in 206 (93.63%) cases, while 14 (6.37%) were conducted by untrained persons. Intranatal complications included severe bleeding in 30 (13.63%) women, high-grade fever in 13 (5.9%), breathlessness or edema in 12 (5.45%), prolonged labor in 7 (3.18%), convulsions in 5 (2.27%), retained placenta in 3 (1.36%), and uterine inversion in 2 (0.91%).

Only 30 (13.63%) women received adequate postnatal visits, while the majority, 190 (86.37%), did not receive adequate postnatal care. Almost all women, 218 (99.09%), gave colostrum to their babies. Exclusive breastfeeding was practiced by 154 (70%) women, and breastfeeding was initiated within one hour of delivery by 195 (88.6%) women. Pre-lacteal feeds were given by only 18 (8.19%) women. Complementary feeding between 4–6 months was initiated by 165 (75%) women. Postpartum complications included secondary hemorrhage in 20 (9.09%) women, urinary tract infection in 7 (3.18%), puerperal sepsis in 5 (2.27%), and thrombophlebitis in 2 (0.91%). In terms of family size, 88 (40%) women had one living child, 106 (48.18%) had two, 23 (10.45%) had three, and 3 (1.36%) had four or more children. The average age at first childbirth was 21.1 years and at second childbirth was 23.1 years.

Regarding immunization, 178 (81.13%) children were fully immunized, 43 (15.30%) were partially immunized, and 10 (3.55%) were not immunized. Awareness of contraceptive methods was present among 138 (62.7%) women, while 82 (37.3%) were not aware. Nearly half of the respondents, 103 (46.82%), did not use any contraceptive method. A total of 73 (33.18%) women had undergone sterilization.
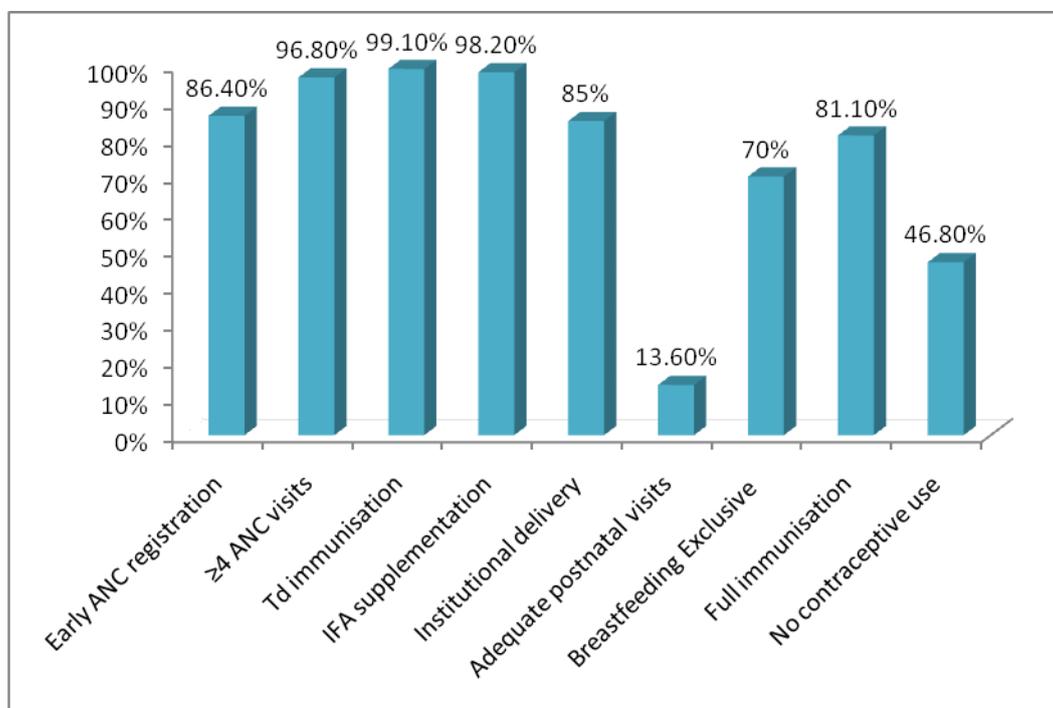

Figure-2: Utilisation of Maternal and Child Health Services.

Figure 2 shows the Utilization of Maternal and Child Health Services. Accessibility to services varied. Only 32 (14.54%) women lived very close to MCH facilities, while most lived somewhat far (95; 43.18%) or far away (93; 42.28%). Government hospitals

were the most preferred facilities (87; 35.65%), followed by private hospitals (69; 28.27%).

A small proportion of women did not utilize ANC services, mainly due to lack of awareness, unsuitable timing, non-availability of health personnel, or high cost. Reasons for non-utilization of immunization services included religious beliefs, timing issues, and non-availability. Some women also did not use family welfare services due to desire for more children, religious reasons, or husband's refusal.

Statistical analysis showed that maternal education, husband's education, occupation, and socioeconomic status were significantly associated with utilization of ANC, intranatal, and postnatal services. However, maternal age and religion were generally not significantly associated with service utilization.

Overall, the study showed high coverage of ANC visits, TT immunization, and institutional deliveries, but low utilization of postnatal care and moderate levels of contraceptive awareness and use.

DISCUSSION

The present study assessed the utilization of maternal and child health (MCH) services among women in the study area and its association with socio-demographic variables.

In the present study, most women (51%) were in the age group of 15–25 years, and the mean age of mothers was 26.8 years. This is comparable to national patterns, where the median age at first birth among women aged 25–49 years was reported as around 21 years in NFHS-5 [2]. The mean age at marriage in this study was 19.5 years, which is slightly lower than the national average age at marriage of 19.2 years, reported in NFHS-5, indicating persistence of early marriage in rural and tribal population [2, 6].

Regarding education, nearly half of the women in this study had education up to high school, and only 2.3% were graduates. NFHS-5 also reported that a large proportion of women in India had education up to secondary level, while higher education among rural women remained low [2]. Several studies have shown that maternal education is a key determinant of utilization of MCH services [7, 8]. In the present study, education of both mother and husband was significantly associated with adequate ANC utilization, which is consistent with findings from studies conducted in Maharashtra and Karnataka [9, 10].

Most women in the present study were unemployed (91.36%), reflecting economic dependence on husbands. Similar occupational patterns have been reported in rural and tribal populations across India [9]. Socioeconomic status also showed significant association with ANC utilization in this study. NFHS-5 reported that women in higher wealth quintiles had significantly better maternal service utilization, including institutional delivery and antenatal care [2].

In the present study, early ANC registration was reported among a majority of women, and 96.8% had at least three ANC visits. NFHS-5 reported that about 58.1% of women had four or more ANC visits nationally, indicating improvement but still gaps in coverage [2]. The higher ANC utilization in this study may be due to better outreach services or effective primary health infrastructure in the study area.

TT immunization and IFA supplementation coverage were very high in the present study (99% and 98% respectively). NFHS-5 reported that about 91% of mothers received at least two tetanus toxoid injections and around 89% consumed IFA tablets for 100 days or more, suggesting similar or slightly better coverage in the present study [2].

Anemia was the most common ANC complication in this study. NFHS-5 reported that more than half (52.2%) of women aged 15–49 years in India were anemic, highlighting the persistent burden of maternal anemia nationwide[2]. This similarity reflects the ongoing public health challenge of anemia among pregnant women.

Institutional delivery was reported by 85% of women in this study. NFHS-5 reported that 88.6% of births in India were institutional deliveries, indicating comparable coverage [2]. Studies from other parts of India have reported institutional delivery rates ranging from 70% to 92%, depending on region and socioeconomic conditions.

In the present study, 79.5% of newborns had normal birth weight, while 20.4% were low birth weight. NFHS-5 reported that about 18% of children had low birth weight, which is similar to the present findings[2].

Breastfeeding practices in this study were encouraging. Colostrum feeding was reported by 99% of mothers, and early initiation of breastfeeding was seen in 88.6%. NFHS-5 reported early initiation of breastfeeding among 41.8% of newborns nationally, indicating better practices in the present study population. Exclusive breastfeeding was practiced by 70% of women in this study, compared to 63.7% reported nationally in NFHS-5[2].

However, postnatal care utilization was low in this study, with only 13.6% of women receiving adequate PNC visits. NFHS-5 reported that about 78% of mothers received postnatal care within two days of delivery, suggesting a major gap in PNC utilization in the present study area[2]. Similar findings of low PNC coverage have been reported in tribal and remote populations.

Immunization coverage in this study showed that 81.1% of children were fully immunized, while 15.3% were partially immunized. NFHS-5 reported full immunization coverage of 76.4% among children aged 12–23 months, indicating slightly better coverage in the present study[2].

Contraceptive awareness was present among 62.7% of women in this study. NFHS-5 reported overall contraceptive prevalence of 66.7% among married women, indicating comparable awareness and usage levels[2]. However, a large proportion of women in the present study still did not use any contraception, which reflects ongoing unmet needs for family planning.

The present study also found that socio-demographic factors such as maternal education, husband's education, occupation, and socioeconomic status were significantly associated with utilization of ANC, institutional delivery, and PNC services. Similar associations have been reported in multiple Indian studies, indicating that social determinants continue to influence maternal health service utilization.

Globally, maternal mortality has declined significantly over the past two decades. According to the WHO and allied agencies, the global maternal mortality ratio decreased from 339 per 100,000 live births in 2000 to 223 in 2020, while India's MMR declined substantially over the same period[1,] according to the Sample Registration System, India's MMR declined to 97 per 100,000 live births in 2018–20, reflecting improvements in maternal health services[3].

Overall, the findings of this study are broadly consistent with national data and other regional studies, particularly regarding ANC coverage, institutional delivery, and immunization. However, gaps remain in postnatal care utilization, anemia control, and contraceptive adoption, especially among socioeconomically disadvantaged groups.

CONCLUSION

The present community-based cross-sectional study among tribal women demonstrated relatively high utilization of antenatal care services, tetanus diphtheria toxoid immunization, iron–folic acid supplementation, institutional deliveries and early breastfeeding practices. These findings indicate improved outreach and effectiveness of frontline health services in the study area.

However, significant gaps were observed in postnatal care utilization, contraceptive adoption and management of maternal anemia. A substantial proportion of women did not receive adequate postnatal visits, and nearly half were not using any

contraceptive method despite awareness of available options. Socio-demographic factors such as maternal and husband's education, occupation, socioeconomic status and accessibility of services were significantly associated with utilization of maternal and child health services.

Although the study area showed performance comparable to or better than national averages for several antenatal and delivery indicators, the poor uptake of postnatal care and family planning services highlights critical gaps in the continuum of care. Focused interventions addressing these gaps are essential to further improve maternal and child health outcomes in tribal populations.

Declaration by Authors

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