

Access, Awareness and Utilisation of Maternal Healthcare Services Among Tribal Women: Evidence from Mananthavady Taluk of Wayanad District, Kerala

Seena Devi¹; Rishana Sherin^{2*}

¹Associate Professor, PG Department of Economics, NMSM Government College Kalpetta, Wayanad, Kerala, India

²PG Student, PG Department of Economics, NMSM Government College Kalpetta, Wayanad, Kerala, India

Corresponding Author: Rishana Sherin^{2*}

Publication Date: 2026/10/21

Abstract: Maternal wellbeing among tribal women is influenced by healthcare access, income, location, cultural practices, health awareness and support from family members. This study examines maternal health, care-seeking practices and women's views of maternity services in Mananthavady Taluk, Wayanad district. The study is descriptive and empirical and uses both primary and secondary information. The study follows a descriptive empirical approach. Questionnaire responses and field enquiries provided primary information from 100 tribal women, while the secondary material came from relevant studies, reports and health-related publications used in the project. The sample includes Paniya, Kurichiya, Adiya and Kuruma women. The results show comparatively high use of institutional care: 86 per cent of respondents reported hospital delivery and 96 per cent reported the availability of a hospital or health centre in their area. At the same time, maternal health awareness remains uneven, with 58 per cent reporting a medium level of awareness, 22 per cent high awareness and 20 per cent low awareness. Traditional beliefs continue to influence pregnancy-related practices among 56 per cent of respondents. Family support is also uneven: 33 per cent reported high support, 48 per cent average support and 19 per cent below-average support. The study further records seven deaths associated with pregnancy outcomes, of which five involved babies and two involved mothers. The findings indicate that improvement in physical access alone is insufficient. Maternal health policy in tribal areas requires culturally sensitive communication, stronger tribal ASHA outreach, nutrition and anemia prevention, early pregnancy registration, reliable referral transport and focused support for women in remote settlements.

Keywords: Maternal Health; Tribal Women; Health-Seeking Behaviour; Institutional Delivery; Mananthavady; Wayanad; ASHA Workers.

How to Cite: Seena Devi; Rishana Sherin (2026) Access, Awareness and Utilisation of Maternal Healthcare Services Among Tribal Women: Evidence from Mananthavady Taluk of Wayanad District, Kerala. *International Journal of Innovative Science and Research Technology*, 11(10), 1031-1039. <https://doi.org/10.38124/ijisrt/26oct662>

I. INTRODUCTION

Women's health during pregnancy, childbirth and the period after delivery is an important part of human development. It affects the physical, psychological and emotional health of both mothers and children. Hence, a maternal-health system should provide prenatal care like pregnancy check-ups, safe childbirth, along with various postnatal care, including nutrition, emergency referral and reliable health information. Yet the ability to use these services is not determined by supply alone. Household income, education, distance, transport, social support, local

beliefs and trust in health institutions can strongly influence when and where women seek care.

These concerns are especially relevant to tribal communities. Tribal populations often live in geographically isolated settlements and may experience economic marginalization, limited transport and uneven access to formal institutions. At the same time, pregnancy and childbirth may be embedded in distinct cultural beliefs and practices. Such practices need not always conflict with modern healthcare, but they can influence the timing of antenatal registration, the preference for home or hospital delivery, nutrition practices and the use of traditional healers.

Maternal healthcare policy in tribal regions therefore requires a balance between service expansion and culturally responsive community engagement.

Kerala is widely recognized for comparatively strong health and social indicators, a dense public health network and high levels of institutional delivery. Nevertheless, the benefits of these achievements are not evenly distributed across all social groups. The study identifies Wayanad as the district with the largest concentration of tribal population in Kerala and describes several tribal communities, including Paniya, Kurichiya, Adiya, Kuruma and others. Many settlements are in hilly or forest-fringe areas, making last-mile access and emergency transport important dimensions of maternal healthcare.

Mananthavady taluk can be regarded as one of the appropriate settings for understanding these issues because of its substantial tribal population and the coexistence of public healthcare facilities, outreach services and traditional practices. The present article reorganizes the evidence generated by the project into a journal format and focuses on three related questions: the maternal health profile of tribal women, their health-seeking behaviour, and the functioning of maternal healthcare programmes and services as experienced at the community level.

➤ *Statement of the Problem*

The existence of hospitals, health centers and government maternity schemes does not automatically ensure equal maternal health outcomes. Tribal women may continue to face barriers arising from remoteness, low and unstable income, limited health literacy, traditional beliefs, inadequate family support, delayed pregnancy registration and difficulties in reaching facilities during emergencies. The study specifically notes concerns relating to maternal and infant health, physiological difficulties during pregnancy and uneven family support among tribal women in Mananthavady.

The policy problem is therefore not simply one of expanding infrastructure. It is necessary to understand whether tribal women use the services that are available, whether the information reaching them is adequate, whether cultural practices shape their decisions, and whether government interventions have succeeded in encouraging safer delivery and maternal care. A local empirical assessment is important because state-level averages may conceal inequalities within remote tribal settlements.

II. REVIEW OF LITERATURE

Early work on maternal healthcare in South India emphasized the role of social context in the use of tetanus toxoid vaccination, place of delivery and birth assistance. Navaneetham and Dharmalingam (2000) drew attention to variations in maternal healthcare utilization across social settings. Soni (2003), in a study of the Kol tribe of Madhya Pradesh, pointed out a lack of sufficient awareness regarding pre- and postnatal care for both mother and child and

recommended stronger monitoring, information dissemination and medical camps.

In Rajasthan, Bhardwaj and Tungdim (2010) found that Scheduled Tribe women faced greater disadvantages in education and reproductive healthcare use than Scheduled Caste women. Chauhan, Chauhan, and Shrivastava (2012), using hospital records from Bastar, identified serious maternal mortality risks among tribal women, including anemia, malaria and sickle-cell disease. These studies show that maternal health disadvantages are linked to both biomedical risks and broader socio-economic conditions.

Evidence from Kerala provides a more direct context. José et al. (2014) examined maternal healthcare utilization among tribal women in Wayanad and reported the importance of health workers and public health infrastructure in improving service use. This is particularly relevant to the present study because it suggests that the effectiveness of maternal health programmes in tribal areas depends substantially on local frontline workers and the functioning of nearby institutions.

Research from other tribal regions further demonstrates the importance of culture and access. Islam (2017), studying Muru indigenous women in Bangladesh, found low maternal healthcare utilization associated with education, residence, distance and access to information. Contractor et al. (2018), in Odisha, argued that maternal health systems should respond more carefully to tribal women's experiences and cultural practices rather than relying on a uniform service template. Their work underlines the need to build trust between communities and formal health systems.

More recent studies examine inequality and the role of community-based interventions. Ali and Chauhan (2020) reported persistent socio-economic inequalities in the utilization of maternal healthcare in rural India. Choudhury, Asan, and Choudhury (2020) showed that mobile health-based education can improve knowledge about maternal health among tribal women. Choudhury and Choudhary (2022) similarly examined the use of mobile-supported maternal health communication among women in tribal societies. These studies point out that information constraints can be addressed through locally suitable communication technologies and trained health workers.

Studies using larger datasets also point to structural determinants. Barman et al. (2024) found that education, employment, age at pregnancy, parity and proximity to facilities influence maternal healthcare utilization among Scheduled Tribe women in the Empowered Action Group states. Sudarsan and Vithya (2024), in a systematic review of tribal maternal wellbeing in Kerala, identified biological, psychological, social and cultural determinants. Taken together, the literature suggests that service availability, household characteristics, social support, cultural beliefs and health awareness interact in shaping maternal health outcomes.

➤ *Research Gap*

Much of the existing literature either uses large national datasets or focuses on a single tribal group in another state. Studies from Wayanad have established that healthcare workers and infrastructure matter, but there remains a need for small-area evidence that simultaneously considers institutional delivery, availability of facilities, awareness, traditional beliefs, family support and reported maternal or infant loss. The current research aims to reduce this gap through a field-level assessment in Mananthavady taluk involving women from multiple tribal communities.

The contribution is mainly descriptive rather than causal. Its value lies in bringing together socio-economic, cultural and service-utilization dimensions within one local study and identifying areas where high service availability coexists with incomplete awareness and persistent vulnerability.

➤ *Objectives of the Study*

- To understand the maternal health status of tribal women in Wayanad, with special reference to Mananthavady taluk.
- To assess the health-seeking behaviour of tribal women in relation to pregnancy and delivery.
- To evaluate the effectiveness and reach of government maternal healthcare programmes and related health facilities among tribal communities.

Cultural context also matters in Mananthavady. The study records the continued influence of traditional beliefs and the presence of traditional healers in some communities. This does not necessarily imply rejection of modern medicine; rather, women may use traditional practices alongside formal care. Therefore, the effectiveness of maternal health programmes should be assessed not only by the physical availability of hospitals but also by how well programmes engage with community beliefs, family decision-making, information gaps and the practical constraints faced by low-income households.

The role of frontline workers is especially important because access is not purely a question of distance. Health workers often function as a link between the household and the formal health system by identifying pregnancy, encouraging antenatal registration, explaining nutrition and medicine, facilitating immunization, arranging referrals and making postnatal home visits. In tribal areas, the project emphasizes the additional value of tribal ASHA workers and community-based health volunteers who are familiar with local language, settlement patterns and cultural practices. Such familiarity can reduce mistrust and improve communication about danger signs, institutional delivery and follow-up care.

The public health context is comparatively favourable in Kerala, but the project points out that tribal settlements may still face a different pattern of access from the general population. Maternal healthcare in Wayanad includes antenatal care, institutional delivery, postnatal visits and

referral services. ASHA workers, ANMs, Anganwadi centers and outreach camps are important in reaching tribal hamlets. Programmes referred to in the project include Janani Suraksha Yojana, Pradhan Mantri Surakshit Matritva Abhiyan, nutrition support through ICDS and locally organized outreach mechanisms. Ambulance and referral services are also important where distance and terrain create delays in reaching higher-level institutions.

➤ *Study Area and Maternal Healthcare Context*

Wayanad is a predominantly hilly district in northern Kerala with a comparatively high concentration of Scheduled Tribe communities. The study identifies Mananthavady as one of the three taluks of Wayanad and as an area with a substantial tribal population living in forest-fringe and remote settlements. The socio-economic profile described in the study includes dependence on daily wage work, agriculture and MGNREGA, along with continuing concerns relating to poverty, landlessness, transport and access to basic amenities in some settlements. These conditions are relevant to maternal health because pregnancy care may require repeated travel for antenatal check-ups, laboratory tests, referral and delivery.

III. METHODOLOGY

The study follows a descriptive and empirical design and combines quantitative and qualitative information. Field-level information was obtained from respondents through a questionnaire and field enquiry. Secondary data were collected from research studies, reports on tribal communities, material relating to ASHA workers and government health sources cited in the project.

The field survey covered 100 tribal women in Mananthavady taluk, Wayanad district. The respondents represented Paniya, Kurichiya, Adiya and Kuruma communities. The project reports descriptive distributions relating to age, income, tribe, delivery method, adherence to traditional beliefs, availability of health facilities, level of maternal health awareness, alcohol use during pregnancy, family support, age-related childbearing and maternal/infant deaths. The present article uses percentages and frequencies as reported in the project and does not introduce inferential estimates that were not part of the original study.

The analysis is organized around three dimensions: (i) socio-demographic profile, (ii) health-seeking behaviour and service utilization, and (iii) cultural, informational and family-support factors affecting maternal health. This structure allows the project data to be presented in a form more suitable for journal publication.

➤ *Econometric Model Specification*

To strengthen the empirical analysis, the study can use a binary logistic regression model to identify the factors associated with institutional delivery among tribal women. Institutional delivery is selected as the dependent variable because it is a direct indicator of maternal healthcare utilization and health-seeking behaviour. The dependent variable (Y) is coded as 1 when the respondent reported

hospital delivery and 0 when the respondent reported home delivery. Since the dependent variable is dichotomous, ordinary least squares is not appropriate, and a logit specification is more suitable.

The model may be specified as:

$$\ln [P_i / (1 - P_i)] = \beta_0 + \beta_1 \text{INC}_i + \beta_2 \text{AWARE}_i + \beta_3 \text{SUPPORT}_i + \beta_4 \text{TRAD}_i + \beta_5 \text{AGE}_i + \beta_6 \text{TRIBE}_i + \beta_7 \text{ACCESS}_i + u_i$$

Here, P_i is the probability that the i -th respondent had an institutional delivery. INC represents the monthly income category of the respondent; AWARE represents maternal health awareness; SUPPORT represents the level of family support; TRAD is a dummy variable taking the value 1 when traditional beliefs or rituals are followed during pregnancy and 0 otherwise; AGE represents the respondent's age or age group; TRIBE is a set of dummy variables for the tribal community; and ACCESS represents the reported availability of a hospital or health center. The coefficients β_1 to β_7 measure the direction of association between the respective explanatory variables and the log-odds of institutional delivery.

The expected signs are generally positive for income, maternal health awareness, family support and effective access to healthcare. The sign of the traditional-belief

variable is theoretically ambiguous because the descriptive results show that traditional practices coexist with a high level of hospital delivery. Tribe and age variables are included mainly as controls. Because only 14 respondents reported home delivery, the final estimated model should be kept parsimonious. A preferred empirical version would include three or four principal predictors—maternal health awareness, family support, traditional beliefs and income—while age and tribe may be added in robustness checks. If complete respondent-level data are available, results should be reported as odds ratios with robust standard errors, 95 per cent confidence intervals, p -values, the likelihood-ratio test and a goodness-of-fit measure such as McFadden's pseudo- R^2 . If separation or very sparse cells arise because of the small number of home deliveries, penalized (Firth) logistic regression may be considered.

An alternative model can be used for maternal health awareness because awareness is recorded in three ordered categories—low, medium and high. In that case, an ordered logit model may be estimated with awareness as the dependent variable and income, family support, traditional beliefs, age, tribe and access to health facilities as explanatory variables. However, for the objectives of the present article, the binary institutional-delivery model is more directly connected with health-seeking behaviour and is therefore recommended as the principal econometric specification.

IV. RESULTS AND DISCUSSION

➤ Socio-Demographic Profile

Table 1 Age Profile of Respondents

Age group (years)	Number	Per cent
15–20	8	8
20–25	28	28
25–30	32	32
30–35	27	27
35–40	5	5
Total	100	100

Source: Primary Survey Data

The age distribution is concentrated in the central reproductive years. Women aged 25–30 form the largest group (32 per cent), followed by those aged 20–25 (28 per cent) and 30–35 (27 per cent). Together, women aged 20–35 constitute 87 per cent of the sample. This concentration is important for programme design because maternal health communication, antenatal tracking and nutritional interventions can be targeted strongly towards the age groups in which pregnancies are most common in the surveyed population.

The study also reports a predominantly low- to middle-income profile. Forty-eight per cent of respondents had monthly income between ₹5,000 and ₹10,000, 34 per cent were in the ₹1,000–₹5,000 category, and only 18 per cent were in the ₹10,000–₹15,000 category. Economic vulnerability can influence nutrition, transport choices and the ability to manage indirect costs even where government services themselves are subsidized or free.

Table 2 Tribal Composition and Monthly Income

Indicator	Category	Per cent
Tribe	Paniya	46
Tribe	Kurichiya	31
Tribe	Adiya	13
Tribe	Kuruma	10
Monthly income	₹1,000–₹5,000	34

Monthly income	₹5,000–₹10,000	48
Monthly income	₹10,000–₹15,000	18

Source: Primary Survey Data.

Paniya women constitute 46 per cent of respondents and Kurichiya women 31 per cent; together they account for 77 per cent of the sample. Adiya and Kuruma women represent smaller shares. The dominance of two communities means that aggregate results should not be interpreted as equally

representative of every tribal group in Mananthavady. At the same time, inclusion of multiple groups is a strength because it allows the study to move beyond a single-community case study.

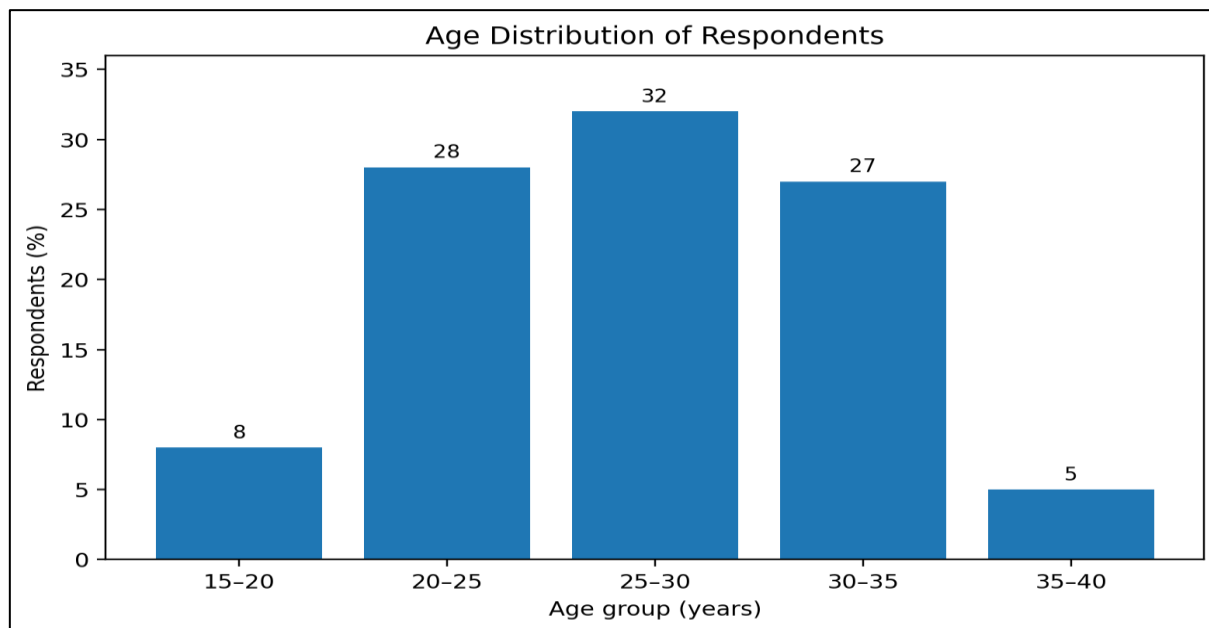


Fig 1 Age Distribution of Respondents.

Source: Primary Survey Data

➤ Delivery Practices and Access to Healthcare

Table 3 Delivery Method and Reported Availability of Health Facilities

Indicator	Response	Per cent
Delivery method	Hospital delivery	86
Delivery method	Home delivery	14
Hospital/health center availability	Available	96
Hospital/health center availability	Not available	4

Source: Primary Survey Data

A major positive finding is the high prevalence of institutional delivery. Eighty-six per cent of respondents reported hospital delivery, compared with 14 per cent reporting home delivery. This pattern suggests substantial acceptance of institutional maternity care among the surveyed tribal women. It is consistent with the project's broader assessment that government initiatives, local health workers and improved service availability have encouraged hospital-based childbirth.

Reported physical availability of healthcare is also high: 96 per cent stated that hospitals or health centers were available in their area. However, availability should not be equated with complete accessibility. The remaining 4 per cent represent women in potentially remote or underserved locations, and even women who report a facility as available may face transport, terrain or timing barriers. The study discussion of hilly settlements and referral difficulties supports the need to distinguish geographic presence from effective access.

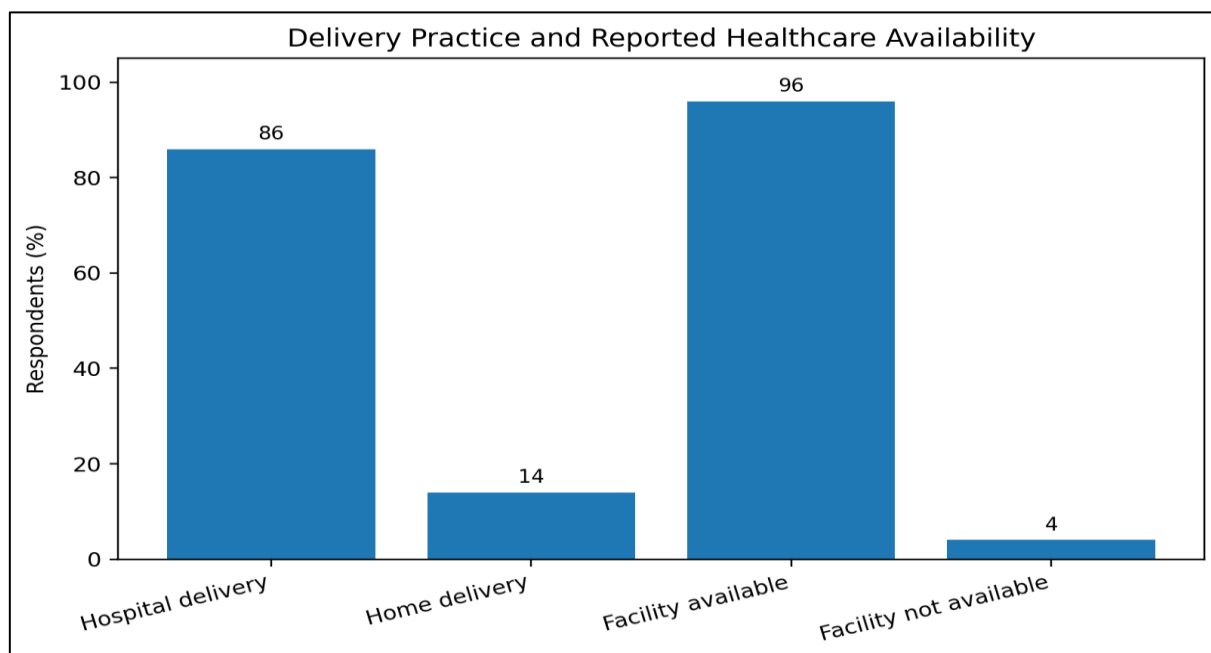


Fig 2 Delivery Practice and Reported Availability of Healthcare Facilities.

Source: Primary Survey Data

➤ *Traditional Beliefs, Awareness and Health Behaviour*

Table 4 Cultural and Awareness Indicators

Indicator	Category	Per cent
Traditional beliefs during pregnancy	Followed	56
Traditional beliefs during pregnancy	Not followed	44
Maternal health awareness	High	22
Maternal health awareness	Medium	58
Maternal health awareness	Low	20
Alcohol use during pregnancy	Consumed	2
Alcohol use during pregnancy	Not consumed	98

Source: Primary Survey Data

Traditional beliefs remain influential: 56 per cent of respondents reported following traditional beliefs or rituals during pregnancy, while 44 per cent did not. The relatively narrow difference between the two groups is significant. It suggests neither the disappearance of traditional practice nor complete resistance to modern healthcare. Instead, women appear to negotiate between cultural practices and institutional services. The high rate of hospital delivery alongside continued adherence to tradition illustrates this coexistence.

Maternal health awareness is more uneven. Fifty-eight per cent fall in the medium-awareness category, 22 per cent in the high-awareness category and 20 per cent in the low-awareness category. Thus, four out of five respondents have

at least moderate awareness, but only around one-fifth are classified as highly aware. This indicates considerable scope for improving knowledge regarding antenatal warning signs, nutrition, anemia prevention, timely registration, institutional delivery and postnatal follow-up.

During the field study, the reported alcohol use during pregnancy is very low. While 98 per cent stated that they did not consume alcohol, only 2 per cent reported of consuming alcohol during pregnancy. While this is broadly a positive behavioural indicator, the risk group, though statistically small, should not be ignored since the use of alcohol during pregnancy can have irreversible negative consequences on maternal and fetal health. Targeted counselling is therefore preferable to a generalized intervention.

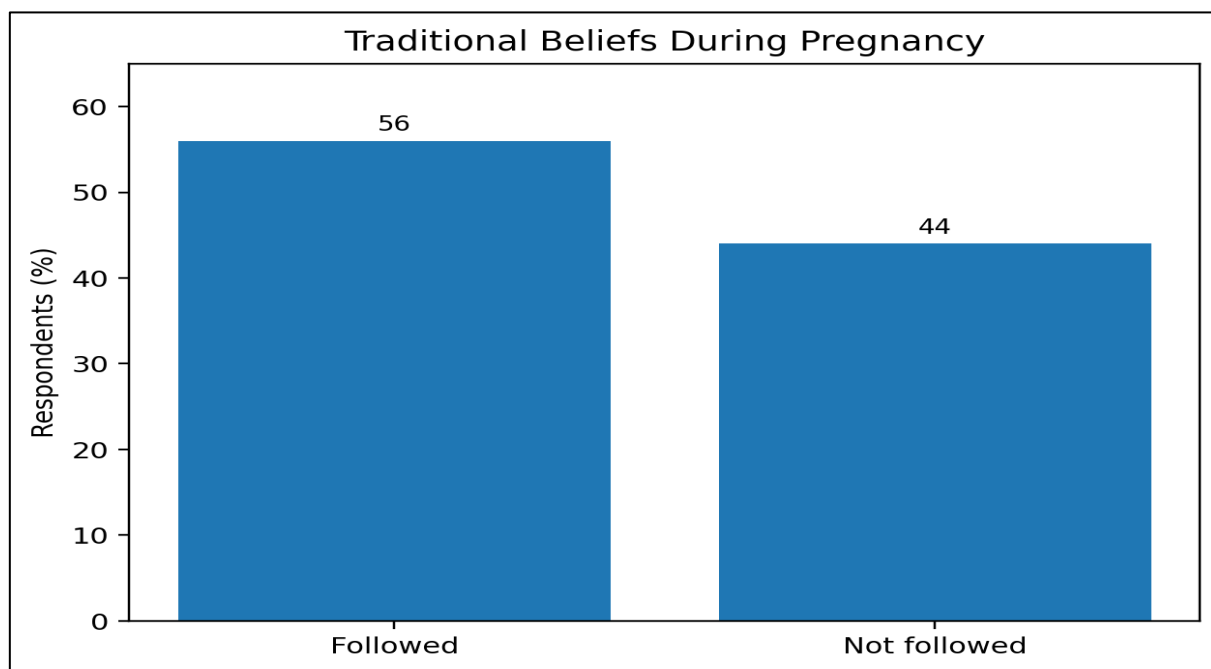


Fig 3 Traditional Beliefs During Pregnancy.
Source: Primary Survey Data

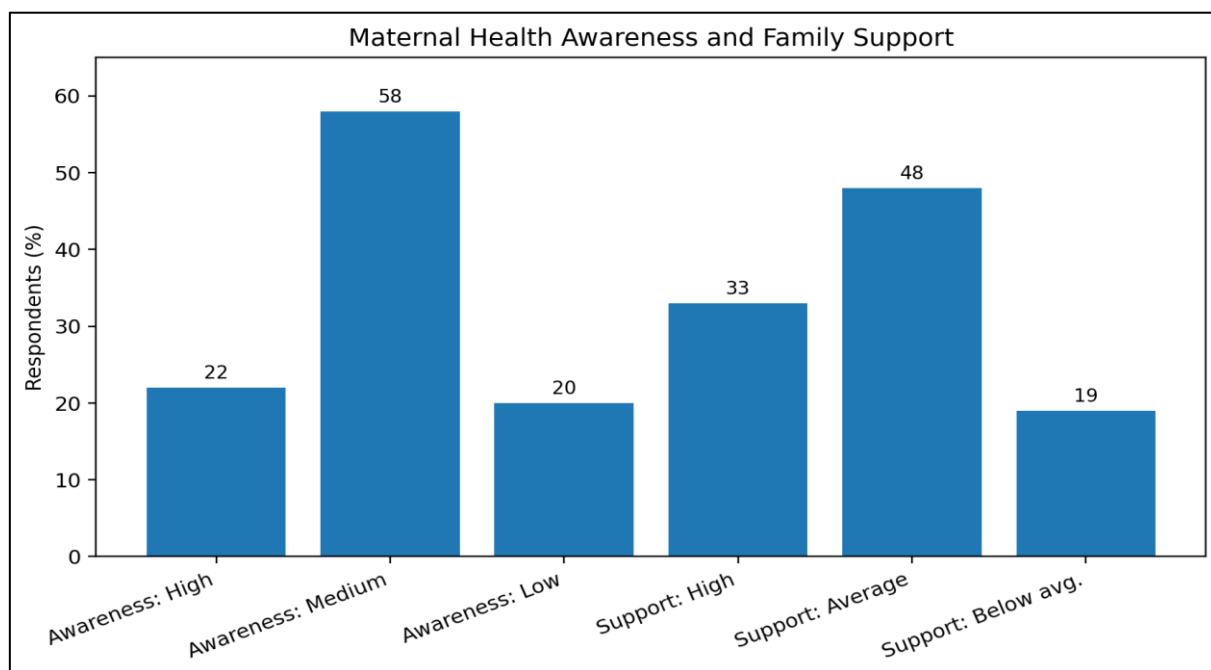


Fig 4 Maternal Health Awareness and Family Support.
Source: Primary Survey Data

➤ *Family Support and Reproductive Outcomes*

Table 5 Family Support and Reported Pregnancy-Related Deaths

Indicator	Category	Number/Per cent
Family support	High	33%
Family support	Average	48%
Family support	Below average	19%
Reported pregnancy-related deaths	Baby deaths	5
Reported pregnancy-related deaths	Maternal deaths	2
Reported pregnancy-related deaths	Total	7

Source: Primary Survey Data

Family support is present but not uniformly strong. Thirty-three per cent of respondents reported high family support, 48 per cent average support and 19 per cent below-average support. The fact that nearly one-fifth report's weak support is important because pregnancy care often depends on household decisions concerning transport, nutrition, accompaniment to health facilities and compliance with medical advice. Strengthening maternal health therefore requires engagement not only with pregnant women but also with husbands and other family members.

The study records seven deaths associated with pregnancy outcomes, consisting of five baby deaths and two maternal deaths. These figures are not population mortality rates and should not be interpreted as such because the project does not provide a denominator of pregnancies over a defined observation period. Nevertheless, within the surveyed experience they point to continuing reproductive risk and reinforce the importance of early antenatal registration, risk screening, nutrition support, referral transport and postnatal follow-up.

It also reports that childbearing is concentrated between ages 25 and 35. The pattern is consistent with the respondent age distribution and reinforces the practical importance of targeting maternal health services to women in the central reproductive age groups while continuing to protect younger and older mothers who may face distinct risks.

V. DISCUSSION

The findings present a mixed picture of substantial progress and persistent vulnerability. On the one hand, institutional delivery is high and most respondents report the presence of a health facility. These indicators suggest that the public health network, government programmes and frontline health workers have succeeded in bringing formal maternal healthcare closer to tribal communities. This interpretation is consistent with José et al. (2014), who emphasized the role of healthcare workers and infrastructure in maternal service utilization among tribal women in Wayanad.

On the other hand, the study shows that service utilization does not eliminate informational and social barriers. Only 22 per cent of respondents are classified as having high maternal health awareness, and nearly one-fifth report low awareness. Similar concerns appear in Soni (2003) and Islam (2017), where information, education and access influenced the use of maternal health services. The evidence therefore supports an approach that combines facilities with repeated community-based health education.

Traditional beliefs must also be understood carefully. More than half of the respondents follow some traditional pregnancy-related practices, yet 86 per cent report hospital delivery. This means that tradition and institutional healthcare are not mutually exclusive. Contractor et al. (2018) argue that tribal maternal health programmes should engage with cultural practices rather than treating them simply as barriers. In Mananthavady, culturally competent communication by ASHA workers, tribal health volunteers

and local institutions may be more effective than messages that dismiss community beliefs.

Economic constraints remain relevant even in a relatively strong public health system. Most respondents are in low- and middle-income categories. Indirect costs associated with transport, food, lost work time and accompanying family members can affect care-seeking decisions. This is especially important in hilly and remote settlements. The project therefore supports continued attention to emergency transport, outreach services, direct benefit mechanisms and simplified documentation for maternal health schemes.

Finally, uneven family support and reported maternal/infant deaths point to the importance of continuity of care. Maternal health cannot be reduced to the place of delivery. Early registration, antenatal visits, anemia screening, adequate nutrition, high-risk identification, safe delivery, newborn care and postnatal follow-up form continuum. Weaknesses at any stage can reduce the benefits achieved through institutional delivery alone.

VI. POLICY IMPLICATIONS AND SUGGESTIONS

First, maternal health communication should be delivered in culturally appropriate and locally understandable forms. Tribal-language or dialect-sensitive information, visual IEC materials and community meetings can improve awareness among women who may not benefit fully from standard written communication.

Second, the role of tribal ASHA workers and other frontline health personnel should be strengthened through regular refresher training, adequate incentives and better coordination with primary and family health centres. Home visits are particularly important for early identification of pregnancy, risk screening and follow-up in remote settlements.

Third, maternal nutrition and anemia prevention require sustained attention. Anganwadi-based supplementation, counselling on locally available nutritious foods, kitchen gardens and systematic monitoring of hemoglobin levels can help reduce preventable risks.

Fourth, last-mile access should remain a policy priority even where general facility availability is high. Mobile medical units, reliable emergency transport, clear referral pathways and improved connectivity between tribal settlements and higher-level institutions are necessary for high-risk pregnancies and obstetric emergencies.

Fifth, government schemes should be made easier to understand and use. Awareness drives should explain eligibility, benefits and procedures, while documentation should be simplified wherever possible. Direct benefit transfer and digital tracking can be useful, but they should be supported by human assistance for households with limited digital literacy.

Finally, district-level monitoring should combine routine health data with periodic community audits. Indicators should include timely antenatal registration, anemia, institutional delivery, referral delays, postnatal visits, maternal and neonatal outcomes and service gaps by settlement and tribal community.

VII. LIMITATIONS OF THE STUDY

The study has several limitations that should be considered when interpreting the results. First, the sample is limited to 100 respondents and does not represent every tribal woman in Mananthavady or Wayanad. Second, different tribal groups are not equally represented; Paniya and Kurichiya women form most of the sample. Third, several indicators are self-reported and may be affected by recall, awareness and willingness to disclose sensitive information, particularly psychological difficulties and pregnancy-related behaviour. Fourth, the study is primarily descriptive and does not establish statistical relationships between socio-economic characteristics and maternal health outcomes. Finally, the project notes that complete data collection across all tribal groups in Mananthavady was not possible.

VIII. CONCLUSION

The study shows that maternal healthcare among tribal women in Mananthavady is characterised by both notable improvement and continuing inequality. High institutional delivery and widespread reported availability of health facilities indicate that public interventions have had an important positive effect. At the same time, medium or low awareness among a substantial share of women, continuing adherence to traditional practices, low household income, uneven family support and reported maternal and infant deaths demonstrate that physical access alone cannot guarantee maternal wellbeing.

The central policy implication is the need for a culturally informed continuum-of-care approach. Tribal maternal health programmes should combine institutional services with trusted frontline workers, nutrition and anemia prevention, early pregnancy tracking, family engagement, emergency transport and communication that respects local social contexts. Such an approach can consolidate the progress already achieved in institutional care while addressing the remaining gaps in awareness, accessibility and maternal-child outcomes in Mananthavady and similar tribal regions.

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