ORIGINAL RESEARCH PAPER

Community Medicine

SOCIO-CULTURAL DETERMINANTS OF ANAEMIA AMONG TRIBAL PREGNANT WOMEN ACCESSING ANTENATAL CARE IN VISAKHAPATNAM DISTRICT, ANDHRA PRADESH

KEY WORDS: Anemia, Tribal health, Socio-cultural determinants, Primitive Tribal Groups, Maternal mortality

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ABSTRACT

Background: Anaemia in pregnancy remains a major public health problem in India, with disproportionately high prevalence among tribal populations. Despite national programs aimed at reducing maternal morbidity and mortality, tribal women continue to face multiple barriers to antenatal care (ANC) utilization. **Objectives Of The Study:** To
(1) estimate the prevalence of anemia among tribal pregnant women accessing ANC,
(2) explore socio-cultural practices associated with anemia, and
(3) identify determinants influencing ANC utilization in the Pedabayalu tribal region of Visakhapatnam district.
Methods: A qualitative cross-sectional study was conducted between April- August 2024 among 89 pregnant women and 14 health-system stakeholders (ASHAs, ANMs, MPHS(F), PHN and the Medical Officer) using purposive sampling. Data were collected using semi-structured interviews. Secondary data were extracted from PHC Pedabayalu records and district MCH tracking data. Thematic analysis was used. **Results:** Severe anemia (<7 g/dL) was most common among multiparous women, those living in geographically inaccessible PTG villages, and women from households earning < 1000/month. Contributing determinants included poverty, food insecurity, cultural food taboos (avoidance of papaya, eggs), heavy workload during pregnancy, consumption of alcohol, hookworm exposure, malaria endemicity, and delayed ANC registration due to cultural beliefs. Health-system barriers included illiteracy among ASHAs (81%), limited diagnostic capacity at sub-centers, lack of DDK kits, and poor transport/ambulance reach. Home deliveries accounted for 75% of total births in Pedabayalu compared to none in the rural comparison PHC Sabbavaram. **Conclusion:** Anemia among tribal pregnant women is influenced by deep-rooted socio-cultural norms, geographic isolation, poverty, and health-system challenges. Strategies to reduce anemia must integrate nutrition interventions, behavior-change communication, capacity-building of frontline workers, and improved transport and referral systems.

INTRODUCTION

Anemia is a leading contributor to maternal morbidity and mortality globally. In South-East Asia, the prevalence reaches 56%, with India contributing 40–80% of cases. Among tribal women, the burden is even higher due to socio-economic vulnerabilities, limited access to health services, and unique cultural practices. Maternal mortality in tribal populations in India ranges between 8–25 per 1000 live births, significantly higher than state estimates.

ASR(erst while Visakhapatnam district)has a large tribal population concentrated in the hilly Agency regions. Despite multiple government initiatives, antenatal care utilization remains suboptimal, and anaemia continues to be a major cause of morbidity and mortality. This study explores the interplay between socio-cultural, economic, geographic and health-system determinants of anaemia in tribal pregnant women accessing ANC services in PHC Pedabayalu.

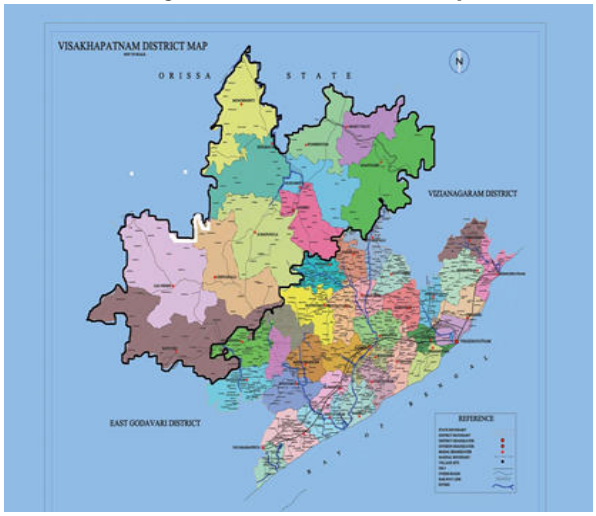

Fig1: Map of erst while Visakhapatnam District

RELEVANCE OF THE STUDY:

Pedabayalu PHC is situated in the Mandal headquarters of Pedabayalu. It is 25 km from Paderu and 145km from Visakhapatnam. It covers a population of 28,542. It has 6 subcentres – Pedabayalu, laxmipeta, aradakota, gamparai, kimudupalli and kunthurla with a population of 6325, 4039, 4685, 4972, 5513and 3008 respectively. Most of the families fall below poverty line and this make them vulnerable for so many nutrition disorders especially anaemia in pregnant women leading to poor maternal health and infant deaths. It has more than 50 PTG villages with no transport. The dietary habits in these PTG villages make them susceptible to food poisoning frequently. This area is endemic for malaria which may also lead to anaemia. In the year 2023- 2024 there were two maternal deaths and the reason for them was anaemia. So we selected this area for the study.

Back Ground Of The Study:

Anaemia among Tribal Women:

The major factor contributing to anemia is nutrition. Poverty, low standards of living, living in high altitudes with mineral and vitamin deficiencies, non provision of safe drinking water and certain food habits like eating stored food leading to frequent diarrheal diseases ,hook worm infestation, consumption of alcohol and smoking contribute to anemia in tribal. Child marriages, high parity also contribute to anemia. Non availability of certain fruits, jaggery, non consumption of milk, vegetables, green leafy vegetables add up to nutritional deficiencies in tribal people.

Other than nutrition, another important factor for anemia during pregnancy is health seeking behavior of the antenatal. Illiteracy of wife and husband, poverty, living in non approachable hilly areas, lack of knowledge about importance of checkups and complications of anemia lead to not turning up to the health facilities. The belief that the pregnancy is a regular part of life and needs no attention and intervention as in animals is a major factor for this.

"A diverse set of factors are thought to be associated with

maternal mortality: factors that influence delays in deciding to seek medical care, in reaching a place where care is available, and in receiving appropriate care. The main causes of high MMR being socioeconomic status of women, inadequate antenatal care, the low proportion of institutional deliveries| and the non-availability of skilled birth attendants in two-thirds of cases(NRHM-Health status & problems in India, mortality)"

In tribal population, women work more compared to males. House hold work, agriculture & other works are mainly taken up by them. This, along with poor reproductive health leading to menstrual problems lead to anaemia.

Anaemia & Maternal Mortality:

As stated by the WHO in its 2005 World Health Report "Make Every Mother and Child Count", the major causes of maternal deaths are: severe bleeding/hemorrhage (25%), infections (13%), unsafe abortions (13%), eclampsia (12%), obstructed labour (8%), other direct causes (8%), and indirect causes (20%). Indirect causes are malaria; anaemia another issue that is associated with maternal mortality is the lack of access to skilled medical care during childbirth and the distance of traveling to the nearest clinic to receive proper care.

Health Scenario Of Tribal's In Paderu:

In erst while Visakhapatnam, out of 43, 41,103 population of the district, 14.9 %(6,49,539) live in hilly tribal areas (paderu, chintapalli, araku). Out of 62 maternal deaths in 2023- 2024, 15 maternal deaths (24%) are from tribal area. (Records of DM&HO OFFICE,VISAKHAPATNAM)

MATERNAL DEATHS IN VISAKHAPATNAM (2023-24)

Rural	33
Tribal	15
Urban	14
Other district	20
Total	84

Fig:2

Challenges in Tribal areas, Paderu:

The geographic distribution of Paderu in Visakhapatnam district is different from other tribal areas in the state. It is located 2,969 ft above the sea level. Until 1978 transport to so many villages of Paderu area were not established. Due to high rain fall throughout year, malaria is endemic among that population & it is one of the leading causes for anaemia in them. Temperature in some villages (Lambasingi) is too low in winter seasons which make it very difficult for them to stay there.

Selected Socioeconomic And Nutrition Indicators For Tribal And Non-Tribal Population (NFHS-3)

Indicators	Tribal	Non tribal
Poverty	43.80%	25.70%
Literacy	47.10%	64.84%
Employment Male	53.70%	51%
Female	30%	16%
Nutrition Status (F)		
Under weight	46.60%	33%
Anemia	69.10%	56.20%

Fig: 3

Methods:

Study Design:

A qualitative cross-sectional study conducted using semi-structured interviews of pregnant women and health workers.

Study Area:

PHC Pedabayalu, located in the Agency area of Visakhapatnam district, catering predominantly to tribal communities including Primitive Tribal Groups.

Sampling Strategy:

Purposive sampling was used to select:

Designation of Person Interviewed	No. Persons Interviewed
Medical Officer	1
PHN	1
MPHA(F)	1
ANMs	4
ASHAs	7
Pregnant women	89
Total	113

Fig:4

These represented five sub-centres: Pedabayalu, Laxmipeta, Aradakota, Gamparai, and Kimudupalli.

Data Sources

1. Primary Data: Interviews conducted using semi-structured guides.
2. Secondary Data: 1) MCH tracking data
   2) PHC records
   3) District maternal and infant mortality Reports
   4) ANM registers

All extracted from official sources with permission.

Data Collection Period:

April–August 2024

Data Analysis:

Interviews were transcribed and analysed thematically. Themes included nutritional practices, cultural beliefs, accessibility, ANC utilization, delivery practices, and health-system challenges.

Ethical Approval:

Obtained from the Institutional Ethics Committee, Public Health Foundation of India.

RESULTS:

1. Geographical Accessibility:

Geographic isolation was the strongest determinant influencing ANC uptake and anaemia. Many villages were 20–65 km from PHC and located beyond two steep hill climbs. 108 ambulances could not reach interior villages. Transport to certain villages was available only on weekly market days and was overcrowded.

2. Socio-Demographic Characteristics

24% married before 18 years.

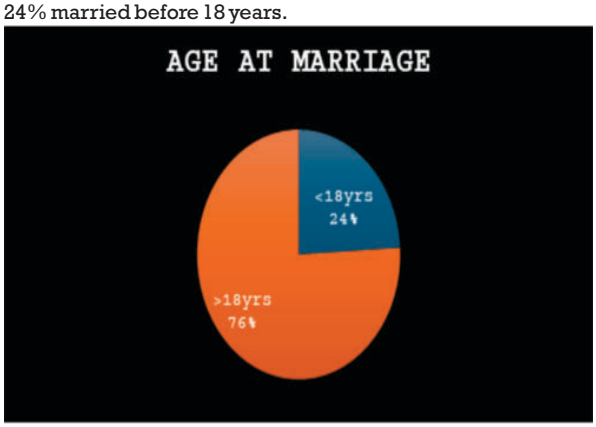

Fig 5: Age at marriage in Tribal Population

High parity and short birth intervals common. Women with >2 pregnancies were frequently severely anaemic (Hb <7 g/dL).

All households earned <□5000/month; severe anaemia highest in lowest income group.

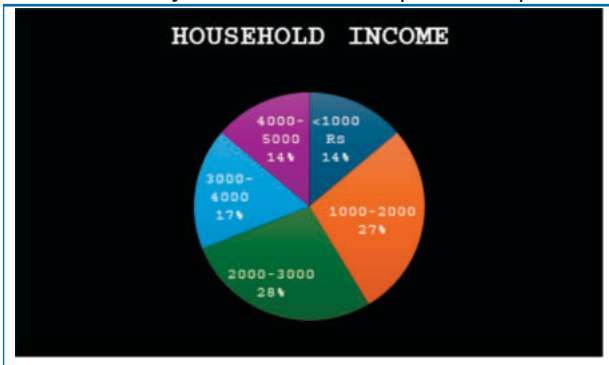

Fig 6: Household income in Tribal Population

3. Dietary Practices

Diet dominated by rice, ragi ambali, millets. Vegetables consumed weekly when purchased at shandies.

No special foods given during pregnancy.

Cultural taboos: avoidance of papaya and eggs.

Alcohol consumption common among women, including during pregnancy.

Frequent diarrhoea from fungal contamination of dried meat.

4. Water And Sanitation

Drinking water from streams; no filtration/boiling.
Open defecation universal.
Hookworm infestation common due to barefoot defecation.
Malaria endemicity contributed to anaemia.

5. Antenatal Care

Early registration was rare due to belief that ANC before 3 months harms pregnancy.
IFA consumption poor; elders discourage use.
Many women missed key investigations (Hb, urine screening, abdominal exam) due to distance.
Birth waiting rooms underutilized.

6. Delivery Practices

Pedabayalu PHC (2012–13):
Total deliveries: 590
Home deliveries: 430 (75%)
PHC deliveries improved following strict JSY payment supervision.
DDK kits unavailable for >1 year.
Squatting deliveries using rope support still observed.

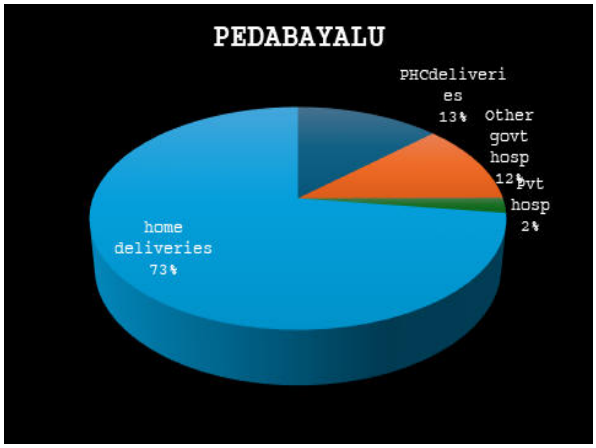

Fig7: Delivery Trends in Pedabayalu area

Comparison PHC:

Sabbavaram PHC recorded zero home deliveries in the same period.

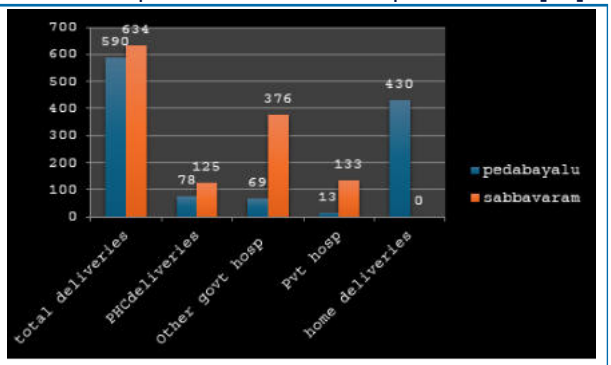

Fig 8: Comparison Of Delivery Trends With PHC Sabbavaram

6. Postnatal And Neonatal Care

Restricted postnatal diet (one meal/day for 1 week).
Immediate newborn bathing common.
Exclusive breastfeeding widespread (positive practice).
Immunisation hindered by mothers' inability to travel; ANMs visited each village.
Infant deaths (0–1 year): 17 in Pedabayalu.

7. Maternal Death Review

Two maternal deaths:
Both home deliveries; both anaemia-related.
One woman advised hospital stay but returned home due to household work; baby stillborn.
In one case, 108 ambulance could not reach the village.

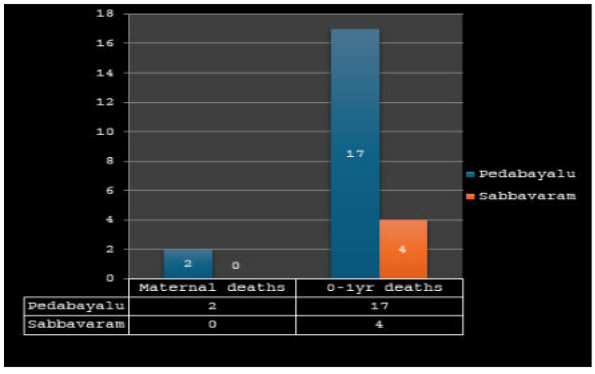

Fig 9: Comparison Of Maternal Deaths

8. Health-System Determinants

81% ASHAs illiterate; limited understanding of anaemia and danger signs.

ANMs lacked confidence in identifying complications

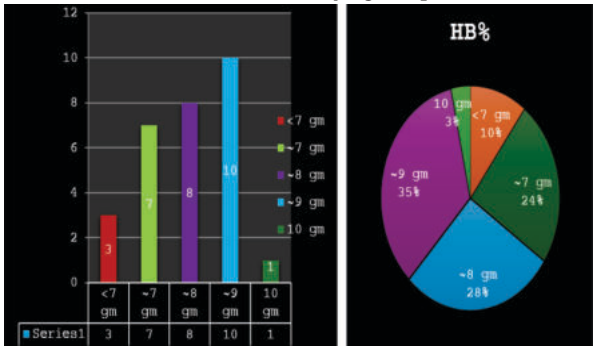

Fig10: Incidence of Anemia in the interviewed Pregnant women

If we analyze the above data it is found that none of the interviewed pregnant women were having normal HB% of > 11gm, while 66% fall in the level of moderate anaemia between 8 to 11 gm, the most alarming feature being 34% of the interviewed women having severe anaemia< 7 gm.

The gross difference between the records & the actual facts observed is found to be multifactorial.

- Knowledge of the ANMs regarding anaemia is not up to the standards. The very basic knowledge of classification of anaemia into mild, moderate & severe is missing.
- Lack of knowledge of ANMs to perform Hb% estimation at sub Centre level is worsening the situation where mild anaemia undetected in early stages is turning into moderate & severe anaemia with complications by the time it is detected by the Medical officer.
- Knowledge of ASHAs regarding anaemia and its complications is poor. So they are not being able to communicate the hazards of anaemia to the community.
- Added to this , the apprehensions of health staff that they would be facing disciplinary action if an anaemia case is detected is forcing them to under report which is making the problem still worse

Medical Officer Perception :

Highlighted poverty, transport barriers, and cultural food beliefs as major determinants.

DISCUSSION

This study demonstrates that anaemia among tribal pregnant women is an outcome of intersecting socio-cultural, economic, geographic, and health-system factors.

Socio-Cultural Determinants

Food taboos, alcohol use, and high physical workload restrict nutritional intake and worsen anaemia.

Economic Determinants

Household poverty limits dietary diversity, access to care, and ability to utilise transport, even with JSY incentives.

Geographic Determinants

Terrain imposes physical barriers to timely ANC and emergency obstetric care, contributing to preventable deaths.

Health-System Determinants

Inadequate frontline worker skills, limited diagnostics, and poor referral systems reduce early detection and management of anaemia.

Behavioural Determinants

Dependence on traditional healers delays appropriate medical care.

Anaemia reduction in such settings requires a multi-sectoral approach integrating health care, transport, nutrition, and social behaviour change.

CONCLUSION

Anaemia in tribal pregnant women is a manifestation of structural inequities and cultural practices. Improving maternal outcomes requires:

Enhancing road connectivity and ambulance reach,

Strengthening ASHA/ANM training on anaemia and danger signs,

Community-based Hb screening,

Nutrition education addressing food taboos,

Strengthening JSY/JSSK utilisation,

Tailored culturally-appropriate health communication,

Women's empowerment through education and livelihoods.

RECOMMENDATIONS

IMMEDIATE INTERVENTIONS:

1. Capacity building among Medical, Paramedical staff & Tribes:

- Training to all medical officers & staff nurses in IV infusion of Iron Sucrose injections, their dosage and importance of test dose and follow up of the case with repeat HB%.
- Training sessions to ANMs regarding Anaemia and its complications. They should be trained in doing Hb% in the field during ANC at sub Centre with authentic methods.
- Intensive training to ASHAs focusing mainly on nutrition, malaria and anaemia. Apart from the regular trainings, intensive training on safe delivery practices can be given which will increase the access to skilled birth attendants at village level.
- IEC campaigns for the beneficiaries can be conducted in all the villages to educate them about the need for Iron rich food for safe motherhood and healthy baby.
- As the languages from one village to other village differ in PTG villages, school teachers of the same area can be included in the IEC team for better communication.
- Awareness campaigns for small family norm can be conducted. As there is no practice of family planning, campaigns on birth spacing and permanent sterilization may be held which decreases the chances of severe anaemia due to multiparity.
- More importance should be given to adolescent girl education in VHNDs regarding healthy diet and IFA tab consumption.

2. Infrastructure Development:

- Development of infrastructure and providing basic and emergency services to the beneficiaries at PHC and referral centre.
- Increasing accessibility to primary care by providing jeeps/ ambulances to the PHCs.
- Providing adequate and uninterrupted drug supply to the PHCs and Sub centers.
- Continuous monitoring of mother and child health.
- Special screening campaigns can be conducted in different areas and anaemic patients may be treated in the same camp and list of such anaemic patients can be given to M.O. for further follow up and future correspondence
- More attractive and palatable Iron preparations with less gastric symptoms can be supplied to tribal areas to encourage regular consumption.
- Improving supply of health services through contracting out to the non public health sector facilities.
- Construction of sub centre buildings to facilitate clean and safe deliveries at sub centres.

3. Long Term Interventions:

Empowerment Of The Community

- Empowering the community through participatory approach. Forming groups with SHGs, educated & enthusiastic young adults, dedicated professionals in the villages, who encourage genuine participation of the villagers and identify village priorities and prepare micro planning for the villages.
- Promotion of community based preventive health care through behavioral change communication.

Housing & Roads

- Providing pucca houses(brick houses) to the tribal villages.
- Construction of roads for better accessibility.

Education

- Improving teaching methods and monitoring educational standards
- Awareness campaigns should be conducted to emphasize the importance of education and to increase enrolment and to decrease drop outs.
- Special drive to enroll girls in schools.

Agriculture:

- Providing Self reliant house hold food security by increasing food production and rising income of tribal families with specific focus on households practicing podu agriculture.
- Conducting training classes on improving farming techniques.

Addressing Poverty:

- By strengthening credit and market systems and by building up the assets and capacities of GCC we can address poverty.
- Vocational trainings to improve professional skills and to provide them loans to start up small scale industries

Sustainability:

Capacity building and social mobilization through IEC should be integral & regular aspect of primary health care system so that the skills and capabilities developed are successfully sustained.

Limitations Of The Study:

This study has certain limitations that must be acknowledged. First, the duration of data collection was short (5 months), which limited the ability to follow pregnant women longitudinally through delivery and the postpartum period. As a result, the direct impact of counselling and awareness interventions on maternal outcomes could not be assessed. Second, although the study area comprises several tribal sub-groups, only Valmiki, Bhagatha and Kodu communities could be included due to severe geographic inaccessibility; thus, findings may not fully represent the practices of all tribal populations, particularly Primitive Tribal Groups residing in remote valleys. Third, logistical constraints prevented the conduct of focus group discussions with ASHA workers, as assembling them in one location was not feasible. Similarly, certain distant sub-centres such as Kunthurla could not be reached due to lack of motorable roads. Finally, self-reported behaviours, cultural practices, and dietary habits may be subject to recall and social desirability biases, although efforts were made to validate responses through triangulation with health workers and field observations.

Despite these limitations, the study provides valuable insights into the complex socio-cultural and structural determinants of anaemia in tribal pregnant women and highlights critical gaps in service delivery in hard-to-reach settings.

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