ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 15, Issue, 05, pp. 68446-68450, May, 2025
https://doi.org/10.37118/ijdr.29592.05.2025

RESEARCH ARTICLE **OPEN ACCESS**

OBSTETRIC MORBIDITY AMONG SANTALS AND BENGALI WOMEN OF PURULIYA, WEST BENGAL: A COMPARATIVE STUDY

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ARTICLE INFO

Article History:
Received 17th February, 2025
Received in revised form
26th March, 2025
Accepted 04th April, 2025
Published online 30th May, 2025

Key Words:
Obstetric Morbidity, Santal, Bengali, Antepartum, Intrapartum, Postpartum, Puruliya.

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ABSTRACT

The objective of the present study was to compare the obstetric health outcomes and care practices between Santal, a Scheduled Tribe (ST) and Bengali women (referred as Non-ST hereafter) across antepartum, intrapartum, and postpartum periods. A total of 800 study participants were selected by purposive sampling method. All the data were collected by using pretested question naires and universally accepted methods and techniques. Results showed significant population differences in many demographic and socioeconomic variables. Variations between the populations have also been depicted in antepartum care, including pregnancy confirmation time and morbidity profile, with ST women reporting higher rates of swelling of hand and feet. Postpartum complications, such as fever, were more common among the Non-ST group, while the Santal women reported fewer issues. The findings of the present study highlight the need for targeted interventions to address maternal health disparities among tribal women.

Citation: Shreya Mukherjee and Dr. Sovanjan Sarkar. 2025. *"*Obstetric morbidity among santals and bengaliwomen of puruliya, West Bengal: A Comparative Study*". International Journal of Development Research*, 15, (05), 68446-68450.

INTRODUCTION

West Bengal is the eastern most states of India, having 91,276,115 individuals, one of 5.29 million individuals from Schedule Tribe (ST) community; which is approximately 5.8% of the total population (Census, 2011). Puruliya is the western most district of West Bengal, having total 2,930,115 individuals, with a sex ratio of 957 females per 1,000 males. Total ST was around 619,736 consisting 21.15% of the total population, where Santals are 11.57%, with a count of 339,054 individuals (District Census Handbook: Puruliya, 2011). Santals are one of the largest tribal communities of eastern India, residing in Jharkhand, Bihar, West Bengal, Orissa and Assam (Dey, 2015). They belong to Austro-asiatic language family (Bhowmick, 1985); whereas, Bengali Hindus, a Hindu caste community prevalent throughout India, are found in both rural and urban settings. In West Bengal, particularly in the district of Puruliya, they constitute the majority. The generalized term 'Bengali' describes the Indo-European language which is the basis of the region's Indo-European family (Grierson, 1927). Obstetric health involves the medical care and management of women throughout pregnancy, childbirth and the postpartum period. It aims to protect the well-being of both the mother and the new-born. This care includes prenatal visits, screening for potential complications, overseeing labour and delivery and offering postnatal care to address any health concerns.

Common conditions affecting obstetric health include pre-eclampsia, gestational diabetes, and severe bleeding during childbirth. The primary objective of obstetric care is to reduce risks and promote healthy outcomes for both the mother and the new-born (World Health Organization, 2022; American College of Obstetricians and Gynecologists, 2020). The launch of Safe Motherhood Initiative (SMI) in 1987 aimed to reduce maternal mortality globally, particularly in developing countries, with a call to reduce maternal mortality and morbidity by one half by the year 2000 (WHO 1989). Later, in 2013, the United Nations Population Fund (UNFPA) reported that an estimated 289,000 women lost their lives due to pregnancy or childbirth related issues. India faces significant maternal health challenges, contributing to 22% of global maternal deaths. Despite improvements in overall health indicators, Maternal Mortality Ratio (MMR) and Infant Mortality Rate (IMR) have stagnated. The National Rural Health Mission (NRHM), initiated in 2005, includes the *Janani Suraksha Yojana* (JSY) to enhance maternal and neonatal care. While JSY increased institutional deliveries, addressing quality issues is crucial for achieving MMR reduction goals (from 301 to 100 per 100,000 live births by 2012). Obstetric morbidity is a significant concern among Bengali Hindu women in West Bengal. A study reveals, 56.6% of rural mothers reported at least one morbid condition during their last child birth (Mukhopadhyay *et al*., 2002). Recent study says it is still a significant concern with prevalence rates of 53.76% (Gupta & Raj, 2024). Socio-economic factors such as age, age at marriage, education, economic pursuits strongly influence obstetric

health outcomes (Gupta & Raj, 2024). Another study reveals, in West Bengal; high prevalence of obesity (73.4%) and hypertension (50.5%) among women are significant predictors (Debnath *et al*., 2020). Common morbidities during antepartum are anemia, urinary problems, convulsion, and eclampsia (Chowdhury *et al*., 2000; Sk *et al*., 2018). Tribal populations often face poorer maternal health outcomes compared to non-tribal populations due to a range of factors including geographical isolation, traditional health practices, and limited access to modern healthcare services. Antenatal care (ANC) was found to be inadequate, with fewer visits to the doctors and reduced access to services like tetanus immunizations (Ray, 1975). Prema and Thomas (1992) observed poor ANC and postnatal care among Kerala's Kannikar women due to low awareness and infrastructure. Nutritional deficiencies, especially anemia, are widespread, contributing to maternal morbidity and adverse pregnancy outcomes (Gopalan, 1987a). Studies reported that chronic under nutrition (Chitre, 1976; Gopalan, 1971) leads to low birth weight and high infant mortality. In West Bengal, tribal groups, such as the Santal and Kora communities, often experience higher maternal and infant mortality rates. For instance, the Koras in West Bengal have higher birth rates compared to national averages (Bose *et al*., 2006), and Santal communities face challenges related to traditional customs and limited healthcare access (Parhi, 1994). The global Sustainable Development Goal 3.1 is to target that by 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births and ensure universal access to sexual and reproductive health-care services, including family planning, information and education, and the integration of reproductive health into national strategies and programmes. In view of the above literature review and Considering the necessity of unravelling the plausible causal factors of obstetric health, the principal aim of the present study is to compare antepartum, intrapartum and post-partum health problems, antepartum care undertaken and the experience of women during the time of last delivery, between Santal and Bengali Women, residing in Puruliya District of West Bengal.

MATERIALS AND METHODS

The present study has been conducted in Puruliya district in West Bengal, specifically from Municipality and Community Development Block in Puruliya Sadar and Raghunathpur subdivisions of the district, located in the eastern part of India. Two distinct groups i.e., the Santals, identified as the Scheduled Tribe (ST) population and Bengali, representing the non-Scheduled Tribe (NON ST) population have been selected. A total of 800 participants were selected for the study, with 400 women from each study population. Purposive and snowball sampling methods were applied to select the study participants. All the participants fulfilled the criteria of the study i.e., aged between 15 and 49 years (reproductive age) and did not attain menopause during the field work, in wedlock during the study, volunteered to participate and having at least one child. Prior to the collection of data, verbal consent was taken from each of the participant. Data collection for this study was conducted using a structured schedule that covered a wide range of topics to gain a comprehensive understanding of the participants' experiences: socio demographic information, obstetric information (antepartum care and morbidities, intrapartum experiences and morbidities, and postpartum morbidities and experiences). To fulfil the aim, a series of statistical tests have been performed in sequential manner. Chi-square and test of equality of proportion analyses were used to assess habitat differences in socioeconomic factors. Test of proportion was found to be applicable for 'zero' frequency (Fleiss *et al*., 2003). Age of the participants has been categorised in five sub categories. The economic pursuit of the participants has been divided into two groups; "working" and "non-working" depending on their occupational status. Educational qualification, for both of the participants and their husbands, have been categorised in three sub categories. Per-capita monthly household expenditure has been divided into two sub categories. The data on antepartum, intrapartum and postpartum phases have been collected either as binomial, i.e. yes of no or as ordinal variable with multiple answering options. All statistical analyses were conducted using SPSS 16.0 (Statistical Package for Social Sciences), with a significance level of $p<0.05$.

RESULTS

Table 1 highlights the socio-demographic profile and its comparison between Santal and Bengali participants. Santal and Bengali women reveal significant differences in education levels, where later show higher educational status, both for the participants and their husbands. There is also a trend where Bengalis are more likely to be working. Mean age at marriage ($t=0.371$; $p>0.05$) and per capita household expenditure show no significant differences between the two groups.

Table 1. Socio-demographic profile of the study articipants, by population group

n=800	Santal	Bengali	Test of proportion (z) / t-value
Age of the participant (%)			
17-19 years	1.88	0.50	0.850
20-24 years	11.62	4.63	1.691
25-29 years	17.75	16.50	0.210
30-34 years	10.13	16.75	1.210
35 and above	8.62	11.62	0.622
Mean age at marriage of the participants	17.20	19.48	0.371#
Economic pursuit of the participants (%)			
Working	0.13	4.38	1.694
Non-working	49.87	45.62	0.538
Education of the participants (%)			
No formal education	17.25	11.62	1.031
Standard I to Standard IX	23.25	8.88	2.610**
Standard X and above	9.50	29.50	3.184**
Education of the participant's husband (%)			
No formal education	12.75	6.00	1.518
Standard I to Standard IX	24.25	15.50	1.415
Standard X and above	13.00	28.50	2.402*
Per capita monthly household expenditure (%)			
Rs. ≤ 4000	15.75	18.88	0.520
Rs. 4001<	34.25	31.12	0.423

*# t-value; *Significant at p<0.05 level; **Significant at p<0.01 level*

Table 2 shows differences in practices of antepartum care and antepartum morbidity between the Santal and Bengali participants.Both groups predominantly consulted their husbands to confirm pregnancy and it was mostly around the second month. Tetanus immunization was largely received at government hospitals or sub-centres by both the groups. Advice on immunization was often provided by health workers or husbands. However, there are notable differences in special dietary practices. Santal participants were found not to follow any special diet, while Bengalis consumed eggs, fruits, and horlicks as special dietary items during pregnancy.

Among the morbidities, vomiting was found to be common in both groups. Table 3 depicts the comparison in intrapartum morbidity and experiences between Santal and Bengali women. Prolonged labour over 18 hours, followed by sac burst with greenish secretion was predominantly reported by the study participants of both the population groups. Most of the other complications, such as excessive bleeding or fainting, inappropriate position of baby, downward movement of the placenta showed minimal variation and no statistical different. In terms of delivery experience, a higher proportion of Bengalis delivered on the ninth months. Both groups had similar preferences for institutional delivery, specifically in government hospitals, with husbands playing a major role in choosing the place of delivery. Vaginal deliveries were predominant, while c-section deliveries were slightly more frequent among the Bengalis. Vaginal tears and new-born weighing time of the new-borns were found to be almost similar in both groups.

Table 2. Antepartum care and morbidity during the last delivery of the participants, by population group

Antepartum care (n=800)	Santal	Bengali	Test of proportion (z)
Person consulted to confirm their pregnancy (%)			
Mother/Mother-in-law	0.25	0.25	-
Husband	49.75	49.75	-
Time of confirmation of pregnancy (month) (%)			
1	3.50	0.25	1.656
2	29.37	30.12	0.103
3	17.00	19.38	0.388
4	0.13	0.25	0.169
Place of taking Tetanus (%)			
Govt. Hospital	25.13	25.00	0.018
Sub centre	24.87	25.00	0.019
Advice received on immunization (%)			
Self	0.25	1.62	0.849
Husband	24.88	28.38	0.499
Health worker (ASHA/ANM)	24.88	20.00	0.745
Frequency of consultation of physician by months of pregnancy (%)			
1	0.75	0.38	0.321
2	6.25	6.00	2.285*
3	42.12	43.25	0.144
4	0.88	0.38	0.414
Place of treatment during pregnancy (%)			
Govt. hospital	44.75	44.25	0.063
Private clinic	3.25	2.12	0.450
Sub centre	2.00	3.63	0.608
Special Dietary Practices (%)			
Fresh fruits	0.25	0.00	0.493
Only Horlicks	0.37	0.00	0.600
Egg, Fruits, Horlicks	0.13	28.50	5.170***
No special diet	49.25	21.50	3.901***
Antepartum morbidity (%)			
Swelling of hands and feet	4.75	5.26	0.147
Blurred vision	0.63	1.51	0.522
Giddiness	2.51	5.13	0.842
Urinary problem	0.13	0.13	0.000
Fever	0.63	1.75	0.628
Vomiting	40.38	41.25	0.111
Breast Problems	0.25	0.00	0.493

**Significant at p<0.05 level; ***Significant at p<0.001 level*

Table 3. Intrapartum morbidity and experience (in %) met by the study participants during the last delivery, by population group (n=800)

Variable		Santal	Bengali	Test of proportion (z)
Intrapartum morbidity		5.25	3.13	0.684
Labour more than 18 hours		0.00	0.13	0.297
Excessive bleeding		4.01	0.00	2.013*
Sac burst and even after 5 hours child was not born		42.88	46.26	0.429
Sac burst and the fluid was greenish coloured		0.13	0.00	0.355
Fainted during labour		0.38	0.13	0.327
Fits or convulsions		0.00	0.25	0.412
Baby was in breech position / not in normal position Placenta was down		0.00	0.26	0.421
Intrapartum experience				
Month of pregnancy during delivery	7	0.13	0.00	0.355
	8	0.25	0.13	0.179
	9	17.00	8.25	1.726
	10	32.62	41.62	1.177
Place of last delivery	Home	0.50	0.13	0.441
	Private hospital	0.00	1.75	1.100
	Govt. hospital	49.50	48.12	0.174
Persons involved choosing the place of delivery				
Husband		49.25	49.12	0.016
Mother/Mother-in-law		0.75	0.75	0.000
Husband and Mother both		0.00	0.13	0.297
Types of Delivery	Vaginal	49.37	48.37	0.126
	Caesarean	0.63	1.63	0.577
Vaginal Tear		46.75	47.12	0.046
Weight of new born	Immediately after delivery	49.50	49.75	0.031
	Within two days	0.50	0.25	0.266

*Significant at p<0.05 level

Table 4 compares postpartum morbidity profile between Santal and Bengali participants. The result highlights significantly higher prevalence of fever among the Bengalis than their Santal counterparts during postpartum phase. Other symptoms like pain in the birth passage**,** burning sensation during urination and pelvic pain were minimally reported. Interestingly, a higher proportion of Santals reported no postpartum complications compared to the Bengalis.

Overwhelming majority of the study participants returned to work within 0-4 months after delivery and resume their sexual life after 30 days. Pain during intercourse was reported by very few participants. For postpartum healthcare visits, most participants had their check-ups at 1.5 months, 2 months, and 5 months after delivery (Not shown in table as the frequencies of these variables remain same for both the population groups).

Table 4. Postpartum morbidity profile during the last delivery of the study participants, by population group

Postpartum morbidity (%) (n=800)	Santal	Bengali	Test of proportion (z)
Fever	0.25	11.37	2.863**
Pain in birth passage	0.13	0.00	0.355
Painful burning feeling while urination	0.13	0.75	0.559
Pain in pelvic region	0.13	0.00	0.355
Nothing happened	49.37	37.88	1.478

DISCUSSION

Maternal and child health remained a substantial global burden since few decades. In India, common health issues affecting mothers and children are malnutrition, infections, and the impacts of unregulated fertility. Obstetric health deals with the care and health of women during their entire pregnancy period, since conception till the childhood of the new-born. It has been reported that morbidity status of the mother in antepartum, intrapartum and postpartum phases affects health of both mother and the new-born, and the child as well. Researches have also pointed out that the morbidity of an individual or a population depends on their ethnic background and lifestyle on one hand, and habitat of living on the other. Keeping the aforementioned scenario under consideration, the necessity of the present study has been felt to compare one ST population, the Santals with a NON-ST population, the Bengalis, residing in Puruliya district of West Bengal. The findings of this study reveal significant demographic and socioeconomic differences between the groups, with Bengali participants generally being older, marrying at a younger age, and demonstrating higher levels of employment and educational attainment which align with 2011 census data which reveals 59% literacy rate for Schedule tribes, compared to 74.04% for the overall population. Dandapat (2019) conducted a comparative study of education between tribal and non-tribal women from Paschim Medinipur, Puruliya and Jalpaiguri; districts of West Bengal. This study collectively shows the persistent educational inequalities faced by tribal communities in West Bengal. In the present study, no significant difference has been found in per capita monthly household expenditure between two groups. In terms of healthcare practices, both groups predominantly shared their pregnancy confirmation with their husbands which aligns with a study where husband's involvement during maternal health care in home and outside of home like hospitals and any other places; improve overall care utilization (Rahman *et al*., 2020).

Interestingly, Santal participants confirmed their pregnancies during earlier phase, mostly in the second month, than their Bengali counterparts, which suggest a heightened awareness or prioritization of pregnancy related health. Study participants of both groups appropriately received tetanus injections from government hospitals, underscoring their alertness about the importance of government healthcare infrastructure. It depends upon factors such as recommendations of health providers, proximity of vaccination centres and spousal support (Khan *et al*., 2024). In the present study, Santal participants reported higher antepartum morbidity, particularly swelling of hands and feet, which could be indicative of nutritional deficiencies or less consistent healthcare practices, aligning with findings in other tribal populations (Gopalana, 1987b; Ray, 1975; Stiller *et al*., 2020). Intrapartum health outcomes showed that prolonged labour was more common in Bengali participants, while other indicators such as the presence of greenish amniotic fluid were similar across the groups. A research study among *Oraon* women also reveals the same (Thakur *et al*., 2023). This may reflect differences in obstetric care access or labour practices. The Santals had a higher proportion of home deliveries, a common practice among indigenous populations, which is consistent with studies showing lower institutional delivery rates among marginalized groups (Heredia-Pi *et al*., 2014; Ray & Roth, 1991). Postpartum morbidity was more prevalent among Santal participants, which aligns with a study shows tribal population face so many challenges than their non-tribal counterpart (Madankar *et al*., 2024; Das *et al*., 2021). Although a large portion of them reported no complications, which may reflect underreporting or limited access to postpartum healthcare, a pattern observed in indigenous women elsewhere (Gurumurthy *et al*., 1990; Sharma & Khan, 1990). These results resonate with existing literature on maternal health disparities among indigenous and tribal women. Globally, indigenous women face significant barriers to accessing adequate maternal health services, leading to higher rates of maternal morbidity and mortality. Studies from Latin America, by Heredia-Pi *et al*. (2014), demonstrated that indigenous women in Mexico are less likely to receive adequate prenatal care, which contributes to poor maternal health outcomes. Similarly, in India, tribal populations face higher health risks due to nutritional deficiencies, poor access to healthcare services, and sociocultural factors. Gopalan (1987a) highlighted the widespread issues of malnutrition among tribal women, which directly affects maternal health and corroborates with the present study. The comparison with international studies emphasizes that the challenges faced by tribal and indigenous women are universal and it has been continued since long. Inadequate access to healthcare, compounded by socioeconomic and cultural factors, leads to poorer maternal and reproductive health outcomes. The findings of this study suggest that Santal women in India, much like indigenous women elsewhere, are disadvantaged in terms of both healthcare access and maternal health outcomes. These findings underscore the urgent need for targeted healthcare interventions, including improved access to antenatal and postpartum care, nutritional support, and education to address these disparities. Efforts should also be made to strengthen government healthcare provisions in tribal populated regions, as these services play a crucial role in maternal health outcomes and child health, as well.

CONCLUSION

In conclusion, our study reinforces the critical importance of addressing healthcare disparities among indigenous and tribal populations. Improving maternal health in these communities requires not only increased healthcare access but also broader socioeconomic reforms, particularly in education and employment, as reflected in the demographic and socioeconomic differences found between the Santal and Bengali groups. Further research and policy efforts should focus on reducing these disparities to ensure equitable maternal health outcomes for all populations.

ACKNOWLEDGEMENTS

The researchers sincerely appreciate the help and cooperation of the study participants for their unhesitating response during the data collection. Department of Anthropology, Vidyasagar University is acknowledged for necessary logistic and infrastructural support. UGC SAP (DRS Phase I) is gracefully acknowledged for financial support.

Conflict of interest: The authors have no conflict of interest to declare.

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