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Utilization of Antenatal Care and Child Birth Weight among Santhal Tribes of Malkangiri District, Odisha

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Abstract: ***Tribal women are largely neglected to poor reproductive conditions, less utilized maternal care services during pre- and post-natal periods due to cultural practices, poverty, illiteracy, absence of health infrastructure. Aim: The objective of present study is to examine demographical determinants and the factors affecting utilisation of antenatal services and its impact on birth weight of infants of Santhal mothers of Malkangiri, Odisha. Method: Selective sampling has been done for data collection from 210 tribal women from those households, which has at least a child under the age of five using pre-tested questionnaire. The binary logistic regression is used for analysis of quantitative data to find the association between demographics, antenatal care utilization and low birth weight. Result: Santhal mothers those who are having schooling more than seven years, have opted institutional delivery, taken upantenatal checkup more than three times, have followed birth gap of at least 3-4 year among children and have consume at least 70% of IFA course is less likely to give birth to low-weight child. Conclusion: Education, better socio-economic conditions, right marital age and maternal healthcare infrastructure are necessary factors for improvement of maternal and child health status.***

Keywords: Antenatal, birth weight, Institutional delivery, birth gap, Santhal tribe.

1. Introduction

Maternal and child health status is always a topic of concern in developing countries. In Millennium Summit(2000), UN General Assembly proposed eight MDG (Millennium Development Goals) to promote human development; to eradicate uttermost poverty and aim to improve the statistics of maternal and child morbidity[(1)]. The MDG-4 targets for improvement in maternal health by making accessibility to reproductive health services to reduce maternal mortality, which is currently addressed under SDG-3 on health and well-being[(1,2)]. Here, Maternal health can be defined as state of women being physically, emotionally and socially healthy during pregnancy, childbirth, and the post partumphase [(3)].India is a developing nation where maternal mortality, malnutrition, anemia in women, worst reproductive health is a matter of grave concern. It is found in several studies that the condition was worse in socially disadvantaged groups, marginalized women, and women of low socio-economic status[(4)]. As per census 2011 of India, 8.2% population documented STs (ScheduleTribe) group by the Constitution of India, in which 4.2% (51 million) were female[(5)]. Poverty, illiteracy, unemployment, and indebtedness is higher in underdeveloped hilly terrain areas where most of the inhabitant belongs to tribal groups. In this scenario, tribal females and children were the more vulnerable or neglected groups & that's why Maternal and child mortality rates higher among the tribal area[(6)]. Accordingto a study on tribal women of Bastar district of Chhattisgarh, it was found that the Maternal Mortality Rate(MMR) was high due to unhygienic practices and traditional methods of child birth where women used to deliver babies on their own while half squatting and holding a rope that was tied to hut's roof [(7)]. Pregnancies at young ages have repeatedly been linked to higher risks of negative health outcomes, including low birth weight, early births, high neonatal and post-neonatal as well as infant morbidities and mortalities [(8)]. According to Thaddeus and Maine (1994), the main causes of maternal morbidity and mortality in tribal mothers were socioeconomics, cultural factors (women's status in the home and society, their level of education etc.), accessibility to facility (distance, transportation etc.) and availability of high care (staff and equipment in the health facility center) [(9)].In tribal areas, the absence of health infrastructure and sparse utilization is considered as one of the factors for poor maternal health and malnutrition in the child[(10)]. Odisha is one of the Indian state where the tribal population constitute 22.1 % of the total population of the state[(5)]. Odisha is a socially disadvantaged poor eastern ghat state, where natural calamities, a dense area that had high mortality and morbidity above the national average[(11)].Where tribal women largely neglected to poor reproductive conditions, less utilize maternal care services during pre- and post-natal periods due to cultural practices, poverty, illiteracy, unawareness, absence of health infrastructure[(11,12)]. The study area, Malkangiri is red belt area of Odisha, which has a low literacy rate among females, prolonged poverty, lack of economic infrastructure, poor medical facilities, and lack of skilled health personnel[(13)]. Others factors preventing women from seeking antenatal care services include uneven terrain of land, the long distances to maternal health centres, and lack of reliable transportation in the area. Balanced diet is very important for pregnant woman. While several studies indicates that food consumption was found to be less than the usual amount among pregnant women of tribal areas[(14)]. The govt launched the Janani Suraksha Yojana (JSY), a conditional cash transfer scheme, to promote institutional delivery among women and implemented National Rural

Health Mission (NRHM) to build and provide accessible, affordable, and quality health care infrastructure for the rural tribal population. The objective of present study is to examine demographical determinants and the factors affecting utilization of antenatal services and its impact on birth weight of infants of Santhal mothers of Malkangiri. Odisha. These research findings can assist the ongoing program in determining the most important factors that can improve maternal health.

2. Study Area

Variables	Category	Frequency	Percent
Age group	14-18	47	22.38
	18-20	52	24.76
	20-25	30	14.28
	25-30	35	16.66
	30-35	46	21.9
Age at consummation of marriage	14-15 year	57	27.14
	16-17 year	82	39.04
	18-20 year	43	20.47
	20-25	28	13.33
Education	Illiterate	73	34.76
	Primary	82	39.04
	Elementary	47	22.38
	High School	8	3.8
Socio-Economic Status	Low	161	76.66
	Middle	45	21.42
	Upper	4	1.9
Age at first pregnancy	<18	139	66.19
	18-20	46	21.9
	20-24	25	11.9
Total number of pregnancy (pregnancy order)	1	60	28.57
	2-4 times	128	60.95
	More than 5	22	10.47
Total number of stillbirth or miscarriage	1-3 foetus	59	28.09
	4-6 foetus	8	3.8
	No still child	143	68.09

Malkangiri is southernmost district of Odisha which is surrounded by Borders of Andhra Pradesh, Sukma District of Chhattisgarh. Malkangiri lies in the Dandkarnya forest which extends to Chhattisgarh. This proposed anthropological research study was conducted in the Thakurpalli, M. V. 3, 2, 9, 6, 7, 1 of Malkangiri NAC block Odisha. The villages are situated at outskirts of municipality of Malkangiri. These villages mostly inhabited by Santhal tribal groups. In this study, sampling has been done in two steps for data collection. In the first step, probability sampling occurs in which random sampling is done then second step, selective sampling occurs to select the Santhal tribal household, which has at least one younger child under the age of 5.

3. Methodology

The cross- sectional survey was conducted to assess the maternal health status of tribal mothers aged 15-35 years. A total of 210 tribal women who have a child under age of 5 years has been randomly selected for the primary data collection. A pre-tested questionnaire was prepared for data collection. The questionnaire includes community and household level factors that could influence the health-seeking behaviour of pregnant women, which can have an impact on child's health. The individual-level factors included age, marital age, delivery age of first child, socio-economic condition (evaluated through a type of house, family income, member in a family), maternal education, ethnicity, language spoken, the order of birth. Then in community factors, use of ANC, the number of ANC visits, the timing (trimester) of the first ANC visit during the most recent pregnancy within the five years preceding the survey delivery, and post-natal care services, delivery care and post-natal care from a skilled attendant. We investigated distance and travel time to a health center and place of residences. To note the birth weight of child, the birth card was checked issued by ANM, health center. In case of birth card was unavailable, the verbal information of child birth weight collected through mother. The data have been tabulated using MS Excel, 2021. Evidence tables were generated to summarize the selected studies and results descriptively. We conducted a qualitative synthesis to find the maternal factor responsible for the birth of underweight children. Thebinary logistic regressionwas calculated to find the association between demographical and pre-natal care utilization affect with low birth weight of children using SPSS Software.

Consent of respondents

The verbal consent was taken prior to investigation information from the participants. The information provided by subjects and their identity was kept confidential. The participants had the full right to withdraw themselves from the study at any point of time.

4. Results

Table 1:- Demographical indicators of Maternal Health.

Table 1 shows that out of 210 samples, 22.38% of Santhal mothers belong to the age group 14-18 years, and 24.76% tribal mothers in the age group 18-20 years. And 14.28% of tribal mothers belong to the age group 20-25 years, and the 16.66%, 21.90%belong to 25-30, 30-35 years age group respectively. The majoritySanthal mothers living in remote villages of Malkangirigot married even before the completion of the minimum legal age of marriage. About33.80% of tribal mothers were married at their legal age. Approximately34.76% of tribal mothers were illiterate, 39.04% had primary education, and 22.38% had 7 years of schooling. Around three-fourth of total sample (73.57%) belong to lower socio-economic status and 21.42% belong from the middle socio-economic condition. The Majority of tribal mothers (66.19%) give birth to a child before 18 years of age and 21.90% of women enter motherhood the age of 18-20 year group. In this study, it was found that 28.57% of women have already given birth of at most one child and 60.95% have given birth 2-4 times. While 10.47% of tribal women had an experience of giving birth to the child more than five times. It was also found that 31.11%women had either given birth to still child or suffer from a miscarriage while 68.09% of women have given birth to all live children.

Table 2: Ante-natal health care during pregnancy and delivery period by tribal women

Variables	Category	Frequency (N)	Percent (N%)

Number of ANC checkup during pregnancy	No checkup	70	33.33
	1-3 times	87	41.42
	4-6 times	46	21.9
	7-8 times	7	3.33
Place of ANC checkup	CHC	17	12.14
	Anganwadi	93	66.42
	At home visited by ASHA/ANM	30	21.42
Starting month of ANC checkup	First trimester	87	60.21
	Second trimester	53	37.85
Tetanus injection taken during pregnancy	Yes	108	51.42
	No	102	48.57
Total number of Iron tablets taken during pregnancy	Not taken	94	44.76
	6-30 IFA	28	13.33
	31-70 IFA	41	19.52
	71-110 IFA	29	13.8
	111-180IFA	18	8.57
Place of delivery	At Home	132	62.85
	Hospital	78	37.14
Types of delivery	Normal Delivery	189	90
	Caesarean Delivery	21	10

Table 2 shows 41.42% of women visited for an ante-natal checkup for 1-3 times either at (66.42%) Anganwadi center or Health center during their last pregnancy period. Approximately 21.90% of women reported 4-6 times ANC visits. Only 21.42% obtained the services of skilled ANM or ASHA for ANC or during child delivery. Furthermore, 60.21% of tribal women had their first ANC visit during the first trimester of pregnancy and 37.85% of women had visited for ANC during the second trimester. Among women visited for ANC, 51.42% of women get tetanus injection during pregnancy. Out of the total sample, 19.52% of tribal mothers reported a total number of iron-folate tablets taken during pregnancy is 31-70 tablets, and 13.80% of women took 71-110 IFA tablets and remaining8.57% of women took a complete course of the iron tablets, while 44.76% of women reported did not took iron tablets during pregnancy. In total, 37.14% of deliveries occurred in a hospital in which 10.00% were cesarean, while 62.85% of deliveries took place at home with the assistance of trained ANM or unskilled elderly dais. Approximately 90% of delivery was normal.

Table 3: Health status of children less than 5 years

Variables	Category	Frequency	Percent
Age of younger child	0-4 month	27	12.85
	5-9 month	33	15.71
	10-15 month	14	6.66
	16-21 month	22	10.47
	22-27 month	23	10.95
	28-33 month	17	8.09
	34-39 month	31	14.76
	40-45 month	11	5.23
	46-51 month	15	7.14
	51-59 month	17	8.09
Age gap between children	First born child	47	22.38
	2 year gap	81	38.57
	3 year gap	48	22.85
	4 year gap	34	16.19
Pre-term or Term week of child in month	< 35 month	127	60.47
	36-37 month	83	39.52
Low birth weight	1.8 - 2.4 kg	131	62.38
	2.5 – 2.9 kg	56	26.66
	3.0 – 3.3kg	23	10.95

Table 3 indicates during study 12.85% of younger child age was in between 0-4 months, 15.71% of children were in group 5-9 months. While 14.76% of the child were in 34-39 months, 7.14% in between 46-51months. Only 8.09% of the younger child's age was 5 years. It also depicts 22.38% of tribal mothers had no burden of the second child. 38.57% of tribal mothers reported that only 2 years of the age gap between their children. In total 22.85% of younger children had three years of birth gap, 16.19% of children were born after 4 years of the elder child. Approximately 60.47% of children were born before 35 weeks of the gestation period and the rest 39.52% were born after 35 weeks of gestation. In total, 62.38% of children were born with 1.8 kg to 2.4 kg at the time of immediate birth, 26.66% of children had birth weight 2.5kg to 2.9 kg and 10.95% of children had healthy birth weight with 3kg to 3.3 kg.

Table 4: Odd Ratios, 95%CI, p value for the association between Low birth weight of child and use of maternal health care provided during pregnancy

VARIABLES	LOW BIRTH WEIGHT OF CHILD		OR (95% CI)	P Value
	LESS THAN 2.5 KG	EQUAL OR MORE THAN 2.5KG		
	N (%)	N (%)		
Mother age at delivery				<0.000
<18 year[R]	103 (49.04)	36 (17.14)		
18-20 year	24 (11.42)	22 (10.47)	2.622 (1.313 - 5.238)	0.0063
20-24 year	4(1.90)	21 (10.00)	15.020 (4.829 - 46.714)	0.0001
Mothers' education				0.019
Illiterate[R]	54(25.17)	19 (9.04)		
Primary	48 (22.85)	34 (16.19)	2.013 (1.016 - 3.985)	0.0446
Elementary	27 (12.85)	20 (9.52)	2.105 (0.965 - 4.590)	0.0612
High School	2 (0.95)	6 (2.85)	8.526 (1.583 - 45.911)	0.0126
Socio- Economic status				0.000
Lower[R]	112 (53.33)	49 (23.33)		
Middle	18 (8.57)	27 (12.85)	3.428 (1.729 - 6.797)	0.0004
Upper	1 (0.47)	3 (1.42)	6.857 (0.695 - 67.576)	0.0991
Number of ANC visit				0.013
No Visit	52 (24.76)	18 (8.57)		

1-3 times[R]	54 (25.71)	33 (15.71)	1.765 (0.886 - 3.516)	0.1059
4-6 times	23 (10.95)	23 (10.95)	2.888 (1.313 - 6.354)	0.0083
7-8 times	2 (0.95)	5 (2.38)	7.2222 (1.286 - 40.544)	0.024
Place of ANC				0.005
CHC[R]	13 (9.28)	4 (2.85)		
Anganwadi	52 (37.14)	41 (29.28)	2.562 (0.777-8.449)	0.122
ASHA/ANM	26 (18.57)	4 (2.85)	0.500 (0.107-2.326)	0.376
Institutional Delivery				0.0001
Hospital[R]	22 (10.47)	56 (26.66)		
Home	109 (51.90)	23 (10.95)	0.0829 (0.425- 0.161)	0.0001
Type of Delivery				0.621
Normal[R]	119 (56.66)	70 (33.33)		
Caesarean	12 (5.71)	9 (4.28)	1.275 (0.511 - 3.178)	0.6021
Tetanus Injection taken during pregnancy				<0.000
Yes[R]	47 (22.30)	61 (29.04)		
No	84 (40)	18 (8.57)	0.165 (0.087 - 0.311)	0.0001
IFA Course				<0.000
Not taken[R]	64 (30.47)	30 (14.28)		
6-30 IFA	27 (12.85)	1 (0.47)	0.079 (0.010 - 0.609)	0.0149
31-70 IFA	26 (12.38)	15 (7.14)	1.230 (0.570 - 2.656)	0.5968
71-110 IFA	9 (4.28)	20 (9.52)	4.740 (1.930 - 11.640)	0.0007
111-180 IFA	5 (2.38)	13 (6.19)	5.546 (1.811 -16.980)	0.0027
Age gap between children				<0.000
first born[R]	42 (20)	5 (2.38)		
2 year	64 (30.47)	17 (8.09)	2.231 (0.765 - 6.507)	0.141
3 year	13 (6.19)	35 (16.66)	22.615 (7.344 - 69.642)	0.0001
4 year	12 (5.71)	22 (10.47)	15.400 (4.809 - 49.314)	0.0001
Pre-term birth				<0.000
Yes[R]	119 (56.66)	8 (3.80)		
No	12 (5.71)	71 (33.80)	88.010 (34.322-225.679)	0.0001

R- reference; P<0.05
Abbreviation: ASHA- Accredited Social Health Activist-, ANM- Auxiliary Nurse Midwife, IFA- Iron-folic acid

Table 4 shows the result of binary logistic regression in terms of Odd ratios and p value for significance. As previously outlined, a maternal healthcare index was created to assess child health status among tribal population. It was found that mother age at delivery (p=0.000), socio economic condition (*P* = .000), maternal education (p=.019), number of ANC visit (*P* = .013), place of ANC (*P* = .005), institutional delivery (*P* = .000), tetanus injection taken during prenatal (p=.000), IFA course (*P* = .000), age- gap between children (p=.000) andpre-term birth (*P* = .000) were significantly predictor of low-birth weight of child. The tribal women who visited ASHA/ ANM health centre for ante-natal check-up (OR=0.50, 95%CI=0.107-2.326, p=0.376) is less likely to give birth of low weight child. Similarly, women of age group 20-24 years (OR= 15.020, *P* <0.0001, 95% CI = 4.829–46.714), Santhal mothers who have high school education qualification (OR=8.526, P=0.0126, 95%CI=1.583-45.911) women who have institutional delivery (OR=0.082, P< 0.0001, 95%CI=0.425-0.161), who used antenatal check up more than 3 times (OR=2.888, P=0.024, 95%CI=1.286 – 40.544)is less likely to give birth of low-weight child. Similarly the Santhal mothers who have follow birth gap of atleast 3-4 year among children and consume at least 70% of IFA course is less likely to give birth of low-weight child.

5. Discussion

Despite several affirmative efforts by the central Government for safe motherhood and child health program to achieve the fourth and fifth goal of Millennium Development Goal i.e. to reduce Child mortality and improve maternal health respectively[17]. It was found that in tribal population the maternal healthcare service utilization was still unacceptable. Thus the present study's aimed to assess the maternal and child health status among Santhal tribal mothers residing in the Malkangiri district of Odisha. The objective of this study was to examine the factors of use of maternity care services namely IFA Course, tetanus injection taken during pregnancy, full antenatal care, safe delivery, etc that significantly affect the birth weight of child. According to the UNICEF report of Child Marriage in 2019 revealed, one in three of the world's child brides lives in India[18,19]. India acceded to the convention on the Rights of child in1992, which sets a minimum age of marriage for girls is 18 and In 2006, Government enforced the law for Prohibition of child marriage act which restricts minimum age of marriage for boys 21 and 18 years for girls by integrating panchayat for effective implementation[20]. In this study, it was found that 66.48% of tribal mothers married before the legal age, 66.19% of women enter in motherhood before 18 years of age. Traditionally tribal group has been practicing early marriage and enter in motherhood at an early age, at that period they fail to support her growth alongside to the foetus, which leads to giving birth to underweight babies that is the root cause of poor reproductive health among women[20,21]. There is a need for building awareness on the issue of early marriage and the adverse effects of early pregnancy at the family and societal levels. Several studies show a significant association

between the low birth weight of babies, infant and child mortality, the birth of premature babies with maternal age of marriage[22]. During the study, respondent state that it is compulsory to enter in motherhood after 1-2 year of the consummation of the marriage, otherwise family decide to divorce the women because it linked with the honor of the family[21]. This indicates that generally women is not given any say in family planning in tribal areas. Either husband or husband` family are decision-makers[21]. The Maternal Literacy rate also shows a positive association with a low birth weight of the child. Lack of education brings negligence toward women's health during pregnancy and post-birth which leads to no family planning, high fertility rate, and the sort age gap between children[23]. The Odd ratio was 2.01 times higher in illiterate mothers to give birth to low weight babies than mothers who had primary education (Table 4). It was found that tribal women were forced to leave school due to poor socio-economic status and get married at an early age to spend time on childrearing and other household chores [24]. This suggests that improving educational opportunities to tribal area girls needs to be reinforced so that maternal and child health status can be improved. Because education makes women independent to make decisions regarding their health, understand the use of contraceptives, do family planning, have a greater ability to use healthcare inputs, have knowledge and need of spacing methods, to improve their health. The relative risk of low socio-economic give birth to the low weight babies was 3.42 times greater than middle -class family (table 4). Economic status was found to be a significant factor affecting the utilization of maternal healthcare services and giving birth to a healthy child in India[25]. This scenario govern the fact that illiteracy, poor socio-economic condition, less awareness lead to early marriage, male dominance in decision making of reproduction which can cause premature birth, malnutrition among children and mothers, neonatal deaths and health implication in mothers[26].

It was found that 60.95% of women have undergone pregnancy 2-4 times without proper age gap, 38.57% of children born within two years (table 2) of an age gap of the elder child which have negative impacts on mothers and child health[27]. The study area tribal group follows a belief that in the family both carrying and crying child is needed. Carrying a child means boy, which will carry the dead body of parents to the graveyard and do last rituals of life, and crying means girls which will cry on the dead bodies of the parent in the courtyard from the house. So the sex ratio of this area is quite good. The findings of this study depict low utilization of Ante-natal care services among tribal women, 41.42% women visited for ANC check-up only for 1-3 times. It could be due to unawareness about the importance of ANC visit, poor communication facility, long-distance to maternal health centers, and absence of good transportation in the region, the taboo of taking medicine, cultural practices of the tribal population, the low priority assigned to health-seeking, believe in traditional untrained elderly women i.e *Dais*[14,23]. But Nowadays the tribal women were slowly aware of antenatal care through Mamata Yojana, financial assistance in institutional delivery under Janani Suraksha Yojna (JSY) benefits. They start visiting health centers for ANC check- up 12.14% of women were visited CHC, 66.42% of women were visited Anganwadi center and 21.42% women obtained Antenatal services from the domiciliary visit by ASHA/ANM during pregnancy for a check-up and medicines in the studied area. The findings depict31.17% of women had given birth to still child or suffered from a miscarriage (table 1), Infant mortality is high among the studied area. It may be due to no specific precautions is taken at the time of conducting deliveries which resulted in an increased susceptibility to various infections during childbirth[3,4,7,10].

During study, it was found that 44.76% of pregnant women had not consumed iron-folic acid tablets during pregnancy[29].Even not special diet taken during pregnancy and post birth. Some pregnant tribal women reduced their food intake because of simple fear of recurrent vomiting and also to ensure that the baby may remain small and the delivery may be easier. Almost all of tribal mother were continue their regular activities including strenuous physical work during pregnancy[7,14].Some studies have highlighted limited care during the antenatal period and delivery for the second and higher-order births than for the first birth[3,10,22]. This could be due to women with a second child had experience and knowledge about their pregnancy and consider modern health care unnecessary so they less utilize maternity care services or delivery care. This suggests that birth order should be used as a condition for targeting educational and awareness campaigns on the benefits of ongoing safe motherhood programs. So, under nutrition among women and their children when left unaddressed in one generation may get carried on to the next generations forming a vicious circle that leads to the gross breakdown of the health of the community[30].

6. Conclusion

Education, socio-economic conditions, marital age, utilization of maternal healthcare services which are the key to combat the maternal and child morbidities among tribal women. Thus the distribution of services, counselling, medicine, diet, and livelihood, awareness program to promote the importance of education and marital age, positioning skilled health personnel needs to be strengthened at root level is needed among the tribal group of this district. The Government should make separate policies for tribal; addressing their tribal customs, practices, and beliefs regarding diet, hygiene, physical activity, and rest which had a bad influence on maternal and child health. There is a need for examining each component of the tribal society to deliver health services that should be accommodative of the existing social norms.

7. Limitations

There are a few limitations that study could not include many other important determinants of maternal healthcare utilization such as the distance to health centre, availability of skilled health personnel, and quality of care and post-natal care which are also predictor of maternal and child mortality.

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Abbreviation:
ANM- Auxiliary Nurse Midwife
ASHA-Accredited Social Health Activist
CHC- Community Health Centre
IFA- Iron folic acid
MDG- Millennium Development Goals
SDG- Sustainable Development Goals
ANC- Ante-natal Care

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