Full Length Research Article

MATERNAL HEALTH STATUS IN TRIBAL AREAS OF BANKURA DISTRICT OF WEST BENGAL, INDIA

[1]*Nirmalya Mukherjee, [2]Biswajit Pal and [3]Nagarathinam, S.

[1,2]Manbhum Ananda Ashram Nityananda Trust, Kolkata-107, India
[3]Department of Communication, School of Linguistics and Communication, Madurai Kamaraj University, Madurai, India

---

ARTICLE INFO

ABSTRACT

Over half a million women die each year due to complications during pregnancy and birth. The vast Majority of these deaths are preventable. The overall health status of Tribal Women was not good due to array of causes like lack of medical facilities and outreach medical centres. The present study was undertaken to know about the maternal health status of Bankura district of West Bengal, India. Sample population was selected from 6 tribal dominated Blocks of South Bankura. A total 406 samples (N=406) were selected for the study. All respondents belong to the tribal community; sanitation facility of the respondents was very poor. With the increase of age, the physical conditions of the respondents deteriorate significantly .Most of the respondents avail themselves of ANC as well as PNC but only 75.3 % avail of the recognised institutional delivery with assistance of doctor, nurse or auxiliary nurses. Sanitation facility and Kitchen also had a significant effect on pregnancy complications. Received ANC were highly positively and significantly correlated with PNC. Pregnancy complications significantly increased with the non-institutional delivery.

INTRODUCTION

World Health Organisation defines maternal health as it refers to the health of women during pregnancy, childbirth and the postpartum period. All of the three phases have to take under consideration of study when we want to know about the maternal health status.. The recent data shows that MMR in West Bengal is 117 per 100,000 live births in 2012-2013 and maternal mortality rate is 6.6 (Office of Register General, India, 2013).About 4 million neonates die each year globally, and 98 per cent of these deaths occur in developing countries (Lawn, Cousens and Zupan, 2005; UNICEF, 2007; WHO, 2001). The present study was conducted in West Bengal which is one of the important states of India located in the eastern part of the country with 91.35 million populations out of which 5.8 % are ST. The status of Tribal maternal health in West Bengal is still a question due to low accessibility as well as poor health care facility or outreach medical centres. The tribal people are disproportionately suffering from many

communicable diseases and they are lagging far behind in maternal health status in comparison with their counterparts in the state. The situation analysis of health indices of the tribal population in West Bengal is worse than the State average: The present study has put an emphasis on knowing about the maternal health status of tribal areas of West Bengal. In view of this, objective detailed information about the maternal health condition as well as health facility of that particular area have been collected and analysed.

MATERIALS AND METHODS

In the present study the Bankura district was selected taking into account its backwardness, the existence of exclusively tribal villages, and lack of a proper health care delivery mechanism. The multilevel cluster sampling procedure was adopted to select the sample size. 6 clusters were selected according to the remoteness of the area, exclusive tribal habitation and distance from any health facility not less than 3 KMs. The required sample size was calculated on the basis of the finding of the DLHS-3 i.e. 3 and more ANCs- 55.1%. The calculation was based on an 80% power to point out the

---

*Corresponding author: Nirmalya Mukherjee
Manbhum Ananda Ashram Nityananda Trust, Kolkata-107, India

Parameters	West Bengal (%)	ST (%)
Any ANC Check-up	96.1	90.2
3 or more ANC Visits	66.9	55.1
Stage of Pregnancy at the time of First ANC	42.5	30.9
Full ANC	19.6	15.6
Institutional Delivery	48.9	30.5
PNC (within 2 weeks after delivery)	56.9	39.1
Knowledge of Diarrhoea Management	87.1	71.8
ORS Given	46.4	39.2
Women aware of Danger Signs of ARI	43	27.1
Ever used contraceptive method	87.7	74.9
Using any Modern FP method	69.5	56.1
Current Use of Contraceptive Method	72	60.5

difference of proportion of at least 3 ANCs taken by the pregnant tribal women.

Here the basic power equation is:

$$n= \frac{[Z\,\alpha/2 + Z\beta]^2\,(p)(q)}{\Delta^2}$$

Where

$Z\,\alpha/2$ is the critical value; at 95% confidence level= 1.960
$Z\beta$ is the critical value of β; at 80% power = 0.842
p is the estimate of sample proportion; proportion of pregnant tribal women received 3 or more ANCs which could not save positively= 0.551.
q is (1-p)= (1-.551) = 0.449
Δ is the effect size= .07 (7 percentage point difference)

Applying this equation:

$$n= \frac{[1.960+0.842]^2\,(.551)(.449)}{0.07^2} \qquad = 396.40$$

At power 80% the estimated minimum sample size was 397. However, to be on the safer side 9 more cases ware recruited, hence the total sample size is now 406. Data were collected from the respondents through personal interview method with the help of pre-testing interview schedule. There were socio economic variables used as the predictor variables and some variables related to maternal health status included to study the status of maternal health. The data were computed and analyzed using different statistical methods like frequency distribution, percentage analysis and co-relation co-efficient, non parametric tests.

RESULTS

From Table 1 it has been found that in case of educational attainment of the respondents 36.5% of them belong to no school category, 26.1% had knocked the door of Primary Education, while 24.4% attended the school up to 8th standard. Secondary and Higher Secondary stages were reached by 8.4% & 3.7% respectively, whereas .7% and .2% of respondents had touched the boundary line of Graduation & Post-Graduation respectively. Classism of health section clearly reveals that 44.8% of total respondents had moderate health status, 26.8% and 10.1% of respondents were living with good and very good health. On the other hand, health status was bad and very bad among 11.6% and 6.7% of respondents respectively. In case of worst physical condition it had been found that only

7.1% of the total respondents were in good state of physique. Elephant portion of the respondents that is 68.0% were living with mildly worst physical condition. 11.1% had shown moderately worst physical condition. In case of severity it had been found that 5.9% came under this purview whereas 7.9% had worst physical condition at the extreme level. Greater number (32.0%) of respondents' household earnings was ranged between Rs. 2001-Rs. 3000 ($33-50). Household income was within limit of Rs. 3001-Rs. 4000 ($50-67)& Rs. 1000-Rs.2000 ($17-33) for 29.3% and 16.0% respectively. Less number (3.4%) of respondents had household income of below Rs. 1000($17). 9.4% & 9.9% of respondents' earnings were found to be ranged from Rs.4000 ($67) to above Rs. 5000($83). Huge fraction (94.3%) of the respondents was living in kuccha house. Only 3.0% had pucca house. For large chunk (77.6%) of the respondents the source of water was tube-well. On the other hand, 15.3% and 6.9% of respondents collected water from well and public-tap respectively. For 69.2% of respondents; availability of 20lts of water was very much trouble-free in nature whereas rest of the respondents that is 30.8% couldn't avail of 20lts of water. Titanic segment of the respondents that is 96.8% was living with no sanitation facility. 32.8% of respondents had kitchen room whereas for 39.2% of respondents the living room was their kitchen and 28.1% had kitchen in separate building. A great number of respondents (91.9%) had no health insurance.

Table 2 describes that 58.1 % of the respondents received ANC thrice whereas 24.9 % received ANC twice and 4.4 % respondents did not receive any ANC during their pregnancy. Maiti et. al. (2005) concluded that around 72 percent of tribal mothers did not have any antenatal care (ANC). Rani et. al. (2007) stated that 59 % respondents received ANC. Hati & Mazumder (2011) found that only 20 % pregnant women in West Bengal completes full Antenatal Care check-ups. 54.9 % respondents went to the auxiliary nurse most of times and 26.6 % respondents went to the doctor for health care checkups. Jat *et al*. (2011) found in their study that 49.8% women received skilled attendance at delivery. Manna *et al*. (2011) found that only 7.11% mother used Govt. hospital and 2.65% used private clinic. Only 0.7 % respondents went to the traditional birth attendant for health checkups. Weight and Blood pressure check up are done for 93.3 % and 91.9 % respondents respectively. 93.3 % respondents registered for ANC and out of that 91.1 % registered for first trimester. Jat *et al*. (2011) in their study showed that 61.7% of the respondents used ANC at least once during their most recent pregnancy. Rani *et al*. (2007) reported that 14 % pregnant women received ANC in first trimester. Iyanger (2009) reported that the majority (66%) of women started receiving ANC after the first trimester.76.8 % respondents got advice about the signs of pregnancy.

Obstratic complications had been identified of 73.9 % respondents and they were referred to other medical institutions for better treatment.93.6 % received 100 IFA tablets, 88.9 % received TT1 and 86.9 % received TT2. Hence the findings of the present study indicate that there is an overall improvement in ANC coverage. Half of the respondents answered that they got assistance from doctor at the time of delivery. 20.7 %, 7.6 % and 7.4 % got assistance from Nurse, auxiliary nurse and traditional birth attendant respectively at the time of their delivery. Maximum respondents (70.4) gave birth at the Govt. hospital followed by

Table 1. Frequency of socio-economic variables

Variables	Category	Frequency	Percentage (%)
Education	No School	148	36.5
	Primary	106	26.1
	Class VIII	99	24.4
	Secondary	34	8.4
	Higher Secondary	15	3.7
	Graduate	3	.7
	Post-Graduate	1	.2
Classism of Health	Very good	41	10.1
	Good	109	26.8
	Moderate	182	44.8
	Bad	47	11.6
	Very Bad	27	6.7
Self defined worst Physical Condition	None	29	7.1
	Mild	276	68.0
	Moderate	45	11.1
	Severe	24	5.9
	Extreme	32	7.9
HH Income	Below Rs. 1000	14	3.4
	Rs. 1000 –Rs. 2000	65	16.0
	Rs. 2001-Rs. 3000	130	32.0
	Rs. 3001-Rs.4000	119	29.3
	Rs. 4001-Rs. 5000	38	9.4
	Above Rs. 5000	40	9.9
Condition of House	Pucca	12	3.0
	Katcha	383	94.3
	Semi Pucca	11	2.7
Source of Water	Piped water	1	.2
	Public tap	28	6.9
	Tube-well	315	77.6
	Well	62	15.3
20 Ltr Availability	Yes	281	69.2
	No	125	30.8
Sanitation	Yes	13	3.2
	No	393	96.8
Kitchen	Living room used as Kitchen	159	39.2
	Kitchen room	133	32.8
	separate building	114	28.1
Health Insurance	Yes	33	8.1
	No	373	91.9

Table 2. Frequency of question related to maternal health

Variables	Category	Frequency	Percent
Times of ANC	No ANC	18	4.4
	1 time	16	3.9
	2 times	101	24.9
	3 times	236	58.1
	4 times	21	5.2
	5 times	13	3.2
	8 times	1	.2
Health care professionals	No one	18	4.4
	Doctor	112	27.6
	Nurse	48	11.8
	Auxiliary nurse	223	54.9
	Traditional Birth attendant	3	.7
	Others	2	.5
Weight Measures	No	27	6.7
	Yes	379	93.3
Blood pressure Measured	No	36	8.9
	Yes	370	91.1
Registered for ANC	No	33	8.1
	Yes	373	91.9

Registered in 1st Trimester	No	63	15.5
	Yes	343	84.5
Advised about sign of pregnancy complications	No	94	23.2
	Yes	312	76.8
Identified obstratic complications and referred	No	106	26.1
	Yes	300	73.9
Received 100 IFA tablets	No	26	6.4
	Yes	380	93.6
Received TT1	No	45	11.1
	Yes	361	88.9
Received TT2	No	53	13.1
	Yes	353	86.9
Assist in delivery	Not Applicable	3	.7
	Doctor	203	50.0
	Nurse	84	20.7
	Auxiliary nurse	31	7.6
	Traditional Birth attendant	30	7.4
	Others	56	13.7
Birth Place	Not applicable	3	.7
	Govt. Hospital	286	70.4
	Private Hospital	20	4.9
	Other type of health facility	97	23.9
Received PNC	No	39	9.6
	Yes	367	90.4
JSY beneficiary	No	22	5.4
	Yes	384	94.6

Table 3. Mean effect of predictor sets of variables on maternal health status criterion measures

Variables	Category	times ANC during your pregnancy	Asymp sig.	Health care received	Asymp sig.	pregnancy complications	Asymp sig.
HH Income	Below Rs. 1000	3.64	0.004	9.64	0.002	2.00	0.118
	Rs. 1000 –Rs. 2000	2.75		8.05		1.46	
	Rs. 2001-Rs. 3000	2.65		8.27		1.53	
	Rs. 3001-Rs.4000	2.60		8.22		1.54	
	Rs. 4001-Rs. 5000	2.58		7.74		1.37	
	Above Rs. 5000	2.60		8.25		1.38	
	Public tap	3.18		8.25		1.39	
	Tube-well	2.68		8.28		1.55	
	Well	2.39		7.89		1.32	
Sanitation	Yes	2.62	0.940	8.23	0.463	.69	0.000
	No	2.67		8.21		1.53	
Kitchen	Living room used as Kitchen	2.80	0.019	8.21	0.987	1.50	0.001
	Kitchen room	2.68		8.29		1.35	
	separate building	2.48		8.12		1.71	

Table 4. Pearson correlation different variables under study

	Age	Education	Worst Physical Condition	HH Income	Sanitation	ANC times	Delivery assistance	Birth Place	PNC	JSY	Health care received	pregnancy complications
Age	1											
Education	-.257**	1										
Worst Physical Condition	.287**	-.145**	1									
HH Income	.114*	.127*	.021	1								
Sanitation	-.038	.007	.030	-.122*	1							
ANC times	.085	.068	.095	-.118*	.011	1						
Delivery assistance	-.031	-.072	.048	-.011	.044	-.103*	1					
Birth Place	-.059	-.027	.052	-.035	-.004	-.074	.828**	1				
PNC	.007	-.044	.037	-.005	-.012	.116*	-.008	.032	1			
JSY	.021	-.097	.007	-.026	-.044	.157**	.034	.069	.513**	1		
Health care received	.045	.021	.114*	-.065	-.002	.790**	-.124*	-.107*	.216**	.307**	1	
pregnancy complications	.001	-.021	.064	-.082	.183**	.342**	-.135**	-.163**	.153**	.110*	.509**	1

Table 5. Comparison of Maternal health of different research findings

Health Care Facility	District HDR, Bankura[*]	DLHS-3 [**] (ST only)	Godda report[***]	Present findings
ANC with in RI-RII	45.7 %	90.2 % (Any ANC check up)	67.4 %	84.5 %
ANC received 3 times or above	40.7 %	55.1 %	29.1 %	67.7 %
Institutional Delivery	59.1 %	30.5 %	24.4 %	75.3 %
Delivery by trained personnel	47 %	....	35. 3%	78.3 %
Received IFA 90+	83.06 %	....	98 %[**] (IFA 100+)	93.6 % (IFA 100+)
PNC received within 1 week	......	39.1 % (2 weeks)	52.6	90.4
JSY	......	....	71.6	94.6

other types of health facility (23.9 %) and private hospital (4.9%). 90.4 % respondents received post natal care. Iyanger (2009) reported that only 7.5% of women who delivered at home received a postnatal check-up within two weeks of delivery. Jat *et al*. (2011) observed in their study that only 37.4% women received PNC within two weeks of delivery. Hati and Mazumder stated that in Bankura 45 % belonging to socially excluded group has shown significant improvement in terms of post natal care. 94.6 % respondents were JSY beneficiaries and got help from the JSY scheme.

Mean effect of predictor sets of variables on maternal health status criterion measures

Table 3 indicate that Household income has significant (p<0.01) mean effect on times of ANC during pregnancy and health care received. It seems that respondents of lower income group have high ANC check-ups during pregnancy and health care received mean score. Sanitation has significant (p<0.01) mean effect on pregnancy complications. It seems that respondents who had no sanitation facility have high pregnancy complication score. Kitchen has significant (p<0. 01) mean effect on numbers of ANC during pregnancy. It seems that respondents who had used the living room as a kitchen, they had higher mean numbers of ANC received during pregnancy. Kitchen space has also significant (p<0. 05) mean effect on pregnancy complications. It seems that respondents who had used separate building as Kitchen has high mean score of pregnancy complications. On the basis of the findings as noted in table 4 we can discuss the following:

From the table 4 we found that Age is Highly Positively significantly correlated with worst Physical condition, highly significantly correlated with House hold income and age is also highly negatively significantly correlated with Education. Education has positive correlation (p<0.5) with Household income. Education is also negatively significantly (p<0.1) correlated with worst Physical condition. Hati and Mazumder (2011) stated that literacy among women helps in determining whether to go for ANC check up or not. Household income is negatively significantly correlated with Sanitation and numbers of ANC received. Rani et. Al. (2007) found in their study that women who had more access to money receive more ANC than women who had no access to money. Sanitation has positive and significant (p<0.1) correlation with pregnancy complications. It means respondents without sanitation facility in their households have significantly higher rate of pregnancy complications. Numbers of ANC received is highly positively and significantly (0<0.1) correlated with JSY beneficiary, Health care received, and pregnancy complications and positively significantly correlated (p<0.5) with PNC. ANC times also negatively and significantly correlated with person assist in delivery. Rani *et al* (2007) stated that women who received full ANC services also found

to be more likely to have received a PNC. Person assists during delivery highly positively and significantly correlated with Birth place. Person assists during delivery also has negative significant (p<0.1) correlation with pregnancy complications and negatively significant (p<0.5) correlation with Health care received. It indicates that maximum non institutional delivery assisted by the traditional birth attendants and in those cases mother did not get proper health care facility and were suffering from pregnancy complications. Birth place is highly negatively and significantly correlated with pregnancy complications and negatively and significantly (p<0.5) correlated with Health care received. It means that non institutional delivery had significant high pregnancy complications and low health care received. PNC has significant (p<0.01) correlation with JSY, health care received and pregnancy complications. JSY is highly positively and significantly (p<0.1) correlated with health care received and positively significantly (p<0.5) correlated with pregnancy complications. Health care received has significant (p<0.1) correlation with pregnancy complications. It indicates that complicated pregnancy cases received more health care than the normal pregnant women.

DISCUSSION

The Bankura district is a Santhal populated district in West Bengal, India. Very few research works were conducted in this area. With reference to District Human Development Report, and District Level Household Survey-3, 2007-08; the present study findings and the research report of Gadda district, Jharkhand, the following table was prepared to make a comparative study on Maternal Health Status of tribal women. From the above table it can be safely said that there is an improvement in maternal health care in the tribal dominated Blocks of Bankura. However, if we compare the present findings with official heath data then we would find that there is a considerable gap between overall health status and tribal health status. During 2011-12 the institutional delivery percentage was 85.08% as against 75.3% found in the present study (http://bankura.gov.in/Health/Health_Bankura_180213. htm; accessed on 26-07-2014). It is quite obvious that maternal health depends on a series of inter-connected events rather than any single factor. Accessibility, affordability, zero or little knowledge in identifying danger signs in pregnant mothers and the like are important factors to improve the maternal health in tribal areas. Access to quality health care is also very important to reach the Millennium Development Goal of reducing maternal mortality. In the study area appropriate health care centres are not proportionately distributed. The delay in reaching the first referral units is a factor which is negatively impacting maternal health care in the Blocks, the study covered. The exclusive habitation in remote areas far from any health centre, without any all-whether road connectivity farther aggravated the situation. The

government supported transport facility rarely reaches the tribal villages because for want no motorable road or for difficult terrain. These observations should be further researched keeping in mind the Three Delays Model as proposed by Thaddeus and Maine.

Conclusion

The study was conducted in 406 households in West Bengal, India to know about the maternal health status. From the study we can conclude that maximum number of the respondents took health care facilities like receiving ANC and PNC and they were also beneficiaries of Janoni Surakhsha Yojona (Program run by Govt. of India to decrease the neo-natal and maternal deaths). But most of them accessed these health care facilities through Auxiliary nurses. 23.4 % respondents went for non-institutional delivery. With the increase of age, the physical conditions of the respondents deteriorated significantly and they also had low education status. Sanitation facility and Kitchen also had a significant effect on pregnancy complications. Received ANC were highly positively and significantly correlated with PNC. Pregnancy complications significantly increased with the non-institutional delivery. There was a trend to take delivery assistance from non-doctors which caused health complications among mothers.

REFERENCES

Hati, KK and Mazumder, R. 2011. Health for Development: A District Level Study in West Bengal. Munich Personal RePEc Archive

Iyengar, S.D; Iyengar, K. And Gupta. V 2009. Maternal Health: A Case Study of Rajasthan. *Journal of Health, Population and Nutrition*, 27(2): 271-292.

Jat, R.M.; Ng, N. and Sabestian, M.S. 2011. Factors affecting the use of maternal health services in Madhya Pradesh state of India: a multilevel analysis. *International Journal for Equity in Health*, 10(59):1-11.

Lawn, J.E., Cousens, S. and Zupan, J. 2005. 4 million neonatal deaths: When? Where? Why? Lancet, 365 (9462), 891–900.

Maiti, S., Unisa, S., Agarwal, PK. 2005. Health Care and Health among Tribal Women in Jharkhand. A Situational Analysis. *Studies of Tribes and Tribals*, 3(1):37-46.

Manna, Prabir Kumar; De, Debasis; Ghosh, Debidas 2011. Knowledge Attitude and Practices for Antenatal care and Delivery of the mothers of tea garden in Jalpaiguri and Darjeeling Districts, West Bengal.

Negi, N.S., Sekher, T.V., Ganguly, S. 2010. Antenatal Care among Tribals: A Study of Chhattisgarh and Jharkhand, 8(2):77-86.

Rani, S. Ghosh, S., Sharan, M. 2007. Maternal Healthcare Seeking among Tribal Adolescent Girls in Jharkhand, Economic and Political Weekly, December, 56-61.

UNICEF. 2007. The state of the world's children 2008: Child Survival. New York: UNICEF.

World Health Organization. 2001. Estimates. In Saving Newborn Lives. States of the World's Newborns (pp. 1–49). Washington DC: Save the Children Federation–US.

****