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Maternal Healthcare Utilization among Rural Tribes: A Study of the Reangs of Tripura

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Abstract: The present study is an attempt to critically examine the level and determinants of antenatal care and institutional delivery among the Reang tribe of Tripura, India. We use primary data collected from 400 rural Reang women for the purpose of the analysis. Information has been collected on all three dimensions of antenatal care, viz., antenatal care visits, tetanus immunization and consumption of iron and folic acid supplements. Drawing on previous research which emphasizes the crucial role of socioeconomic and women's autonomy variables for antenatal care and institutional delivery, we employ binary logistic regression analyses to discern the determinants of each dimension of antenatal care as well as full antenatal care and institutional delivery. Overall, this study brings out that economic factors, women's education, working status and access to health facility are critical determinants of antenatal care utilization among the Reangs. Perhaps unsurprisingly, antenatal care in turn is one of the crucial factors affecting institutional delivery along with woman's education and access to health facility. However, lack of evidence for women's household decision-making autonomy as affecting antenatal care utilization and institutional delivery suggests the need for refining and fine-tuning the measures of women's autonomy designed for diverse sociocultural contexts.

Keywords: Antenatal care, Binary Logistic Regression, Disadvantaged communities, Reangs, Scheduled Tribes, Tripura.

Introduction

Reduction in maternal mortality remains a priority under the Sustainable Development Goals 2030. Even though maternal mortality rate (MMR) has declined in India, there is still a long way to go. According to the latest estimates provided by the Registrar General, MMR in India stood at 122 maternal deaths per lakh live births during 2015-17 with the stated target of 70 to be achieved by 2030. It is perhaps a well-known fact that the causes of maternal mortality are largely treatable through modern medicine and procedures (Bale, Stoll and Lucas, 2003; Bedi et al, 2001, Sinha, 2018). Even though it is difficult to measure the exact contribution of antenatal care towards reducing maternal mortality, its importance in bringing down maternal mortality can hardly be overemphasized (Bergsjo, 2001; Carroli, Rooney and Villar, 2001; Iyaniwura and Yussuf, 2009; Mbuagbaw and Gofin, 2011; Pandit, 1992). Alongside this, institutional/assisted delivery has been identified as a key factor in averting maternal deaths (Goudar, et al., 2015; Nigatu and Gelaye, 2019) and has been found to be more effective for facilities which have emergency obstetric care (Gabrysch et al., 2019). In this connection, an area of persisting concern is the low utilisation of antenatal care services among Scheduled tribes (ST) and the wide gap that exists between various social groups in India (Adhikari et al., 2016; Ali and Chauhan, 2020; IIPS and ICF, 2017).

Extant literature reveals the importance of socioeconomic factors as well as women's autonomy in determining utilization of antenatal care in India. Education, that of both woman

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and husband, has been reported as a significant determinant of antenatal care utilization in nearly all studies (see for instance, Das et al., 2001; Jungari and Paswan, 2019; Kumar et al., 2019; Munuswamy et al., 2014; Singh et al., 2019). Likewise, family income (Pandey and Karki, 2014; Tekelab, et al., 2019) and health knowledge (Gupta et al., 2015; Nuamah et al., 2019) have been identified as important determinants. Women's household decision-making autonomy and freedom of movement (Bloom et al., 2001) have also been found to be enablers of ANC utilization. Here, it could be mentioned that women's autonomy as measured by joint decision-making (by women and their husbands) has also been found to be positively associated with ANC, especially in the South Asian patriarchal context (Ghose et al., 2017; Rizkianti et al., 2020) but not without exceptions (see for instance, Chol et al., 2019).

Research on the correlates and determinants of antenatal care utilisation, *especially* on India's tribes, reflect the importance of broadly the same set of factors viz., education of woman and her husband, income, and knowledge of ANC (see for instance, Gupta, Kumar and Dorcas, 2016; Roy et al., 2013 and the literature cited therein). However, research on ANC utilization among tribes of Northeast India is conspicuously thin. Thus, given the twin facts that maternal health care among tribal women merits greater attention, and that tribes of Northeast India have received scant attention especially in the recent past, the present study examines the level and determinants of antenatal care utilisation among Reangs, a particularly vulnerable tribal group belonging to Northeast India.

Socio-Demographic profile of the Reangs

The Reangs (or *Bru*) are the second largest tribe of Tripura after the Tripuris, inhabiting three erstwhile districts of the state- North Tripura, Dhalai and South Tripura. This particularly vulnerable tribal group with a total population of nearly 1.89 lakh constitutes nearly 5 percent of the total population and around 16 percent of the total tribal population of Tripura (Registrar General, 2011). The Reangs also inhabit the states of Arunachal Pradesh, Assam, Manipur, and Mizoram in Northeast India and the Chittagong Hill Tracts (CHT) in Bangladesh. However, 93 per cent of the total population of the Reangs within India is concentrated in Tripura alone.

The Reangs are considered to be one of the earliest settlers in Tripura along with a few other tribal communities, viz., Tripuri, Jamatia, Halam, Noatia, Kuki, Lushai and Uchoi (Kilikdar, 1998). They belong to the Sino-Tibetan language family. According to scholars, upper courses of the Yangtze and Hwang-ho in China was the original seat of the Reangs, from where they migrated to Shan state (Myanmar) and settled along the Irrawady and Chindwin rivers. The Reangs migrated further to cross the Lushai Hills to reach Maini Tlang in the Khagrachari Hills district in CHT and finally entered Tripura (Acharyya, 1999; Reang, 2018). It is believed that the nomadic nature of the tribe based on *kairing* or *jhum* (shifting cultivation) has been a major factor towards migration (Reang, 2018).

The total population of the Reangs has been increasing overtime and the compound annual growth rate (CAGR) of population between 1961 and 2011 turns out to be around 2.4% (not shown in figure). Interestingly, a comparison of the population growth rates of all-tribes and non-tribes reveals that the two groups evince the same growth rate of 2.4%. However, the Reangs appear to be lagging in terms of demographic transition, perhaps not unexpectedly, given the low level of socioeconomic development (to be elaborated in the following paragraphs). The age-gender pyramids constructed from Census data for the years

2001 and 2011 reveal the typical bottom-heavy structure suggesting high fertility and mortality rates among the Reangs (Figure 1a and 1b).

Figure 1a: Age-gender pyramid for Reangs, 2001

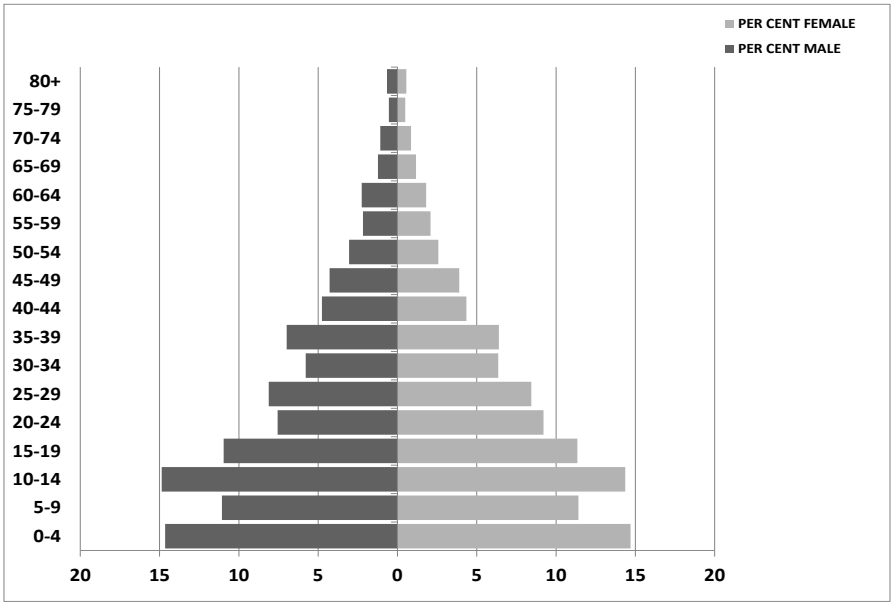
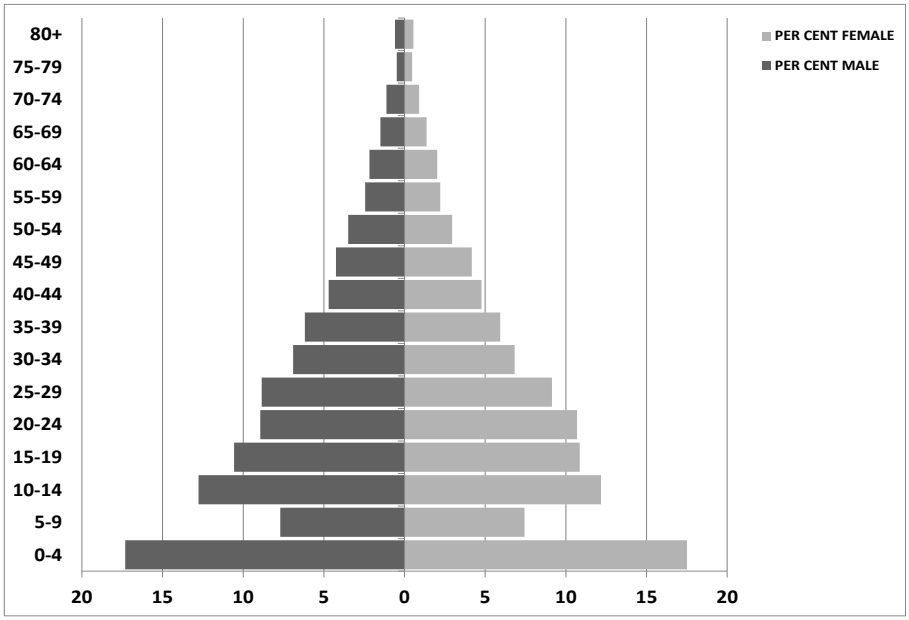


Figure 1b: Age-gender pyramid for Reangs, 2011



Source: Registrar General of India, 2001; 2011

The lack of socio-economic development of the Reangs is particularly evident in the low levels of literacy and lack of urbanization, both in absolute and relative terms. As can be seen from Figure 2a, the Reangs had practically no education till as late as the early 1960s. It is only in 2001 that we find around 40 per cent of the Reang population as having attained basic literacy. The picture is worse for Reang women, and just around 30 per cent of them had achieved basic literacy till 2001, as compared to 45 and 65 per cent of women from all-tribes and non-tribal communities. In fact, the pace of improvement in education among Reang women has been very slow over the decades. The gap in literacy rate between Reang

women and non-tribal women increased till 2001 and started to decline during the last decade i.e. 2001-2011 (Figure 2b). Thus, the Reangs are not only behind the general population of the state in terms of education, they also lag behind most of the other tribes inhabiting Tripura.

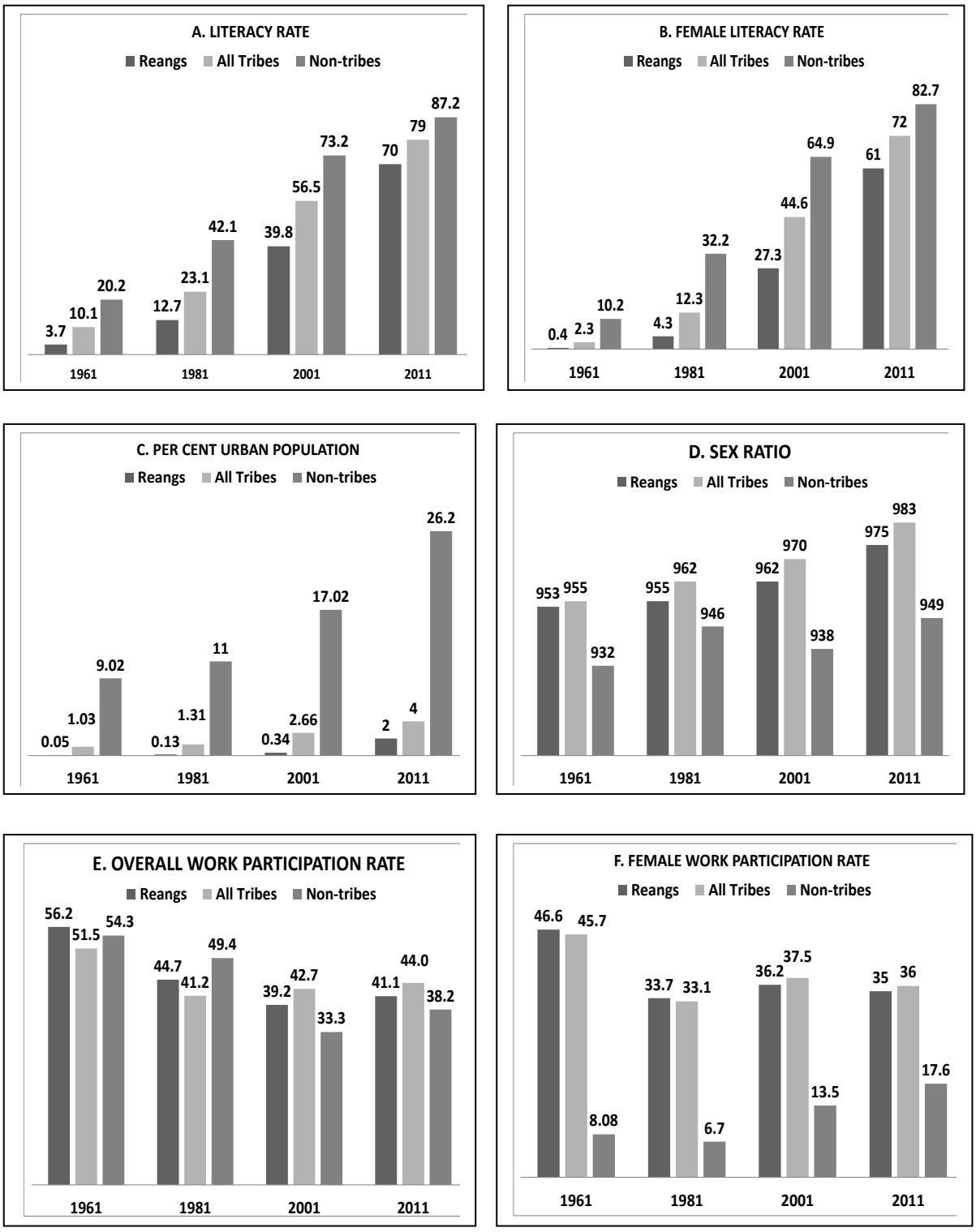
Likewise, the socio-economic backwardness of the Reangs finds reflection in the almost *complete* rural existence of the community. It is indeed remarkable that just around 2 per cent of the Reangs reside in urban areas. In fact, as can be seen from Fig. 2(C), the situation is not very different for the tribal community as a whole and one could point out at least two possible (albeit related) causes for this phenomenon. First, the extremely low levels of education and requisite skills make it impossible for the Reangs to secure jobs in the urban formal sector. Indeed, as revealed by Census data there has been no structural transformation of tribal economies, with most of them engaged in the rural primary sector, which is especially true for tribal women. For instance, while the proportion of non- tribe workers engaged in the tertiary sector (trade and commerce, transport and communication, and other services) hovered around 26 and 27 per cent for much of the period after 1961, the corresponding figure for tribes remained stagnant at just 3 per cent overtime (calculated from Chakravarti, 1998: 40). Unsurprisingly, the same pattern can be found for tribal women as well (but more on this in the following paragraphs). Second, and related to the first is that urbanization in Tripura (as for India as a whole) has been largely a product of rural to urban migration. While various economic factors can viz., availability of suitable jobs and relatively higher wages in urban areas set off rural-urban migration, the importance of social capital in terms of existing contacts in urban areas has been found to be of much importance especially for the urban sector (Mitra, 2004). Thus, the virtual nonexistence of tribes in the relatively developed townships from historical times is also a significant factor causing impediment to urbanization of tribes in general.

A relatively low female-male ratio or sex ratio is often considered as broadly reflective of anti-female bias in societies caused by excess female mortality through material neglect of women. In this connection, we can see from Figure 2d that as compared to non-tribes, all-tribes and the Reangs as well evince more balanced sex ratios. In fact, it is interesting to note that the sex ratios have been increasing overtime in Tripura for all social groups which, however, has perhaps more to do with the decline in (male dominated) legal and illegal migration from neighbouring states and countries into Tripura than improvement in the social position of women.

Finally, data on work force participation rate (WFPR) for various social groups reveals that overall there has been a trend of declining WFPR across social groups- tribes as well as non-tribes. While the declining trend in WFPR for the non-tribal groups could be largely attributed to spread of the desire and resources for higher levels of education and increasing skill mismatch due to low elasticity of employment in the secondary and tertiary sectors (Verick, 2014), the declining WFPR among tribes, especially the relatively socioeconomically backward ones is presumably due to loss of land due to expansion of reserved forest area and even inability to continue farming owing to lack of required resources and agricultural credit. An equally important finding is that while the female labour participation rate (FLPR) of all-tribes and the Reang women is higher than that of non-tribes over the entire period from 1961 to 2011, there has been a decline in the FLPR not just overtime for the Reangs but also as compared to the average for all-tribes. In fact, during 1961, the FLPR among the Reangs was higher than the average for all-tribes and stood at nearly 56 per cent as compared to around 51 per cent for the tribes as a whole. However,

during 2011, the situation seems to have somewhat reversed with the work participation rate of Reang women (35 per cent) lagging slightly behind the average for all tribes (36 per cent) (Figure 2f). Undoubtedly this has implication for the status and autonomy of Reang women.

Figure 2: Demographic and Socioeconomic Trends among Reangs and Others, Tripura, 1961-2011



Sources: Computed from Census of India, various years; Bhattacharjee et al. 1996; Chakravarti, 1998

Even though socioeconomic and cultural changes are afoot among them due to what has been popularly called 'Sanskritization', they retain many of the ancient cultural practices, especially as it pertains to marriage, kinship, and health practices including maternal healthcare. Consanguineous marriages are not uncommon even among the young. Recent research finds that nearly 30 per cent of the women have married among relatives (consanguineous marriage) (Sinha, 2020). Regarding maternal healthcare, scholars have noted that there are at least seven rituals among the Reangs for safeguarding and purifying the mother during pregnancy which are carried out from the *ninth month* of pregnancy (*Kebeingbuma, Swanirima, Taohrowrima, Chantakehar, Nokhla, Aichaurima, Charttaatoima*) (Acharyya, 1999). Among these rituals many are performed by men and few by both men and women. However, use of modern practices of maternal healthcare is abysmally poor among the tribes.

In fact, as indicated by the National Family Health Survey (NFHS), at least since the beginning of 1990s- from when such data have been made available- the tribes have been lagging behind other social groups including the Scheduled castes (SC) in nearly every parameter of maternal health care, viz., antenatal care (ANC) utilization, institutional delivery and postnatal care. For instance, during 1990-92, around 52 percent of tribal women *did not* utilize ANC services, as compared to 34 percent and 42 percent of women belonging to the general and SC categories respectively. Likewise, during the early 1990s, hardly 9 percent of ST women reported institutional deliveries compared to around 30 percent for the others (excluding SC) (IIPS and ICF, 1993). Undeniably, the social chasm, though narrowing overtime, persists even today. Thus, we find that whereas around 11 percent of women from general category could *not* avail ANC services, the figures for ST women are significantly higher at around 20 percent. Also, in the case of institutional deliveries, we find that while around 68 percent of ST women have had an institutional delivery for their last birth, the figure for the general category is substantially higher at 83 percent (IIPS, 2017). Indeed, data from NFHS 4 for Tripura indicates a huge chasm between the tribes and others in every dimension of ANC utilization. For instance, while more than 70 per cent of women from other communities had four or more ANC visits, the corresponding figure for the tribes was just above 50 per cent. Differences of a similar magnitude were found as well for TT immunizations and IFA tablet intake among the tribes and others (IIPS and ICF, 2018:77).

Material and Methods

Data Collection

Detailed information has been collected from 400 Reang women between the ages of 15 and 49 years with at least one child, using semi structured interview schedule. Data has been collected from erstwhile two districts of Tripura- South Tripura and Gomati district. The sample size for the Reangs is determined by standard statistical methods involving measures of expected baseline values or prevalence rate (assumed to be 65 per cent), confidence interval of 95 percent, design effect (assumed as 1.2), precision level of 5 per cent and non-response rate of 5 per cent[2].

[2] Cochran's formula for large population modified for design effect and non-response has been used for the calculation of sample size. The formula is: $n= [(Z^2 P (1-P)/E^2)*DEFF]$. Here, n is the effective sample size, Z is the Z value at 95 per cent confidence interval (1.96), P is the prevalence rate based on National Family Health Survey Tripura report 2015-16, that indicates contraceptive use and ANC utilization around (or above) 65 percent. E is the precision rate assumed to be 5 per cent. DEFF is the design effect assumed to be 1.2 for this study since the clusters are fairly homogenous in terms of socioeconomic development. Also, previous research

At present, South Tripura and Gomati district contain 16 Blocks, out of which 10 blocks (Amarpur, Karbook, Matarbari, Ompi, Kakraban, Bokafa, Jolaibari, Rajnagar, Hrishyamukh, and Bharat Chandranagar) are inhabited by the Reangs. Out of these 10, 4 blocks with the highest level of rural female literacy rate, viz., Matarbari, Amarpur, Bokafa and Jolaibari have been selected.[3] From each of the selected blocks, one village council has been randomly chosen (viz., Chandrapur R.F., Paharpur, Laxmichhara and Kalshimukh). Finally, 100 Reang women respondents have been randomly chosen from each village council distributed over the numerous hamlets/villages. Overall, information has been obtained from 400 Reang women residing in 20 villages distributed over South Tripura and Gomati districts.

The interviews were mostly conducted at the residence of the respondent. The interviews were conducted with the assistance of an interpreter, who speaks both the Reang dialect (*Kau-Bru)* and Bengali, even though many Reang respondents have a basic knowledge of the local Bengali vernacular. The women's schedule is similar to other large scale sample survey schedules (e.g. the DHS). The schedule is basically focussed on understanding the role of various social, economic and cultural factors affecting the use of antenatal care among Reang women. Detailed information was collected on utilization of antenatal care including number of visits, tetanus toxoid immunization and intake of folic acid tablets during pregnancy.

Though proper care has been taken to ensure correct age reporting (through corroboration with official documents like Aadhar card and/or birth certificate and probing for historical events in case of apparent doubt), the fact remains that there is bound to be inaccuracies in reporting of the exact age of respondent, though we are more confident about the age group to which the respondent belongs. However, misreporting of age has been an issue mostly for women above 35 years.

One of the biggest challenges faced was collection of information on the standard of living of the household. During pilot testing of the questionnaire, we tried to test the efficacy of generating information on household income versus that on household expenditure. We found that the expenditure method is more suitable primarily due to fluctuating income of the households (which is common for poor agricultural households). For the expenditure data, we modelled the questions along the lines of the National Sample Survey expenditure surveys. In case of doubt on expenditure on particular items of the expenditure section, information was sought from the husband of the woman respondent. However, information on expenditure, especially on consumables, could also be biased to some extent chiefly because of fluctuating purchasing power and also because the Reang women gather food

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has suggested DEFF of 1.2 for list and area blended sampling (World Health Organization, 2015). This leads to a sample size of around 419 Reang women. However, due to cost and time considerations, data could be collected on a sample of 400 Reang women finally. The researcher also recognizes that higher DEFF could possibly increase the precision of the estimates but expects these errors are not grave enough to significantly bias results.

[3] The rural female literacy rates of the 10 blocks as calculated from Census 2011 data are Amarpur (78.1%) Karbook (55.1) Matarbari (81.2%) Ompi (67.1%) Kakraban (82.1%) Bokafa (75.3%) Jolaibari (74.5%) Rajnagar (87.2%) Hrishyamukh (79.5%) and Bharat Chandranagar (71.1%). However, as four blocks among them viz., Kakraban, Rajnagar, Hrishyamukh and Bharat Chandranagar have few Reang families (94, 130, 44 and 207 families respectively), these blocks have not been considered for data collection. From the remaining six, we have chosen four with the highest rural female literacy rates as can be seen.

items (e.g. vegetables and fruits) from nearby forests whose value had to be imputed in some cases. As the interviews were conducted at the residence of the respondent, data on assets are sufficiently reliable since the facts could be corroborated. And therefore, we used a standard of living index was constructed from assets using usual procedure.[4] These lacunae have to be kept in mind during interpreting of results.

Description of Sample Variables

A broad description of the sample variables is contained in Table 1. As can be seen from the table, there is a relatively even distribution of women across the age groups in the sample except for the extreme age groups, viz. 15-19 years and those over 40 years of age (not shown in table). However, the middle age group (25-35 years) represents the largest proportion of the sample women. Also, as can be seen from Table 1, a significant proportion of Reang women and men have not received formal education. In fact, it is distressing to note that around 25 per cent of Reang women and 15 per cent of men still remain uneducated (Table 1). Perhaps unsurprisingly, the Reang society remains primarily agrarian and nearly 85 per cent of men and 62 per cent of the women are employed in agriculture, either as cultivators or as agricultural labourers.

However, it is remarkable that 29 per cent of Reang women have been found to be not working. Majority of the Reang households are poor. Around 74 per cent of the households have been classified as belonging to lower standard of living based on asset criteria as discussed earlier. Nearly half of the women in the sample revealed high household decision-making autonomy. Also, almost 43 per cent of the Reang women have high freedom of movement based on standard questions (as put in Demographic and Health Survey questionnaires).[5] Furthermore, 71 per cent of the women have bank accounts (Table 1). It could be noted here that the Cronbach's alpha for the household decision-making index and the freedom of movement index are 0.77 and 0.67 respectively, which are acceptable given that there are between three and five questions in the constructed indices. It is also perhaps interesting to note that nearly 60 per cent of the Reang women watch TV or listen to radio almost every day, and nearly 13 per cent of them are exposed to media at a lesser frequency i.e. less than once a week (Table 1). However, newspaper was not found to be popular among Reang women, and practically no one was found with regular habit of reading newspapers.

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[4] The standard of living includes the following assets: House type, Ownership of house/Land ownership, Gas Stove, Bicycle, Motor Cycle, Mobile, Refrigerator, Colour TV, Electric Fan, Table, Chair, Bed, and Ownership of livestock. The weight attached to each of the asset is as suggested in the National Family Health Survey. The asset index value of the Reang households ranged from 8 to 26. We classified the households into two categories, viz., high and low standard of living taking asset index 17 as the median value. 73.3% of the households scored 17 or less in asset index value and were classified as households with relatively low standard of living.

[5] The questions included in household decision-making are (1) *Who usually makes decisions about major household purchases* (2) *Purchases for daily needs* (3) *Visit to family and friends* (4) *Own health care* and (5) *How to spend family's total income.* The responses vary among three possible (pre-coded) ones, i.e. decisions made by husband and/or others (coded 0), decisions taken jointly by husband and wife (coded 1) and decisions made solely by woman (coded 2). Principal component analysis has been used to generate regression scores. The finally constructed index is binary such that positive scores are coded 1 and negative scores are coded 0.

Freedom of movement is measured by a set of three questions. The questions included in freedom of movement relate to whether the woman is usually allowed to go to the following places alone, with someone or not at all (1) *to the market* ***(MOB1)*** (2) *to the health facility* ***(MOB2)*** and (3) *to places outside this (village)* ***(MOB3)***. The responses vary among three possible (pre-coded) ones, i.e. not allowed at all (coded 0), allowed to go with someone (coded 1) and allowed to go alone (coded 3).The freedom of movement index has been constructed using the same procedure as the household decision-making index.

Table 1: Description of Sample Variables

Variables	Percentage (%)
Age Group	
15-24	25.3
25-34	44.6
35 and above	30.1
Education of woman	
No education	24.9
Till primary standard	12.7
Above primary	62.7
Education of husband	
No education	15.4
Till primary standard	14.2
Above primary	70.4
Working status of woman	
Working	71
Not working	29
Occupation of husband**	
Cultivator	58
Agricultural labourer	28.2
Service	13.7
Relatively lower standard of living	73.3
Bank Account (Joint/Single)	71
Higher birth order	58.3
High household decision-making autonomy	51.8
High Freedom of movement	42.2
Media Exposure	
Almost everyday	58.8
At least once a week	27.5
Less than once a week	13.7
Full ANC*	25.3
Number of ANC visits	
No visits	23.7
At least 4 visits*	42
Full tetanus toxoid immunizations (2 immunizations)*	75.8
Consumed full course of iron and folic acid tablets*	41
Institutional Delivery*	66.6
Villages having access to healthcare centres	40.2

Source: Field study, 2017-18

Note: * Dependent variables in binary logistic regression analyses ** not included in regressions

Complete antenatal care (ANC) has been defined in the present paper as at least four ANC visits, minimum of two tetanus toxoid (TT) immunizations and 90 days intake of iron and folic acid (IFA) tablets for the last pregnancy. As can be seen from Table 1, only a quarter of the surveyed women had received full ANC. Among the three components of ANC, we find that whereas 42 per cent of the women had completed four medical visits, as much as 24 per cent did not visit a healthcare provider *even once* during the last pregnancy. Also, nearly 60 per cent of the women did not consume the required dose of IFA tablets. The only component of ANC where Reang women were found to have done better is in receiving TT immunization; with nearly 76 per cent of the women having received it. Nonetheless, this is lower than the average for Tripura and for the average for all-tribes of the state that stand at around 91 per cent and 83 per cent (IIPS and ICF, 2017). Nearly 59 per cent of the women

reported more than one child. Also, nearly 67 per cent of women reported institutional delivery (Table 1). Finally, nearly 40 per cent of the surveyed villages had access to healthcare facilities, i.e. physical accessibility to healthcare centres/hospitals.

Method of Statistical Analysis

The determinants of the various dimensions of ANC have been estimated using binary logistic regressions. The basic form of the binary logistic regression used is:

$$\textbf{Log (p/1-p)} = b_0 + b_1*x_1 + b_2*x_2 + b_3*x_3 + b_3*x_3 + \ldots b_k*x_k$$

Where b_0 is the constant and b_1, b_2, b_3... b_k are the coefficients of the independent variables x_1, x_2, x_3.... x_k. P is the estimated probability of the dependent variable assuming a value of 1.

We have carried out five binary logistic regressions with the following dependent variables (i) Received at least two tetanus toxoid immunizations (2TT) (ii) Consumed IFA tablets for 90 days (90 IFA) (iii) Went for at least 4 ANC visits (Four ANC visits) (iv) Received full ANC (Full ANC) (v) Last birth delivered at a medical institution (Institutional Delivery). The dependent variables are dichotomous where 0 refers to the situation where antenatal care as defined for the particular item does not hold true and 1 otherwise. For example, for 2TT, a Reang woman who has received two tetanus toxoid immunizations during last pregnancy has been coded as 1 and others as 0. Independent variables remain the same in all regressions except in the case of institutional delivery; where full ANC has been included as an additional independent variable (please refer to Table 1 for the list of the independent variables included in the analyses). All the explanatory variables used in the regressions are categorical in nature. In most cases, we have collapsed the categories of the independent variables into fewer ones (mostly limited to two or three) for ease of analysis and exposition, as can be seen from Tables 2 and 3.

Results

Table 2A and 2B presents the results of chi-square analyses of independence between the dependent variables viz., uptake of minimum of two tetanus toxoid immunizations, intake of a minimum of 90 IFA tablets, at least four ANC visits, full ANC uptake and institutional delivery, and various independent variables. Overall, all the chi square values (χ^2), with the exception of the household decision-making index, are highly significant, indicating that each of the independent variables is related with maternal healthcare utilization.

Table 2A reveals that uptake of adequate doses of TT injections is significantly different among age-groups and greater proportions of women from the younger age-groups have received at least 2 TT injections. Uptake of TT injections also varies significantly by the educational attainment of the woman and her husband, and greater proportions among those who have received more than primary education have received adequate TT immunization as compared with women who have received education less than or up to primary level. Women's work and its nature also bear a significant relationship with uptake of tetanus immunization. Significantly greater proportions among non-working women have received immunization as compared to working women. And, among working women, the proportion of TT immunization is highest for women employed in services sector (Table 2A). Not surprisingly, greater proportion of women from households with a higher standard of living have received TT immunizations as compared to those who are not economically well-off and the chi square statistic reveals that the difference is significant. Likewise, uptake of

TT immunization varies significantly with birth order, women's freedom of movement and physical access to healthcare facility. However, women's single/joint ownership of bank account, media exposure and household decision-making autonomy do not have any association with TT immunizations.

Table 2A: Percentages of 2TT, 90 IFA and 4 ANC Utilization by various independent Variables

Variables	**2TT**			**90 IFA**			**Four ANC**		
	No	**Yes**	χ^2	**No**	**Yes**	χ^2	**No**	**Yes**	χ^2
Age Group									
20-24	15.6	84.4		69.0	39.0		61.0	39.0	
25-29	18.6	81.4		55.8	44.2		53.5	46.5	
30-34	21.2	78.8	27.737***	53.6	46.4	6.591	57.0	43.0	10.444
35-39	32.4	67.6		59.2	40.8		60.6	39.4	
40-44	45.7	54.3		74.3	25.7		68.6	31.4	
45+	66.7	33.3		77.8	22.2		90.0	10.0	
Education of woman									
Till primary standard	43.1	56.9	44.543***	69.9	30.1	11.255***	77.2	22.8	33.435***
Above primary	12.9	87.1		52.5	47.5		47.3	52.7	
Education of husband									
Till primary standard	42.9	57.1	29.928***	70.3	29.7	8.196***	78.8	21.2	26.894***
Above primary	16.5	83.5		54.4	45.6		50.2	49.8	
Occupation of woman									
Not working	10.7	89.3		43.8	56.2		35.7	64.3	
Cultivator	27.8	78.2	20.991***	68.9	31.1	30.016***	63.4	36.6	37.333***
Agricultural labourer	37.6	62.4		71.4	28.6		76.5	23.5	
Salaried	19.4	80.6		36.1	63.9		66.7	33.3	
Standard of living									
Low	32.7	67.3	5.337**	69.0	31.0	5.586**	79.6	20.4	25.680***
High	21.2	78.8		55.5	44.5		50.9	49.1	
Bank Account									
Has account	29.5	70.5	2.371	64.9	35.1	2.217	71.4	28.6	10.784
Doesn't have account	22.1	77.9		56.6	43.4		53.3	46.7	
Birth order									
Has had one birth	14.3	85.7	14.904***	54.7	45.3	2.172	43.5	56.5	25.850***
More than a single birth	31.5	68.6		62.2	37.8		69.3	30.7	
Media Exposure									
Almost everyday	23.8	76.2		59.5	40.5		52.9	47.1	
At least once a week	15.7	84.3	3.505	56.0	44.0	0.393	64.2	35.8	7.540**
Less than once a week	29.2	70.8		59.4	40.6		67.9	32.1	
HH Decision-Making Autonomy									
Low	25.5	75.0	0.117	60.7	39.3	0.393	57.0	43.0	0.360
High	23.5	76.5		57.5	42.5		60.0	40.0	
Freedom of Movement									
Low	28.8	71.2	6.094**	67.4	32.6	15.289***	65.5	34.5	10.425***
High	17.9	82.1		47.5	52.5		49.1	50.9	
Access to healthcare facility									
Doesn't have access	31.0	68.6	16.124***	60.5	39.5	0.537	70.6	29.4	34.210***
Has access	13.5	86.5		56.8	43.2		40.6	59.4	

Note: *** indicates significance at <1% level; ** indicates significance at <5% level

Table 2B: Percentages of Full ANC Utilization and Institutional Delivery by various Independent Variables

Variables	Full ANC			Institutional Delivery		
	No	Yes	χ^2	No	Yes	χ^2
Age Group						
20-24	80.5	19.5		19.7	80.3	
25-29	72.1	27.9		29.1	70.9	
30-34	73.8	26.2	5.328	29.4	70.6	24.736***
35-39	71.8	28.2		49.6	50.7	
40-44	80.0	20.0		48.6	51.4	
45+	88.9	11.1		66.7	33.3	
Education of woman						
Till primary standard	86.7	13.3	17.491***	56.2	43.8	54.052***
Above primary	67.5	32.5		19.7	80.3	
Education of husband						
Till primary standard	84.7	15.3	8.283***	57.1	42.9	40.033***
Above primary	70.6	29.3		23.6	76.4	
Occupation of woman						
Not working	56.2	43.8		17.9	82.1	
Cultivator	81.5	18.5	33.779***	36.7	63.3	24.676***
Agricultural labourer	89.3	10.7		50.6	49.4	
Salaried	69.4	30.6		27.8	72.2	
Standard of living						
Low	87.0	13.0	10.873***	48.5	51.5	14.046***
High	70.3	29.7		28.0	72.0	
Bank Account						
Has account	83.8	16.2	6.859***	41.1	58.9	4.164**
Doesn't have account	71.0	29.0		30.3	69.7	
Birth order						
Has had one birth	69.6	30.4	3.833**	19.4	80.6	24.363***
More than a single birth	78.4	21.6		43.5	56.5	
Media Exposure						
Almost everyday	73.1	26.9		28.6	71.4	
At least once a week	78.0	22.0	0.749	32.0	68.0	8.022**
Less than once a week	76.4	23.6		44.3	55.7	
HH Decision-Making Autonomy						
Low	73.8	26.2	0.151	35.3	64.7	0.578
High	75.5	24.5		31.7	68.3	
Freedom of Movement						
Low	79.6	20.4	6.809***	40.7	59.3	12.526***
High	67.9	32.1		23.5	76.5	
Access to healthcare facility						
Doesn't have access	78.9	21.1	5.441**	43.9	56.1	27.592***
Has access	68.4	31.6		18.1	81.9	

Note: *** indicates significance at <1% level; ** indicates significance at <5% level

The results of the chi square test of independence for intake of at least 90 IFA tablets and various independent variables, is broadly similar with the results for tetanus

immunization. However, in this case along with media exposure, ownership of bank account and household decision-making index, age group of woman, birth order and access to healthcare facility also turn out to be insignificant. Also, the proportion of women who have consumed 90 IFA tablets is highest among salaried women among all categories. Furthermore, as can be seen from Table 2A, the results for at least 4 ANC visits is yet again the same as for tetanus immunization, with the exception that ANC visits do not differ significantly by age group of woman and frequency of media exposure has a significant association with proportion of women who have had at least 4 ANC visits during pregnancy. Significantly greater proportion of women who are exposed to media messages on a daily basis have had at least 4 ANC visits as compared to those who have been exposed to media less frequently.

Table 2B presents the results for cross tabulations for full ANC and institutional delivery with various independent variables. Again, the results are broadly similar with the previous cases of Table 2A. However, ownership of bank account is also significantly related with full ANC care as against other domains of maternal healthcare. Finally, age group of woman, education of women and husband, occupation of woman, standard of living of the household, bank account, birth order, media exposure, freedom of movement, and access to healthcare has been found to be significantly associated with institutional delivery.

Table 3 presents the results of the binary logistic regression analyses for different dimensions of antenatal care and institutional delivery of Reang women. Age of the woman is not found to have any significant association with any dimension of ANC among the Reangs. Column I presents the determinants of receiving required number of tetanus toxoid immunizations. Education of both woman and her husband are found to be significant determinants. In fact, a woman respondent with more than primary education is nearly thrice as likely to have received the required number of TT immunizations as compared to women who have received just primary education or less. As can be seen from Table 3, greater media exposure is also significantly and positively associated with receiving tetanus toxoid immunizations. However, economic status or ownership of bank account does not have any significant effect on the outcome, nor do the women's autonomy variables, viz. household decision-making autonomy and freedom of movement. Interestingly, non-working Reang women have higher odds of receiving the adequate number of TT immunizations as compared to women employed as cultivators and agricultural labourers. Also, physical access to health facility increases the odds of tetanus immunization by nearly two times.

Among the determinants of IFA intake, four independent variables, viz. woman's occupation, standard of living of the household, media exposure and freedom of movement turn out to be significant. Neither women's education nor that of her husband has been found to influence IFA intake. That greater freedom of movement is associated with higher odds of IFA consumption, stresses its importance in accessing antenatal care in particular, and healthcare facilities in general. Women, who do not depend on others to go outside home and/or are not culturally denied movement outside household, thus have better chances to meet their basic medical requirements on their own (more on this in the discussion section). Also, women from relatively well to do households are found to be nearly 1.6 times as likely to have consumed the full course of IFA tablets during pregnancy.

Table 3: Determinants of Antenatal Care Utilisation among Reangs: Results of Binary Logistic Regression Analyses

Variables	**2TT Exp (β) (I)**	**90 IFA Exp (β) (II)**	**Four ANC visits Exp (β) (III)**	**Full ANC Exp (β) (IV)**	**Institutional Delivery Exp (β) (V)**
Age group (*Ref: 15-19*)					
20-24	1.106	1.195	0.575	0.609	3.199*
25-29	0.853	1.353	0.683	0.876	1.194
30-34	0.877	1.709	0.794	0.995	1.580
35-39	0.557	1.337	0.904	1.244	0.509
40-44	0.343	0.619	0.924	0.904	1.033
45+	0.136	0.691	0.285	0.513	0.622
Woman's education (Ref: Primary and below)					
Above primary	2.814***	1.473	1.605*	2.016**	2.102**
Husband's education (Ref: Primary and below)					
Above Primary	1.763**	1.213	1.659*	1.015	2.045**
Standard of living (Ref: low)					
High	1.074	1.638*	1.923**	1.883*	1.287
Woman's occupation (Ref: Not working)					
Cultivator	0.345***	0.308***	0.381***	0.298***	0.557
Agricultural labourer	0.320**	0.347***	0.262***	0.202***	0.570
Salaried	0.482	0.933	0.249***	0.443*	0.717
Has Bank Account (Ref: No Bank Account)					
Has bank account	1.182	0.933	1.552	1.472	1.061
Birth order (Ref: first child)					
Higher order birth	0.763	0.867	0.415***	0.794	0.639
Media Exposure (Ref. category: Less than a week)					
Almost daily	2.533*	1.656	0.760	1.114	0.907
At least once a week	1.046	1.694*	0.705	1.393	0.674
Household Decision-making autonomy (Ref: Low Autonomy)					
High Autonomy	1.517	1.237	0.909	1.035	1.321
Freedom of movement (Ref: Low freedom of movement)					
High Freedom of movement	1.418	2.140***	1.875**	1.536	1.908**
Physical access to healthcare facility *(Ref: No access)*					
Has access to health facility	1.942**	0.765	2.573***	1.096	2.917***
Full ANC *(Ref: Did not receive)*					
Received full ANC	-	-	-	-	11.145***

Note: *** indicates significance at <1% level; ** indicates significance at <5% level; * indicates significance at <10 % level

Coming to Column III of Table 3, we find that woman's education and that of her husband are significant factors affecting required number of ANC visits. Women and their husbands who have received more than primary education are approximately 1.6 times more likely to have made at least four ANC vis-à-vis those who have received less education. Economic status variable turns out to be a significant determinant in the case of four ANC visits. Reang women from households with higher standard of living are twice as likely to have completed four ANC visits as compared to women from economically less well-off households. Occupation of women has a significant effect on ANC visits. Women who work as cultivators and agricultural labourers are nearly 70 per cent less likely to have completed four ANC visits as compared to those who are not working. Remarkably, women have a *lesser* likelihood for full ANC visits for subsequent pregnancies after their first birth. Thus, pregnancy with second or subsequent child reduces the odds of four ANC visits by a factor of 0.41. Among the indicators of women's autonomy, we find that freedom of movement has a positive and significant effect on completing four ANC visits. Women who have greater freedom of movement are twice as likely to have completed four ANC visits. Just as in the previous cases of TT immunization and intake of IFA tablets, greater household decision-making autonomy does not have any significant effect on ANC visits. Media exposure and ownership of bank account too turns out to be insignificant in this case. Also, the odds of completing four ANC visits increase by a factor of 2.5 for women who have had access to health facility as compared to others who do not.

Column IV presents the determinants of complete ANC (minimum four ANC visits along with at least two TT immunizations and three months of IFA intake). Here we find that woman's education and occupation turn out to be significant. Women who have attained more than primary education have more than double the odds to have received full ANC as compared to those with primary or lesser education. As with the results of all the earlier regressions, even in this case we find that women working as cultivators and agricultural labourers are less likely to have received full ANC. Not surprisingly, standard of living of household has a significant impact on the said outcome and belonging to a wealthier household nearly doubles the odds of full ANC for Reang women. However, none of the dimensions of women's autonomy turn out to be significant in this case. Overall, we find that woman's education and occupation, and standard of living of the household are consistently associated with the various dimensions of ANC among Reang women. Access to health facility is also a prime determinant, especially in the case of tetanus immunization and ANC visits.

Finally, column V presents the results for the determinants of institutional delivery for Reang women. Women's and husband's educational attainments, access to health facility, uptake of full ANC services and freedom of movement are significant determinants of institutional delivery. Having received more than primary education increases the odds of institutional delivery by more than two times for Reang women. The same holds true in the case where husbands are more than primary educated. Access to health facility almost triples the odds of institutional delivery. Woman's greater freedom of movement more than doubles the odds of an institutional delivery. Not surprisingly, ANC has a significant positive relationship with institutional delivery and women who have received full ANC have substantially higher odds of institutional delivery as compared to those who did not receive full ANC.

Discussion

Despite considerable efforts towards increasing the uptake of maternal healthcare services among the marginalized groups in India, levels of ANC utilization and institutional delivery remains substantially low among them, especially among the tribes. The present research indicates that antenatal care utilization among the Reang tribe is disturbingly low with just about a quarter of the women availing full ANC services. This study brings out several important features concerning utilization of antenatal care among tribes in general and the Reangs in particular. The results validate earlier evidence of the association between women's education and ANC utilization. In fact, women's education has been consistently found to have a positive and highly significant effect on all three dimensions of ANC and also on institutional delivery. Unsurprisingly, husband's higher education has also been found to increase the likelihood of ANC utilization and institutional delivery, on the whole. This finding emphasizes the fundamental and practical significance of education for understanding the significance of modern maternal healthcare practices and its relation to safe motherhood and delivery. This linkage has been found to be especially true for higher education (i.e. higher than primary schooling).

Another remarkable finding has been the association of women's work with ANC utilization. In fact, just like education, women's work has also been found to be consistently and significantly associated with every dimension of ANC. As mentioned earlier, it has been found that non-working women have higher odds of ANC utilization as compared to women working in any occupational category (and especially as compared to cultivators and agricultural labourers). This finding is perhaps not completely unexpected and this kind of association could largely stem from the fact that rural Reang women have a much higher opportunity cost of time involved in ANC as compared to non-working women. Qualitative studies investigating the reasons for the same in various parts of the globe have indicated that burden of agricultural work (especially during the busy season) coupled with household chores and lack of support for the care of other children leave rural women little time to go to the healthcare centres to avail of the services (Awasthi et al., 2018; Wilunda et al., 2017). This observation has practical significance in terms of devising approaches of overcoming the obstacle of time in providing ANC services to rural women.

A rather unexpected finding has been in the realm of women's autonomy. While we find significant positive associations of freedom of movement with ANC utilization, we find no such association between women's household decision-making autonomy and ANC utilization. This could result from the fact that majority of the women in the sample (ranging from nearly 55 per cent to nearly 90 per cent in the case of decisions related to major household purchases and own healthcare respectively) evinced joint decision-making which has been counted as reflecting high autonomy for the present study. In this context it could be mentioned that though a majority of studies have found that high autonomy of women in household decision-making increases the odds of ANC utilization, a few studies have failed to find any such relationship. The divergent findings could be an outcome of differences in measurement of maternal healthcare components as well as conceptualization of household decision-making autonomy (Ghose et al., 2017). In fact, one finds that there has been considerable discussion on the appropriateness of considering women's *joint* decision-making with husbands as manifesting high autonomy, of late. While several scholars believe that in the South Asian context joint decision-making making with husbands indeed manifests high autonomy (see for instance Kabeer, 1999 and the literature cited therein), others believe that any generalization could prove tenuous, and joint decision-making is best conceptualized

as a continuum of degrees of autonomy depending on the *specific* social, cultural, ethnic, and religious backgrounds in which such decisions are taken (Osamor and Grady, 2018). The results from this study bear out that diverse ethnic and sociocultural context in fact, have different implications for women's freedom and choice when measured by questions on joint decision-making, and in contexts where joint decision-making is the cultural norm it cannot be expected to lead to greater say in non-traditional spheres such as maternal healthcare.[6]

In this context, it should be mentioned that freedom of movement as a measure of women's autonomy, turned out to be a significant determinant of maternal healthcare utilization. Thus, it could be said that sociocultural contexts that are conducive to free movement of women are beneficial in the domain of maternal healthcare too. Of course, restrictions or social taboos on women's movement jeopardises various aspects of women's life such as ability to work outside home and building social connections beyond kith and kin. However, as this study brings out, being able to move outside household alone (even if with permission) also has significant impact on the capacity of women for self-healthcare.

Finally, single/joint ownership of bank account does not turn out to be significant in the regression analyses, even though it turned out to be significant in the chi square analyses for full ANC and institutional delivery. Ownership of bank account has been added as an independent variable in the analyses since it indicates financial literacy and/or financial autonomy, even if the transactions are irregular (which is mostly the case with poor rural women in India). Financial autonomy as reflected in single/joint ownership has been hypothesized to increase the autonomy of women in terms of availing maternal healthcare services. However, it's insignificance as a determinant of ANC or institutional delivery in regression analyses indicates that its association with the dependent variables is weak as compared to the other factors included in the analyses.

Conclusion

The present study critically examined the determinants of institutional delivery and full antenatal care along with each of its components viz., at least two tetanus toxoid immunizations, intake of IFA tablets for 90 days and at least 4 ANC visits during pregnancy among the Reang tribe of Tripura. Woman's and husband's education, working status of woman, access to health facility and media exposure were found to be significant determinants of tetanus immunizations. Intake of IFA tablets was determined by standard of living of the household, occupation of woman, media exposure and freedom of movement.

Whether or not a Reang woman could make at least four ANC visits was found to be significantly determined by woman and husband's education, occupation of woman, standard of living, access to health facility, birth order and freedom of movement. Full ANC utilization was found to be determined by woman's education, occupation and standard of living. Overall this study brings out that access to health facility, women's education and occupation and freedom of movement are critical determinants of ANC utilization among the Reangs. ANC utilization is in turn one of the crucial factors affecting institutional delivery

[6] It should be mentioned here that during the field visits and discussion with the women respondents, it was gathered that joint decision-making, especially for household decisions, is the accepted cultural norm among Reangs. This has a further critical implication, viz., predisposition of women to respond to questions regarding such decisions as having been taken jointly with husbands whereas the role of the wife might have been as minimal as acceding to the decision already made by husband.

together with education of women and husband, freedom of movement and access to health facility.

In this context, and as discussed in the preceding section, we find strong evidence for particular emphasis on higher education of Reang women to increase the uptake of ANC services. Even after controlling for a host of other factors, women's education has been found to have a strong and significant positive effect on every dimension of ANC utilization. Along with this, this study also emphasizes the need to develop schemes to decrease the time involved in availing ANC services as rural Reang women working on the farms were found to consistently evince lower odd of ANC utilization as compared to non-working women. In this case door-to-door delivery of ANC services could be a possibility especially for Reang women residing in the remote hilly areas.

Finally, the lack of evidence for women's household decision-making autonomy as affecting ANC utilization and institutional delivery suggests the need for refining and fine-tuning the measures of women's autonomy for diverse sociocultural contexts. Further research is required for understanding the dynamics of women's household decision-making among the Reangs and the specific situations in which joint decision-making could be counted as indicative of greater freedom of choice. This necessarily calls for future studies of a qualitative nature that would keenly examine the nuances of women's autonomy among the Reangs.

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References

Acharyya, R.K., 1999, *Insight into the Reangs*. Agartala: Tribal Research and Cultural Institute, Government of Tripura.

Adhikari, T., Sahu, D., Nair, S., Saha, K.B., Sharma, R.K., and Pandey, A., 2016, Factors Associated With Utilization of Antenatal Care Services among Tribal Women: A Study of Selected States. *Indian Journal of Medical Research*, 144 (1): 58–66.

Ali B. and Chauhan, S., 2020, Inequalities in the utilization of maternal health Care in Rural India: Evidences from National Family Health Survey III & IV. *BMC Public Health*, 20:369. DOI: 10.1186/s12889-020-08480-4

Awasthi, M.S., Awasthi, K.R., Thapa, H.S., Saud, B., Pradhan, S. and Khatry, R.A., 2018, Utilization of Antenatal Care Services in Dalit Communities in Gorkha, Nepal: A Cross-Sectional Study. *Journal of Pregnancy*, 2018: 1-8.

Bedi, N., Kambo, I, Dhillon, B.S., Saxena, B.N. and Singh, P., 2001, Maternal Deaths in India: Preventable Tragedies (An ICMR Task Force Study). *The Journal of Obstetrics and Gynecology of India*, 51(2): 86-92.

Bergsjo P., 2001, What is the evidence for the role of antenatal care strategies in the reduction of maternal mortality and morbidity? In van Lerberghe V., De Brouwere W., (Eds.), *Safe Motherhood Strategies: a review of the evidence* studies in health services organisation and policy (pp.35-54)**.** Antwerp: ITGPress http://hdl.handle.net/10390/2653

Bhattacharjee, P.R., Nayak, P. and Saha, P., 1996, Economic-Demographic Changes in the Tribal Societies of Tripura. *Journal of NEICSSR*, 20(2): 1-18.

Bloom, S. S., Wypij, D., and Das Gupta, M., 2001, Dimensions of Women's Autonomy and the Influence on Maternal Health Care Utilization in A North Indian City. *Demography*, 38(1): 67-78.

Carroli, G., Rooney, C. and Villar, J., 2001, How Effective is Antenatal Care in Preventing Maternal Mortality and Serious Morbidity? An Overview of the Evidence. *Paediatric and Perinatal Epidemiology*, 15: 11-42.

Chakravarti, T., 1998, *Economic Participation of Rural Tribal Women of Tripura: A Case Study*. Agartala: Tribal Research and Cultural Institute, Government of Tripura.

Chol, C., Negin, J., Agho, K. E., and Cumming, R. G., 2019, Women's Autonomy and Utilisation of Maternal Healthcare Services in 31 Sub-Saharan African Countries: Results from the Demographic and Health Surveys, 2010-2016. *BMJ Open*, 9(3). DOI: 10.1136/bmjopen-2018-023128

Das, R., Amir, A., and Nath, P., 2001, Utilization and Coverage of Services by Women of Jawan Block In Aligarh. *Indian Journal of Community Medicine*, 26(2): 94-100.

Gabrysch S., Nesbitt, R.C., Schoeps, A., Hurt, L., Soremekun, S. and Edmond, K. et al., 2019, Does Facility Birth Reduce Maternal and Perinatal Mortality in Brong Ahafo, Ghana? A Secondary Analysis Using Data on 119–244 Pregnancies from Two Cluster-Randomised Controlled Trials. *The Lancet Global Health*, 7(8). DOI: 10.1016/S2214-109X (19)30165-2

Ghose, B., Feng, D., Tang, S., Yaya, S., He, Z., Udenigwe, O., Ghosh, S., and Feng, Z., 2017, Women's Decision-Making Autonomy and Utilisation of Maternal Healthcare Services: Results from the Bangladesh Demographic and Health Survey. *BMJ Open*, 7(9). DOI: 10.1136/bmjopen-2017-017142

Goudar, S.S., Goco, N., Somannavar, M.S., Vernekar, S.S., Mallapur, A.A., Moore, J.L., et al., 2015, Institutional Deliveries and Perinatal and Neonatal Mortality in Southern and Central India. *Reproductive Health*, 12(2): S13. DOI: 10.1186/1742-4755-12-S2-S13

Gupta, A., Kumar, P., and Dorcas, O.A., 2016, Decomposing the Socio-Economic Inequalities in Utilization of Full Antenatal Care in Jharkhand State, India. *International Journal of Population Studies*, 2016; 2(2): 92-106.

Gupta, R.K., Shora, T.N., Verma, A.K. and Jan, R., 2015, Knowledge Regarding Antenatal Care Services, Its Utilization, And Delivery Practices In Mothers (Aged 15-49 Years) in a Rural Area of North India. *Tropical Journal of Medical Research*, 18 (2): 89-94.

International Institute for Population Sciences (IIPS) and ICF, 1993, *National Family Health Survey (NFHS-I), 2015-16: India*. Mumbai: India: International Institute for Population Sciences. Available from: http://www.rchiips.org/nfhs/

International Institute of Population Sciences (IIPS) and ICF, 2017, *National Family Health Survey (NFHS-4), 2015-2016: India*. Mumbai, India: International Institute for Population Sciences. Available from: http://www.rchiips.org/nfhs/

International Institute for Population Sciences (IIPS) and ICF, 2018, *National Family Health Survey Tripura (NFHS-IV), 2015-16: Tripura*. Mumbai, India: International Institute for Population Sciences. Available from: http://www.rchiips.org/nfhs/

Bale, J. R., Stoll, B. J., & Lucas, A. O., (Eds.), 2003**,** *Improving Birth Outcomes: Meeting the Challenge in the Developing World*. Washington DC: National Academies Press (US). DOI: 10.17226/10841

Iyaniwura, C. A., and Yussuf, Q., 2009, Utilization Of Antenatal Care And Delivery Services In Sagamu, South Western Nigeria. A*frican Journal of Reproductive Health / La Revue Africaine de la Santé Reproductive*, 13(3): 111-122.

Jungari S., and Paswan, B., 2019, What He Knows About Her And How It Affects Her? Husband's Knowledge of Pregnancy Complications and Maternal Health Care Utilization among Tribal Population in Maharashtra, India. *BMC Pregnancy Childbirth*, 19 (70). DOI: 10.1186/s12884-019-2214-x

Kabeer, N., 1999, Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment. *Development and Change*, 30 (3): 435-464. DOI:10.1111/1467-7660.00125

Kilikdar, B.K., 1998, *Customary Laws and Practices: The Riangs of Tripura*. Agartala: Tribal Research and Cultural Institute, Government of Tripura.

Kumar, G., Choudhary, T. S., Srivastava, A., Upadhyay, R. P., Taneja, S., Bahl, R., Martines, J., Bhan, M. K., Bhandari, N., & Mazumder, S., 2019, Utilisation, Equity and Determinants of Full Antenatal Care in India: Analysis from the National Family Health Survey 4. *BMC Pregnancy and Childbirth*, 19(1). DOI: 10.1186/s12884-019-2473-6

Mbuagbaw, L. C., and Gofin, R., 2011, A New Measurement for Optimal Antenatal Care: Determinants and Outcomes in Cameroon. *Maternal and Child Health Journal*, *15*(8): 1427-1434.

Mitra, A., 2004, Informal Sector, Networks and Intra-City Variations in Activities: Findings from Delhi Slums. *Review of Urban and Regional Development Studies*, 16(2): 154-169.

Munuswamy, S., Nakamura, K., Seino, K., and Kizuki, M., 2014, Inequalities in Use of Antenatal Care and Its Service Components in India. *Journal of Rural Medicine*: 9(1): 10-19.

Nigatu, A.M. and Gelaye, K.A., 2019, Factors Associated With the Preference of Institutional Delivery After Antenatal Care Attendance in Northwest Ethiopia. *BMC Health Services Research*, 19 (1):810. DOI: 10.1186/s12913-019-4636-6

Nuamah, G.B., Agyei-Baffour, P., Mensah, K.A., Boateng, D., Quansah, D.Y., Dobin, D., and Addai-Donkor, K., 2019, Access and utilization of maternal healthcare in a rural district in the forest belt of Ghana. *BMC Pregnancy Childbirth* 19 (6). DOI: 10.1186/s12884-018-2159-5

Osamor, P., and Grady, C., 2018, Factors Associated With Women's Health Care Decision-Making Autonomy: Empirical Evidence From Nigeria. *Journal of Biosocial Science*, 50(1): 70-85. DOI: 10.1017/S0021932017000037

Pandey, S. and Karki, S., 2014, Socio-economic and Demographic Determinants of Antenatal Care Services Utilization in Central Nepal. *International Journal of MCH and AIDS*, 2(2): 212-219.

Pandit, R.D., 1992, Role of Antenatal Care in Reducing Maternal Mortality. *Asia Oceania Journal of Obstetrics Gynecology*, 18 (1): 1-6. DOI: 10.1111/j.1447-0756.1992.tb00291.x

Reang, L., 2018, *Mapping the Particularly Vulnerable Tribal Group in Tripura*. Agartala: Tribal Research and Cultural Institute, Government of Tripura.

Registrar General, 2001, *Census of India 2001, Primary Census Abstract*. New Delhi: Government of India.

Registrar General, 2011, *Census of India 2011, Primary Census Abstract*. New Delhi: Government of India.

Rizkianti, A., Afifah, T., Saptarini, I., and Rakhmadi, M.F., 2020, Women's decision-making autonomy in the household and the use of maternal health services: An Indonesian case study. *Midwifery*, 90. DOI:10.1016/j.midw.2020.102816

Roy, M. P., Mohan, U., Singh, S. K., Singh, V. K., & Srivastava, A. K., 2013, Determinants Of Utilization of Antenatal Care Services in Rural Lucknow, India. *Journal of Family Medicine and Primary Care*, 2(1): 55–59. DOI:10.4103/2249-4863.109946

Singh, R., Neogi, S. B., Hazra, A., Irani, L., Ruducha, J., Ahmad, D., Kumar, S., Mann, N., and Mavalankar, D., 2019, Utilization of Maternal Health Services and Its Determinants: A Cross-Sectional Study among Women in Rural Uttar Pradesh, India. *Journal of Health, Population, and Nutrition*, 38(1). DOI: 10.1186/s41043-019-0173-5.

Sinha, A., 2018, Demographic and Health Challenges Facing Tripura, 2016-2030: Special Focus on Implications for Maternal and Child Health. *Social Change and Development*, 15 (1), 28-42.

Sinha, A., 2020, Women's Work, "Bargaining" and Household Decision-Making among Tribes: A Case Study of the Reangs of Tripura. *Social Change and Development*, 17 (1): 63-79.

Tekelab, T., Chojenta, C., Smith, R. and Loxton, D., 2019, Factors Affecting Utilization of Antenatal Care in Ethiopia: A Systematic Review and Meta-Analysis. *PLoS ONE*, 14 (4). DOI:10.1371/journal.pone.0214848.

Verick, S., 2014, *Women's labour force participation in India: Why is it so low*? New Delhi: ILO DWT for South Asia and Country Office for India.

Wilunda, C., Scanagatta, C., Putoto, G., Montalbetti, F., Segafredo, G., Takahashi, R., et al., 2017, Barriers to Utilisation of Antenatal Care Services in South Sudan: A Qualitative Study in Rumbek North County. *Reproductive Health*. 14 (1): 65. DOI: 10.1186/s12978-017-0327-0

World Health Organization, 2015, *Service Availability and Readiness Assessment (SARA): An Annual Monitoring System for Service Delivery*. World Health Organization.