Study of General Health and Health Determinants of Scheduled Tribe (ST) Community in Eastern Uttar Pradesh, India

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Abstract— **The present study assesses the health status and key health determinants of Scheduled Tribe (ST) communities residing in eastern Uttar Pradesh (U.P.), particularly in the districts of Sonbhadra, Varanasi, Deoria, Ghazipur, and Ballia. Despite constitutional safeguards and welfare measures, significant socio-economic and health disparities persist between tribal and non-tribal populations. Using a semi-structured questionnaire, field observations, and measurements of blood pressure (BP) and body mass index (BMI), data were collected from 11,416 ST families to evaluate socio-economic conditions, family size, nutritional status, maternal and child health (MCH), prevalence of anaemia and hypertension, and access to medical facilities. Results reveal that a majority (73.4%) of ST families belong to the poor socio-economic grade, with Sonbhadra showing the highest deprivation (96.8%). Only one-third (33.16%) of families practice small family norms, while large family sizes persist mainly due to a lack of awareness and limited access to medical care. About 55.6% of ST families depend on government health services, but nearly half still rely on private treatment, often leading to financial strain. More than half of pregnant women receive assisted deliveries, yet unassisted home births remain common in remote areas. Nutritionally, 58.3% of adults are of normal weight, whereas 13.5% are underweight and 9.1% obese. Anaemia is alarmingly high—91.1% among women and 33% among men—while hypertension affects around 14% of adults. The study concludes that despite ongoing welfare initiatives, the tribal population in eastern U.P. remains socio-economically marginalized with poor health indicators. Targeted interventions are urgently needed to improve access to healthcare, strengthen nutrition and reproductive health programs, and promote awareness of small family norms. Establishing robust local institutions and inclusive policies is essential for bridging the health and socio-economic gap between the tribal and general populations in this region.**

Keywords— ***Anaemia, Health determinants, Hypertension, Nutrition, Scheduled Tribes, Socio-economic status***

I. INTRODUCTION

Tribal communities differ significantly from the general population due to their distinctive lifestyles, social organization, and communal living patterns. They inhabit specific geographical regions and maintain unique cultures, customs, and religious beliefs that distinguish them not only from non-tribal populations but also from other tribal groups within their area. These communities exhibit a relatively homogenous cultural framework characterized by distinct geo-social attributes. Naik and Singh observed that during the colonial period, the categorization of forest dwellers evolved into what came to be recognized as "tribes," and later, certain groups transitioned into caste structures. However, a clear demarcation between tribes and castes formally emerged during the 1901 census [10,14]. The nomenclature of "Scheduled Tribes" (ST) gained legal recognition under the Government of India Act of 1935 and was subsequently institutionalized in the Constitution of India.

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Consequently, the Government of India bears a constitutional responsibility to safeguard the interests of Scheduled Tribe communities and promote their social and economic advancement.

Despite the constitutional provisions and targeted welfare measures for the Scheduled Tribes, these communities remain socially and economically marginalized. Considerable disparities persist between tribal and non-tribal populations, particularly in the domains of education and health, underscoring the need for continued efforts to bridge these gaps and eliminate existing inequalities. The Scheduled Castes and Scheduled Tribes Orders (Amendment) Act, 2002, which came into effect on 7 January 2002, officially recognized the Kharwar and Gond communities residing in the districts of Deoria, Ballia, Ghazipur, Varanasi, and Sonbhadra as Scheduled Tribes in the state of Uttar Pradesh. Given the shared historical disadvantages and persistent socio-economic challenges faced by the tribal populations in eastern Uttar Pradesh, it becomes imperative to identify and analyze the underlying determinants contributing to their continued marginalization despite ongoing welfare interventions. The present study, therefore, seeks to examine the health status and determinants of health among Scheduled Tribe communities, identify priority areas for intervention, and evaluate the effectiveness of existing developmental initiatives.

II. REVIEW OF LITREATURE

Kind and Gudex highlighted that tribal communities often exhibit a strong resistance to altering their traditional lifestyles, which creates barriers to effective communication and contributes to their heightened vulnerability to various health challenges. Since health outcomes are closely linked to underlying determinants and the adequacy of existing interventions, such reluctance toward change exacerbates their susceptibility to poor health conditions [9].

Singh et al. reported a high incidence of diseases and widespread malnutrition among tribal populations, attributing these conditions primarily to factors such as rural isolation, low literacy levels, and persistent poverty [13]. According to Singh's findings, nearly two-thirds of children under five years of age in tribal areas suffer from malnutrition, with approximately 40% experiencing severe forms. Furthermore, fertility rates within these populations remain considerably higher than the national average [14].

The nutritional, health, and medico-genetic issues faced by various tribal groups are both complex and distinctive, posing significant challenges that demand targeted policy responses and the development of context-specific research strategies [2]. Chronic energy deficiency, reflected by a Body Mass Index (BMI) below 18.5, remains a critical concern among tribal communities. Data indicate that 46.6% of Scheduled Tribe (ST) women have a BMI below this threshold, signifying a high prevalence of undernutrition. In contrast, the prevalence of overweight and obesity is substantially higher among women from non-tribal categories (13.8% and 4.5%, respectively), compared to only 3% and 0.5% among ST women. The mean BMI for ST men and women stands at 19.3 and 19.1, respectively. Among men, 39.1% of those from ST groups are underweight, compared to 28.9% among men from other social categories. Conversely, the prevalence of overweight and obesity is notably higher among non-tribal men (11.5% and 2.1%, respectively) but relatively low among ST men (3% and 0.3%) [12]. This evidence underscores the persistent nutritional disparities between tribal and non-tribal populations, reflecting broader socio-economic inequities that demand comprehensive and culturally sensitive health and nutrition interventions.

Between 1998–99 and 2007–08, the proportion of adults experiencing chronic energy deficiency (BMI < 18.5) declined by approximately 9% among men and 6% among women. In contrast, the incidence of overweight and obesity (BMI ≥ 23) showed an upward trend, rising from 3.6% to 7% in men and from 4% to 8% in women during the same period. Among rural populations, the prevalence of overweight and obesity was recorded at 17% for men and 20% for women. Despite these changes, undernutrition continues to pose a significant public health concern among tribal children. Furthermore, hypertension affects a notable segment of the adult tribal population, with prevalence rates of 25% among men and 23% among women. Elevated blood pressure levels were more commonly observed in older adults compared to younger individuals, and men exhibited a slightly higher prevalence of hypertension than women [11].

Jaiswal calculated BMI among ST in Varanasi and Sonbhadra and found only 36% of males and 40% of females having normal weight but 24% of males and 30% of females having underweight. Rest of them were found to be overweight (34% and 16%) or obese (6% and 14%) respectively [8].

According to NFHS-3 report, 70.9% ST mothers had home delivery followed by 17.7% delivered through health facility, 11.6 % delivery at public sector and 5.8% delivery at private sector. Other categories mothers had home delivery only 51.8% but 51% delivery through health facility, followed by 21.8 % delivery at public sector and 28.7% delivery at private sector. ST mothers received assistance by doctors in only 17.1% delivery and 7% by Nurse/midwife, 50.2% by dai/trained birth attendant, 25.4% by other skilled person and 23% by relative/friends while other categories mothers had received assistance by doctors in 33.8% delivery and 11.7% by Nurse/midwife, 37.1.2% by dai/trained birth attendant, 46.7% by other skilled person and only 15.5% by relative/friends [12]. However as per DLHS-3 survey report [3], only 32.8% of ST women had institutional delivery which is higher (49.8%) among non-ST women at all-India level. In U.P. it is lower for both ST and non-ST women (14.4% and 24.6%). Prevalence of anaemia in ST women was found to be 68.5% which is higher (51.3%) to that of other categories. As high as 39.6% men (15-49 years) were found to be anaemic which was lower (20.9%) in other categories men.

As per DLHS-3 survey report, at all India level 77.7% of ST population seeks treatment from Government funded health facilities which is lower (47.7%) for non-ST [3]. However, this treatment seeking behaviour is opposite in U.P. (26.5% and 22.5% respectively). So far treatment seeking behaviour from private agency is concerned it is only 20.2% by ST and 47.2% by non-ST population. In U.P. it is 70.4% and 70.3% respectively.

II. OBJECTIVE

Present study analyzes the health status (nutrition, anaemia, MCH, hypertension) and, health determinants (socioeconomic status, family size, medical facility and capability to handle medical expenditure, personal hygiene) of ST in eastern U.P. to explore further possible strategy for improvement of their health status and overall wellbeing.

IV. MATEIALS AND METHOD

The study encompassed all Scheduled Tribe (ST) communities residing in the eastern region of Uttar Pradesh, which constituted the universe of the research. Data were collected from five districts—Sonbhadra, Varanasi, Deoria, Ghazipur, and Ballia—covering a total of 11,416 ST families. A socio-economic status questionnaire [1], along with a semi-structured instrument developed by the researchers to assess general health, education, and socio-economic conditions, was employed. Additionally, blood pressure (BP) and body mass index (BMI) measurements were taken, complemented by observational methods as required.
Socio-economic (SE) Scale was based on the tool developed by O.P. Agrawal et al. SE status was assessed by scores of semi-constructed questionnaires based on 22 SE related statements. It was categorized as upper high (76 or more scores), high (61-75), upper middle (46-60), lower middle (31-45), poor (16-30) and, very poor (scores less than 15). BP was measured by digital BP machine [1]. As per WHO and JNC5, hypertension is levelled as BP >130/85. Hypertension was detected by BP measurement and it was further confirmed by interview and health records. BMI assessment was done by measuring tape for height and digital weighing machine. It was calculated by weight in kg divided by height in meters squared. Nutritional status was levelled as low (BMI less than 18.5), normal (18.5-24.9), overweight (25-29.9) and obese (BMI 30 or above). Anaemia was detected by seeing pallor in eye [7].

V.RESULTS

Socio Economic Grade: An analysis of the socio-economic distribution of Scheduled Tribe (ST) families across the study districts—categorized as upper high, high, upper middle, lower middle, poor, and very poor—is presented in Table 1. The findings indicate that the majority of ST households (73.4%) fall within the “poor” category across all five districts, with the highest proportion observed in Sonbhadra (96.8%) and the lowest in Ghazipur (51.5%). On average, 24% of families belong to the “lower middle” income group, ranging from a maximum of 45.7% in Ghazipur to a minimum of 0.3% in Sonbhadra. No households were classified in the “upper” socio-economic grade, and only a negligible proportion (0.09%) fell under the “high” category. Approximately 1.5% of families were identified as “upper middle,” while the proportion of “very poor” families ranged between 0.3% and 3%. Overall, ST families residing in Ghazipur exhibit relatively better socio-economic conditions compared to those in Sonbhadra.

TABLE 1 : SOCIO-ECONOMIC GRADE OF FAMILIES

Grade	Scale	Total no. of families (%)	District wise distribution: number (%)				
			Sonbhadra	Varanasi	Ghazipur	Deoria	Ballia
Very poor	0-15	120 (1.1%)	56 (3%)	27 (1.1%)	7 (0.3%)	12 (0.5%)	18 (0.9%)
Poor	16-30	8383 (73.4%)	1819 (96.8%)	1919 (80.4%)	1240 (51.5%)	1667 (62.9%)	1738 (83.1%)
Lower middle	31-45	2739 (24%)	5 (0.3%)	409 (17.2%)	1100 (45.7%)	910 (34.3%)	315 (15.1%)
Upper middle	46-60	170 (1.5%)	0	31 (1.3%)	59 (2.5%)	59 (2.2%)	21 (1%)
High	61-75	4 (0.09%)	0	0	2 (0.1%)	2 (0.1%)	0
Upper high	76 & more	0	0	0	0	0	0
Total		11416	1880	2386	2408	2650	2092

Family size of ST: Family size of ST is presented in Figure 1 as percentage of couples having specified number of children. Analysis of family size (in terms of small family as each couple having two or less children and large family as having more than two children) and various reasons of large family in study districts are presented. It reveals that only 33.16% of the ST families have small family size limiting their children number to 2 or less. Maximum numbers of ST (73.4%) are having large family size, being highest (96.8%) in Sonbhadra and lowest (51.5%) in Ghazipur.

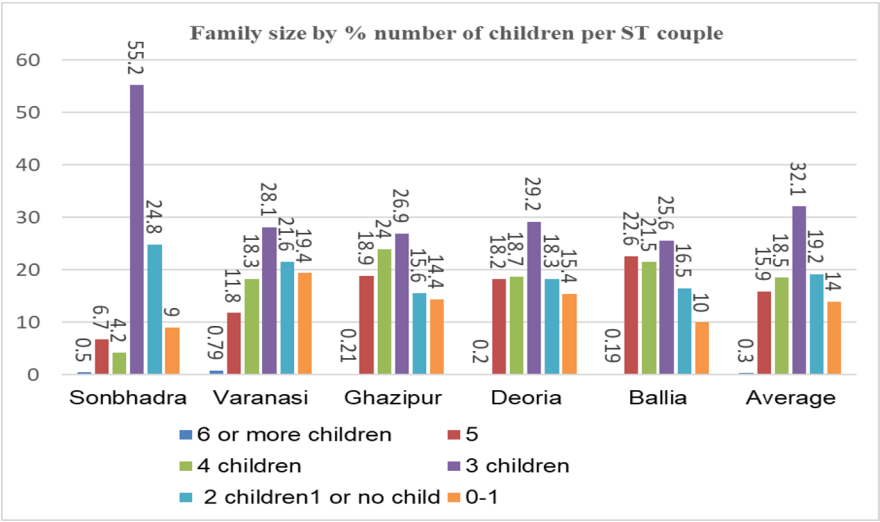

Figure 1. Family size of ST

Reason for large family size: Analysis of reasons of large family size of ST is presented in Figure 2. Most common reason of large family size is either failure in efforts to keep small family size (24.74%) or lack of awareness (24.22%) followed by pressure by elders (12.9%), lack of medical facility (10.14%), desire for son (10.11%) and lack of desire of small family norm by husband (10.05%).

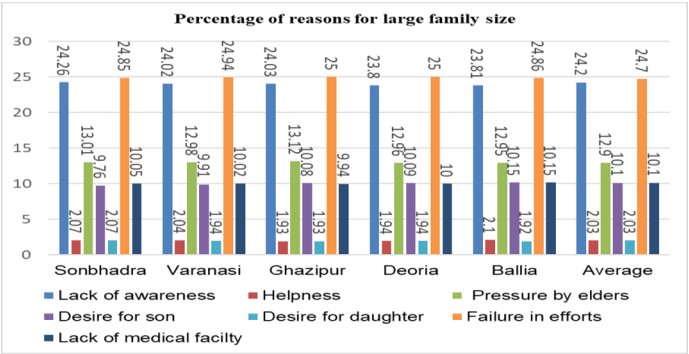

Figure 2. Reasons for large family size

Medical facility and medical expenditure capability Analysis of medical facility and capability to handle medical expenditure of families in study districts is presented in Figure 3. It reveals that on average 55.59% of ST families in all of the selected five districts avails free medical facility from government or trust hospitals which lowest (only 3.62%) in Sonbhadra and highest in Deoria (91.43%) followed by Ghazipur (73.55%). 49.41% of them avail it from private hospitals on payment basis which is highest (96.38%) in Sonbhadra and lowest (8.57%) in Deoria. In present study, 50.63% of the family is able to handle the medical expenditure on behest of compromising other needs but only 11.92% of families are able to bear the expenditure on medical expenses which is highest (29.67%) in Varanasi and zero in Sonbhadra. As high as 37.45% of them are unable to bear the medical expenditure and get trapped in debt to get rid of the expenses.

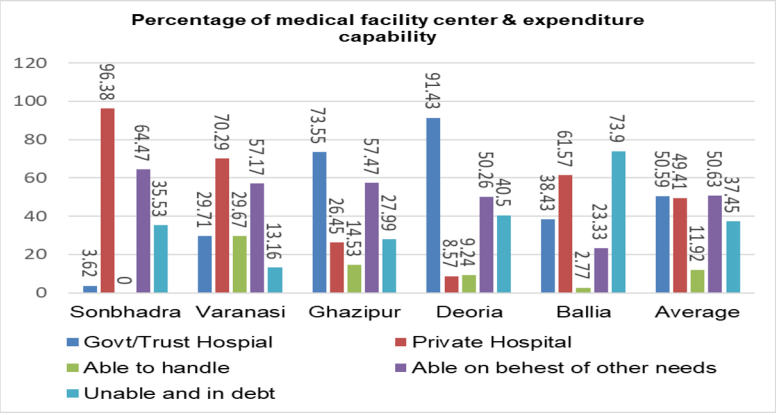

Figure 3. Medical facility and medical expenditure capability

Maternal (Mother) & Child Health (MCH) status of family: Analysis of MCH status of family in terms of delivery of pregnant women, weight of new born, vaccination of infants and availability of the vaccination cards study districts are presented in Figure 4. It reveals that more than 50% of pregnant women have their delivery assisted with medical person either at home (48.48%) or in hospital (13.57%) but unhealthy practice of self-un-assisted home delivery is still very common (99.29%) in Sonbhadra.

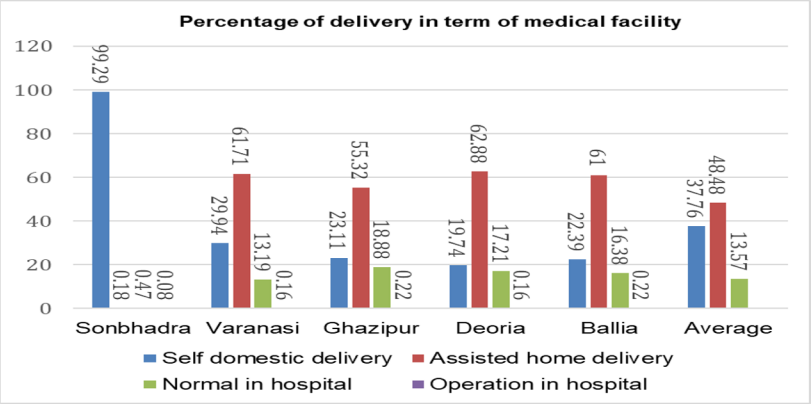

Figure 4. Maternal (Mother) & Child Health (MCH) status of family

Nutritional status of adults: Analysis of nutritional status of adults derived from their BMI is presented in Figure 5. It reveals that 58.3% of adults of ST families are having normal weight which is highest (68.1%) in Ballia and lowest (48.4%) in Sonbhadra. It is followed by overweight (19.1%), highest (27.1%) in Sonbhadra and lowest (7.2%) in Ballia. 13.5% of them are underweight, highest (29.1%) in Ballia and lowest (8.6% and 9.4%) in Varanasi and Sonbhadra.9.1% of them are obese which is highest (15.1%) in Sonbhadra and lowest (2.8%) in Ballia. Pattern of weight among adults is toward lower side in Ballia and toward higher side in Sonbhadra.

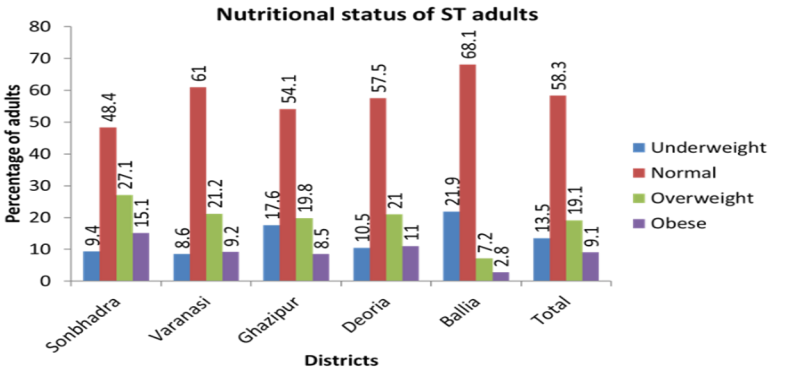

Figure 5. Nutritional status of adults

Weight status of new born: Analysis of weight status of new born in ST family is presented in Figure 6. It shows that 60% of new born have normal weight and low weight is still found in 39.37% new born.

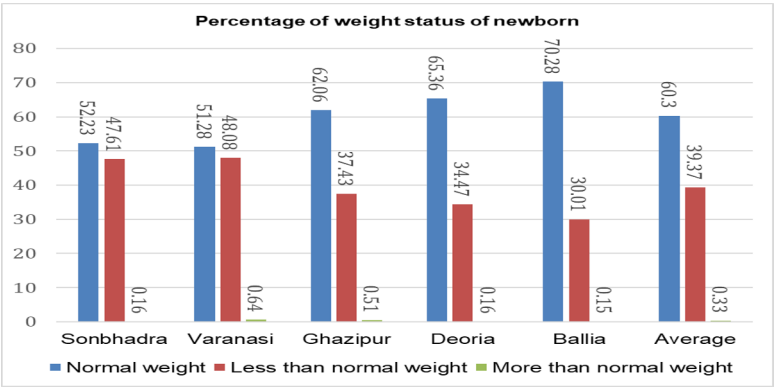

Figure 6. Weight status of New born

Prevalence of anaemia: Figure 7 presents the prevalence of anaemia among adult male and females. It reveals that 33% of males and 91.11% of females are suffering from anaemia.

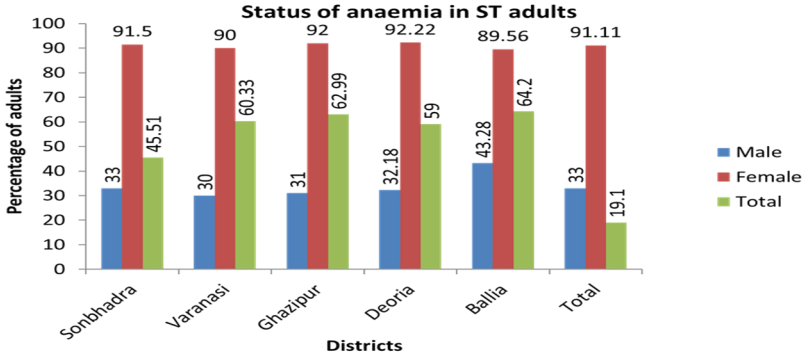

Figure 7. Prevalence of Anaemia

Prevalence of hypertension: Analysis of blood pressure status of adults is presented in Figure 8. It reveals that 14.25% of male and 13.21% female adults are suffering from hypertension (high BP). Prevalence of hypertension is lowest (8%) in Sonbhadra adults.

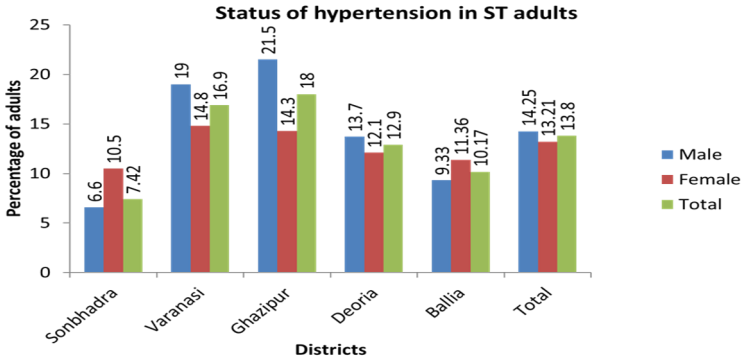

Figure 8. Prevalence of Hypertension

VI. Discussion

Socio-economic status: In the present study, the majority of Scheduled Tribe (ST) families (73.4%) across the five selected districts were classified within the "poor" socio-economic category, with the highest concentration observed in Sonbhadra (96.8%) and the lowest in Ghazipur (51.5%). According to the 68th Round Report of the National Sample Survey Office (NSSO), 21.9% of India's overall population lives below the poverty line, while in Uttar Pradesh the proportion ranges between 30% and 40%. The incidence of poverty among STs in eastern Uttar Pradesh is therefore considerably higher than both the state and national averages [4]. These results align with the findings of the Institute for Human Development (IHD) survey [6], which reported that 49.6% of the ST population lives in poverty compared to only 12% among the general population. Within the study region, ST families in Ghazipur exhibit relatively better socio-economic conditions than those in Sonbhadra. Although this disparity may be partially attributed to the hilly and less accessible terrain of Sonbhadra, further investigation is required to identify additional contributing factors influencing these differences.

Family size of ST: In present study, only 33.16% of the ST families have small family size limiting their children number to 2 or less. Finding is in conformity with that of Singh who reported higher fertility rate than national average in rural area of Ranchi district [14].

Reason for large family size: Most common reason for large family size is either failure in efforts to keep small family size (24.74%) or lack of awareness (24.22%) followed by pressure by elders (12.9%), lack of medical facility (10.14%), desire for son (10.11%) and lack of desire of small family norm by husband (10.05.99%). Lack of awareness and other reasons are in conformity with other research outputs related to small family norms in India, moreover Singh et al [13] too found low level of knowledge attitudes of family planning and child care. Medical facility and failure in efforts to keep small family size needs special attention to encourage families to accept small family norms especially in remote and uncovered area of ST habitats.

Medical facility and medical expenditure capability Observation regarding medical facility is comparable to DLHS-3 survey report which mentioned that at all India level 77.7% of ST population seeks treatment from Government funded health facilities which is lower (47.7%) for non-ST. However, this treatment seeking behaviour is opposite in U.P. (26.5% and 22.5% respectively) [3]. So far treatment seeking behaviour from private agency is concerned it is only 20.2% by ST and 47.2% by non-ST population. In U.P. it is 70.4% and 70.3% respectively [5]. Finding regarding medical expenditure capability is in conformity with several research findings indicating the medical expenditure putting burden on already poor economic capacity of socially deprived class in India and Jaiswal also presented that most of the ST families agonize to get medical care [8].

Maternal (Mother) & Child Health (MCH) status of family: Findings regarding MCH status of family is in conformity with NFHS-3 which report that 70.9% ST mothers had home delivery followed by 17.7% delivered through health facility, 11.6 % delivery at public sector and 5.8% delivery at private sector [12]. However as per DLHS-3 survey report, only 32.8% of ST women had institutional delivery which is higher (49.8%) among non-ST women at all-India level. In U.P. it is lower for both ST and non-ST women (14.4% and 24.6%) [3].

Nutritional status of adults: In present study, maximum numbers (58.3%) of adults of ST families are having normal weight followed by overweight (19.1%), underweight (13.5%) and obese (9.1%). These findings are in conformity with the observation made by Singh et al. mentioning high prevalence of malnutrition among tribes and their very low health-nutrition status is due to their rural, illiteracy and poverty [13]. These findings are also comparable to NFHS-3 report that mentioned that 39.1 percent of ST men to be underweight [12]. Present findings are also comparable to Jaiswal who found only 36% of ST males and 40% of ST females having normal weight but 24% of males and 30% of females having underweight. Rest of them were found to be overweight (34% and 16%) or obese (6% and 14%) respectively [8].
Weight status of new born: Observation regarding new born weight status is comparable to report of Singh that two-thirds of the under-5 years were malnourished, 40% having severe malnutrition [14]. Underweight of new born babies in present study is also contributed to maternal malnutrition and it is in conformity with Basu who found that it is quite high among the tribal women especially those who have many pregnancies too closely spaced and maternal mortality was reported to be high among various tribal groups [2].
Prevalence of anaemia: In present study, 33% of males and 91.11% of females are suffering from anaemia which is comparatively higher to those reported in DLHS-3 survey report which mentioned it to be 68.5% in ST women and 39.6% in ST men [3].
Prevalence of hypertension: Findings of prevalence of hypertension is comparable to those reported by NNMB which mentioned that prevalence of hypertension among adult tribal population was 25% among men and 23% among women [11]. Increasing trend of hypertension not only in general population but also in ST community. It requires adoption of healthy life style including adequate regular physical exercise, obesity prevention by balanced fat free diet, salt deficient diet and reduction of stress.

VII. Conclusion

A majority (73.4%) of the Scheduled Tribe (ST) population falls within the “poor” socio-economic category, with the highest proportion recorded in Sonbhadra (96.8%). The welfare initiatives implemented for the upliftment of these communities have yet to produce any substantial or visible improvements in their living conditions. Significant challenges persist in the areas of healthcare accessibility, family planning, maternal and child health (MCH), nutrition, and medical treatment—particularly in remote and underserved tribal regions. There is an urgent need to establish strong institutional mechanisms aimed at narrowing the considerable socio-economic disparities between STs and the general population. Furthermore, policies should emphasize strengthening social inclusion and integrating empirical insights from such studies into future development strategies.

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