Comparison of Nutritional Status and Socio-demographic Condition among the Children of Bengali, Santhal & Oraon Community in North-Western Part of Bangladesh

Farah Sabrin[1,*], Klinton Ali[1], Sabiha Akter[2], Md. Ashraful Islam[3], Md. Junaid Hossen[1], Shahin Mahmud[1]

[1]Department of Biotechnology and Genetic Engineering, Mawlana Bhashani Science and Technology University, Santosh, Tangail-1902
[2]Department of Environmental Science and Resource Management, Mawlana Bhashani Science and Technology University, Santosh, Tangail-1902
[3]Department of Statistics, Mawlana Bhashani Science and Technology University, Santosh, Tangail-1902
*Corresponding author: farahsabrin@yahoo.com

Abstract Bangladesh is a densely populated country of South East Asia that has a rich tribal presence. It has 1.2 million tribal people which is just above one percent of the total population which belong to in about 58 tribal groups who are living in different parts of the country. The Study was conducted at the Rajshahi Division, in the Naogaon and Rajshahi district at different villages where the Santali and Oraon people lived from their ancestors. Information on their socio-demography, health, disease condition and other related information were collected through a pre-planned questionnaire and the collected data were analyzed to reveal the desire status through Excel and SPSS. The survey covered a random sample of 150 children among three groups (Bengali, Santhal and Oraon). This investigation deals with the assessment of nutritional status and socio-demographic condition through anthropometric indices of children. Most of the child of study area was dropped out before completing primary level education and high number of Bengali respondent of this area completed education from high school and College. Socioeconomic conditions and nutritional status of Bengalis were better than the tribal. Majority of the tribal were thin and lean with medium to short stature. The study showed that females are more underweight then the males. Normal weight group of Bengali male children (57%) was higher than other ethnic groups Santhal (33%) and Oraon male children (30%). This scenario was also same to female. Food adequacy was much lower in Oraon group than Bengali and Santhal. Tribal children were unable to take adequate and nutritional essential food. Only 44% of Santhal and 36% of Oraon intake adequate food as needed for them where 92% of Bengali child took adequate food. Diseases rate was higher in Santali children (40%), than Bengali (16%) and Oraon (38%). The outcome of this study will give an authentic view about the Santhal and Oraon children's current nutritional status and health condition which may draw the attention of policy makers, health workers and social workers to take necessary steps as soon as possible for ensuring their basic needs for better livelihood.

Keywords: Tribal, Bengali, Santhal, Oraon, socio-demographic, Bangladesh

1. Introduction

Children are the most valuable assets of a nation or a country because they can play an essential role to provide the human potential required for its development. For proper development of children, nutrition, family condition and socioeconomic condition play a crucial role in the early years of life. These three main key factors are mainly responsible for dietary inadequacy, illiteracy, and directly related to children's basic needs. For practical purposes, to know about the nutritional status of children anthropometry is the most useful parameter for assessing the nutritional status of children [1]. Based on interrelationships between height, weight and age (i.e. weight for age, height for age and weight for height) it can be categorized into different forms of Protein-Energy Malnutrition (PEM) (i.e. normal, wasted and stunted) [2].

Malnutrition of child is highly common in low and middle-income countries in South Asia especially in Bangladesh. The highest rate of under-nutrition in the world is seen in Asia [3]. Here, one in two children is malnourished. According to WHO (1998), in South Asia,

about 17% of children, under 5 years of age are wasted (weight for height) and 60% are stunted (height for age). Worldwide 160 million children are underweight (weight for age) with over half of these being in South Asia. Malnutrition has some adverse effects on physical growth, motor development, capacity to use intellectual endowment, emotional unfolding and personality development of human child [3]. Inadequate dietary intake and disease are the immediate causes of malnutrition and they underpin one another synergistically [5]. Poor and insufficient nutrition may lead to malnutrition, high morbidity and mortality rate among children. Malnourished children are more likely to grow into malnourished adults who face sharp risks of disease and death [6]. The world wide burden of malnutrition and infectious disease is massive, particularly among children. Basic causes of under nutrition and infections in developing countries are scarcity, poor hygienic surroundings and little access to preventive health care [4,7].

Human beings were originated from a unique root. But racial discrimination makes distance from its existence in today's world. Bangladesh has also brought this concept in question at this moment and nowadays, the tribal issue is considered as very important issue to focus on. The term "tribal group," also mean ethnic minorities and indigenous people, namely a social and cultural identity that is distinct from dominant groups in society. United Nations Human Rights Bodies, ILO (International Labor Organization), the World Bank and international law usually apply four criteria to distinguish indigenous people. Those are Indigenous peoples usually live within (or maintain attachments to) geographically distinct ancestral territories, they tend to maintain distinct social, economic, and political institutions within their territories, they typically aspire to remain distinct culturally, geographically and institutionally, rather than assimilate fully into a national society and they identify themselves as indigenous or tribal [8,9,10]. In many parts of the world, the majority of the population is the descendants of immigrants who arrived there within the last few hundred years. Living alongside of them, and in a minority, are so-called indigenous (or aboriginal) people who are the descendants of people who lived there from more ancient times. In Bangladesh, most of the tribal people have their own isolated life style and are considered as underprivileged. Indigenous population is about one million, or less than 1% of the total population, which consists of 45 indigenous communities using about 26 different languages [11]. The indigenous peoples of Bangladesh are referred to native ethnic minorities in south-eastern, north western, north-central and north-eastern regions of the country. These regions include the Chittagong Hill Tracts, Sylhet Division, Rajshahi Division and Mymensingh District. About 46% of indigenous people live in Rangamati, 28.9% in Kagrachari and 18% in Bandarban district at Chittagong Hill Tracts (CHT) [12]. However, information on tribal communities specially Santhal and Oraon is extremely scanty and there is no data available on BMI distribution and BMI based nutritional status of these tribal children of north-western part of Bangladesh. Considering all these data and to get inside of their serious problem, this study was conducted to report about the nutritional status, family status and socioeconomic status of two tribal groups along with Bengali children in north-western part of Bangladesh especially in Rajshahi District. It is obvious that such information that we defined would be indispensable to way out their problems with probable solution.

2. Methods and Materials

2.1. Study Area

The study was conducted in the Rajshahi Division, at the Naogaon and Rajshahi district of Bangladesh. It is situated about 279 km. north of Dhaka. About 20 visits were made in different villages of Naogaon and Rajshahi District like Godagari, Jwanpur, Khursher, Durgapur and Puthia, where the Santals and Oraon are being lived.

2.2. Study Design

The study was carried out among 150 (Bengali = 50, Santal =50, Oraon = 50) children in north-western part of Bangladesh aged below 18 years. The major objective of this study was to assess their lifestyle pattern, demographic information, health and nutritional status. Anthropometric data were collected following standard guidelines. For statistical analysis, subjects were classified into yearly intervals.

2.3. Development of Questionnaire

A semi-structured based questionnaire was developed to obtain relevant information on anthropometric, demographic, socioeconomic condition, health and nutritional status of selected subjects [13]. All questions were designed, pretested, modified and resettled by following standard procedure to obtain data and record information easily.

2.4. Anthropometric Assessment

The anthropometric data were collected based on literature review of similar existing study. Age of the subjects under study was determined by interrogation and confirmed through probing if the birth certificate or the health card were unavailable. Measurements of weight and height were obtained with digital machine from all subjects. Anthropometric measurements (i.e. height and weight) were performed according to the standard procedures [14]. The subjects were weighed wearing minimal clothes and bare footed. Weight measurement was performed by a digital weight machine at three times and the average was calculated and recorded with standard error. The height was measured using a measuring tape without shoes and the average was calculated and recorded with standard error. BMI was computed using the following standard equation: $BMI = Weight\ (kg)/height\ (m^2)$ [15]. Based on the interrelationships of height, weight and age, height for age, weight for age and height for weight have been calculated to determine their nutritional status [16]. Nutritional status (such as: thinness, malnourished, obesity, normal weight and overweight etc.) was evaluated following the recently published international BMI cut off points [17].

2.5. Data Analysis

The selected data sets were first checked, sorted, cleaned, filtered and entered into the computer in the numerical codes of form. The data were edited if there was any discrepancy and then cleaned. The frequency distributions of the entire variables were checked by using SPSS 20.0 Windows program. Microsoft Word and Microsoft Excel were used for tabular charts and graphical representation.

2.6. Ethics

This study was carried out in a manner without confliction of the ethical issues. Ethical consideration was checked by the research supervisor with the existing research policy of the Mawlana Bhashani Science and Technology University. Oral consent was taken from the participants prior to study.

3. Result

The nutritional status of children contributes significantly to the nutritional status of the community. As childhood is a critical period of growth and development, any program for a long-term effect on health should have a focus on this period of life. Anthropometry is widely recognized as one of the useful techniques for nutritional assessment as it is highly sensitive to detect under-nutrition (National Institute of Nutrition, 2005). These types of measurements are non-expensive, need minimal training and readings are reproducible. It can be used to verify the existence of nutritional problem in a population and to assess its magnitude. The detail age and sex distribution of the studied children from three population groups are given in Figure 1. A total of 150 children were studied. Among them, 32.94% Bengali, 31.76 % Santhal and 35.29% Oraon were male and 33.85% Bengali, 35.35 % Santhal and 30.77% Oraon were female.

Table 1 presents the information about the educational status of the children of these three study group. Most of the children of study area were dropped out before completing primary level education. Total 46 male child out of 85 were not completed PSC (Primary School Certificate) where 46 female child out of 64 were not. Only 10%, 4% and 2% child of Bengali, Santhal and Oraon were completed their SSC (Secondary School Certificate) level. About 20, 92, 30, 9 number of child out of 150 children respectively stopped their education, studied at below PSC, below SSC and below HSC level in the study area.
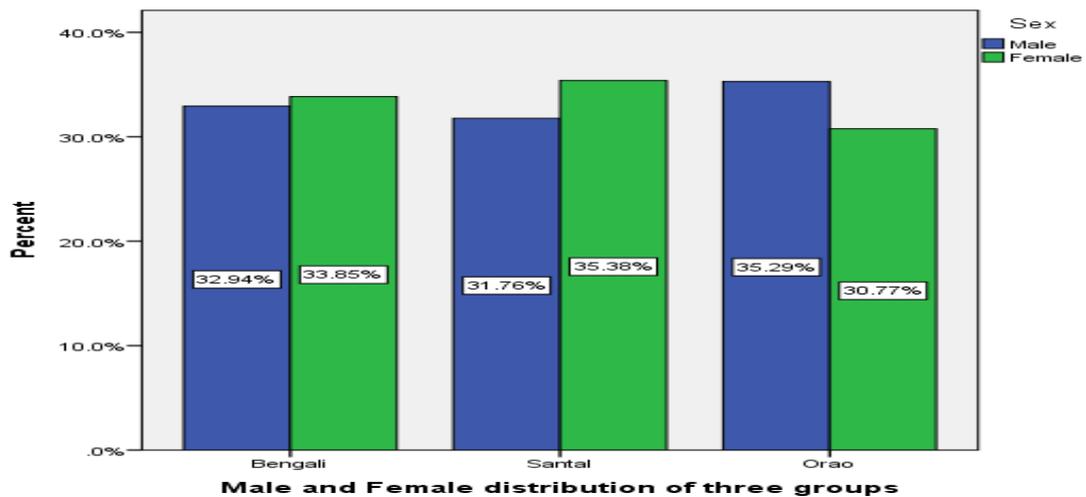

Figure 1. Number of male and female children in the study groups

Table 1. Educational status of Bengali, Santhal and Oraon children

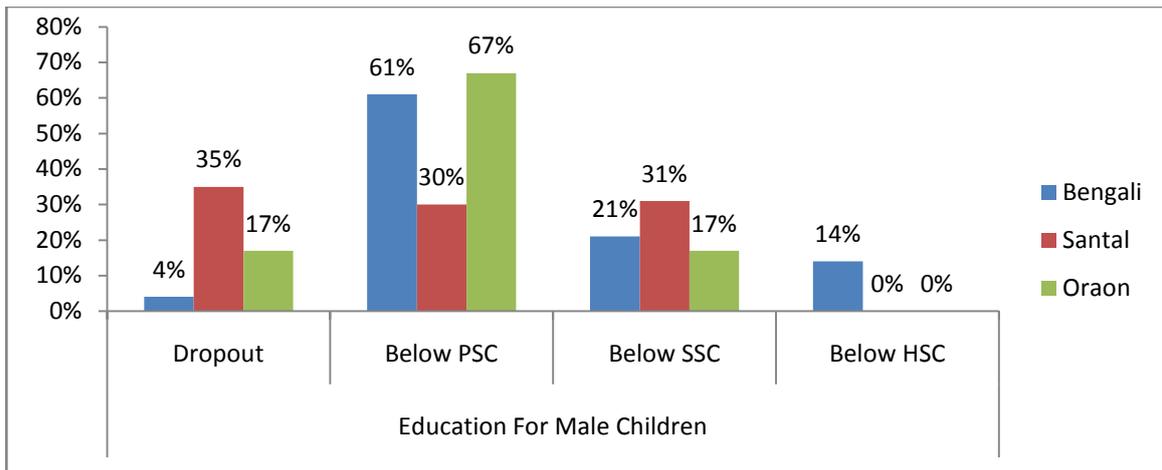|		Education				Total
		Stop	Below PSC	Below SSC	Below HSC	
Male	Bengali	1	17	6	4	28
	Santhal	9	9	8	0	26
	Oraon	5	20	5	0	30
Total		15	46	19	4	84
Female	Bengali	1	16	4	1	22
	Santhal	3	16	3	0	22
	Oraon	1	14	4	1	20
Total		5	46	11	2	64
	Bengali	2	33	10	5	50
	Santhal	12	25	11	2	50
	Oraon	6	34	9	1	50
Total		20	92	30	9	150

Figure 2. Educational status of male children among three ethnic groups (Bengali, Santhal, and Oraon)
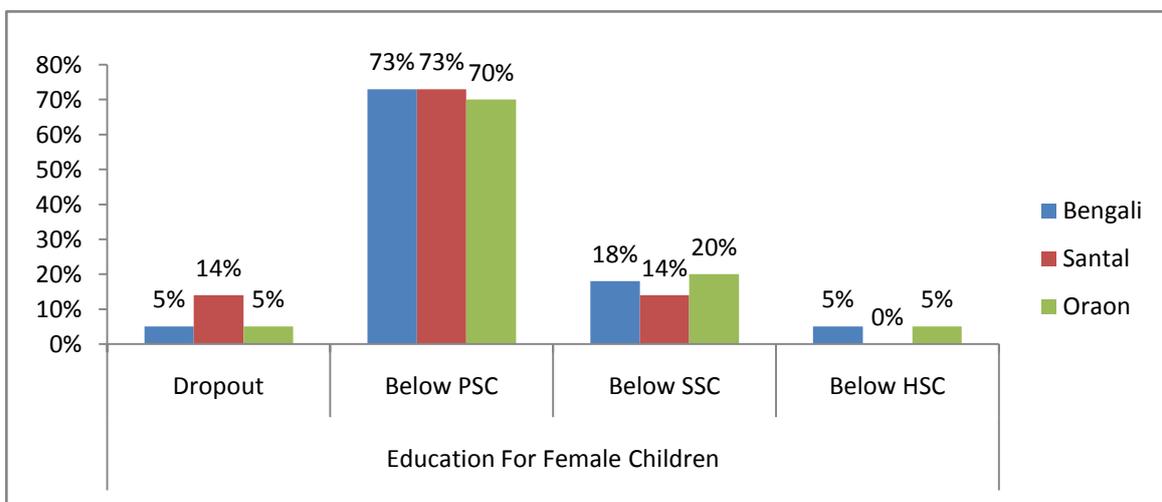

Figure 3. Educational status of female children among three ethnic groups (Bengali, Santhal, and Oraon)

Table 2. Educational status o f the parents of Bengali, Santhal and Oraon children

	Parents Education				
	Primary	High School	College	University	None
Bengali	14%	46%	28%	10%	2%
Santhal	66%	6%	6%	0%	22%
Oraon	70%	10%	2%	0%	18%

Table 3. Occupations of the parents of the children in study groups

	Parents occupation					Total
	Day labor	Domestic worker	Private job	Govt. job	Business	
Bengali	10%	22%	10%	10%	48%	50
Santhal	46%	34%	8%	0%	12%	50
Oraon	68%	28%	2%	2%	0%	50

Table 2 shows education level of the parents of the children from the study group. About 66% of Santhal and 70% of Oraon parents took only primary education and 6% of Santhal and 10 % of Oraon went to the high school. High number of Bengali parents of this area took education from high school and College; the number was 46% and 28% respectively. No one of respondent's parents from Santhal and Oraon went to the university where only 10% from Bengali parents complete university education. Most surprisingly, 22% and 18% parents from Santhal and Oraon community did not take any education.

Table 3 represents the occupational status of the parents of children of three study group. Most of the parents of tribal group are related to day labor activity. About 46% and 68% of parents of Santhal and Oraon was related to day laver activity, respectively. High number of Bengali's was related to business activity. About 48% of Bengali's parent's occupation was business. Where 10% of Bengali parents were employed in different government job but 0% of Santhal and only 2% of Oraon were employed.
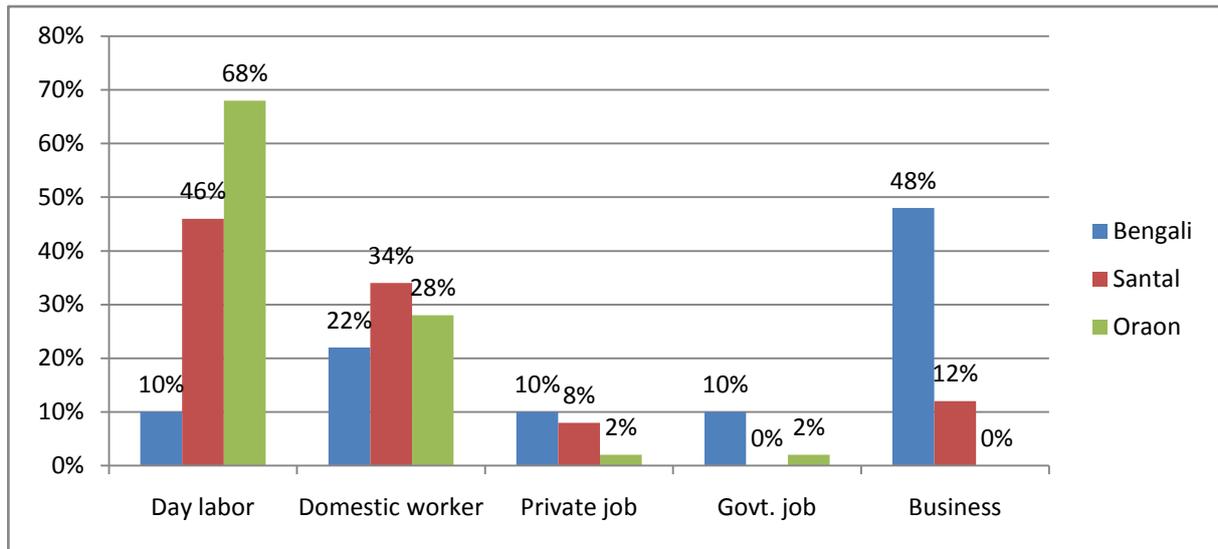
Figure 4. Occupation of the parents of the children in study groups

Table 4. Family income of study groups

	Parents income (thousand per month)				Total
	Less than 5000	5000-10000	10001-15000	15001-20000	
Bengali	0	14	28	8	50
Santhal	4	36	8	2	50
Oraon	6	40	3	1	50

Table 5. Comparison of mean weight of boys and girls

		BMI				Total
		Underweight	Normal Weight	Overweight	Obesity	
Male	Bengali	10	16	1	1	28
	Santhal	15	9	3	0	27
	Oraon	17	9	4	0	30
Female	Bengali	6	14	1	1	22
	Santhal	14	6	2	1	23
	Oraon	17	3	0	0	20
All	Bengali	16	30	2	2	50
	Santhal	29	15	5	1	50
	Oraon	34	12	4	0	50
Total		79	57	11	3	150

Table 6. Comparison of food intake pattern, disease, vaccination and weight loss of different study group

	Food intake		Disease	Vaccination	Weight loss
	Adequate	Not adequate			
Bengali	92%	8%	16%	100%	16%
Santhal	44%	56%	40%	100%	26%
Oraon	36%	64%	38%	100%	34%

Table 4 represents the family income of the children. In general, income of Santhal and Oraon was lower than the Bengali family. About 72% and 80% families of Santhal and Oraon respectively earned 5000-10,000 taka per month. Among them, 56% of Bengali family earned monthly about 10,001-15,000 taka. Only 16%, 4% and 2% family of Bengali, Santhal and Oraon respectively monthly earned about 15,001-20,000 taka.

Table 5 focused the weight of male and female of the study groups. The study shows that female was more

underweight then the male. About 85% female of Santhal was underweight where 56.66% male of Santhal was underweight. Among three different groups, more Oraon and Santhal children were underweight than Bengali. About 60% of Bengali child had normal weight, only 30% and 24% of child from Santhal and Oraon has normal weight respectively. On comparison with the WHO/NCHS standard, more male of study area had normal weight then the female. Less number of female had overweighed then male among these three groups. According to the comparison with the WHO/NCHS standard value, a negligible number of children had obesity.

Table 6 focused the food intake ability of the study groups. About 92% of Bengali child intake adequate food but only 44% of Santhal and 36% of Oraon intake adequate food needed for them. Other 56% and 64% of Santhal and Oraon respondent were not able to intake adequate food respectively. Here, 38% and 40% of child from Santhal and Oraon respectively suffer from different disease where only 16% 0f Bengali children suffer from different diseases. Bangladesh government is able to implement their 100% vaccination target. For this, all the Bengali, Santhal and Oraon children took full courses of all necessary vaccine. Total 34% of Santhal and 24% of Oraon have been suffered from weight loss problem. Although the tribal people are in poor health and nutritional status, but compare to Bengali, the rate of normal type birth is significantly much higher than the cesarean type birth to these tribe people.

So, we can summarize our result in such a way that the tribal children have been suffering from malnutrition and they have serious nutritional deficiency. This may be due to the fact that the tribal people have no adequate knowledge regarding nutrition and health. Moreover they are so poor. That is why they are far from the light of development as well as from good health.

These results may, therefore, only be delegated of a small community and not representative of the country. To obtain a broader representation, more studies among these three tribal groups from other districts of our country should be undertaken. Other information like dietary intake, morbidity and health studies should also be collected. Hence there is a need for successful execution of valuable health and nutritional endorsement programs among the studied populations for decreasing under nutrition and overall improvement of tribal populations in these areas with unique focus on children.

There is a significant relationship between family income and children BMI (p= 0.004). When family status is very poor then the number of underweight children is 70%, and when family status is rich then the underweight rate is 18% (Table 7). There is no significant relationship between BMI and diseases (p=0.992) (Table 8). There is also a significant relationship between parent ethnic group and children BMI (p= 0.002) (Table 9).
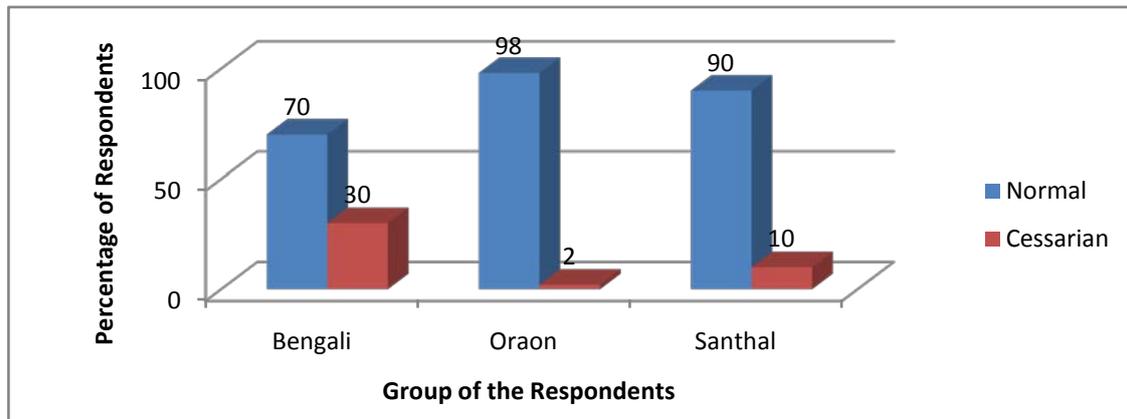

Figure 5. Type of birth

Table 7. Relationship between family status and children BMI

Family Status	BMI				Total	χ^2	P value
	Underweight	Normal Weight	Overweight	Obesity			
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)			
Very Poor	7(70)	3(30)	0(0%)	0(0%)	10	24.37	0.004
Poor	55(61)	27(30)	8(9%)	0(0%)	90		
Wealthy	15(38)	20(51)	1(3%)	3(8%)	39		
Rich	2(18)	7(64)	2(18%)	0(0%)	11		

Table 8. Relationship between BMI and disease

BMI	Disease		Total	χ^2	P-value
	Yes (%)	No (%)			
Underweight	25(32)	54(68)	79	0.097	0.992
Normal Weight	18(32)	39(68)	57		
Overweight	3(27)	8(73)	11		
Obesity	1(33)	2(67)	3		

Table 9. Relationship between parent ethnic group and children BMI

Ethnic	BMI				Total	χ^2	P-value
	Underweight (%)	Normal Weight (%)	Overweight (%)	Obesity (%)			
Bengali	16(32%)	30(60%)	2(4%)	2(4%)	50		
Santhal	29(58%)	15(30%)	5(10%)	1(2%)	50	20.457	0.002
Oraon	34(68%)	12(24%)	4(8%)	0(0%)	50		

4. Discussion

The Santhal and Oraon people described ill health as appearing dull, weak and turning dark, lack of appetite, sleepiness, the inability to much walk, the inability to frequent talk, startling movements, drowsiness, sunken eyes, pale and dry eyes, pain in the body etc. Changes in the color of urine and faster pulse rates also imply ill health. The symptoms of ill health of children includes: lack of interest in playing, sleepiness, imbalance and unstable body temperature, and frequent crying. Physical characteristics such as pale color of the body, rashes on the body, protruding belly and narrowing of buttocks also symbolize ill health [17]. Social, habitation, cultural exchange with the nontribal or Bengali people brought some changes in their concepts and views. The situation was even worse among their rehabilitated counterparts who are unable to collect food from the forest and medicinal plants to use in their unique healthcare system. They live in unhygienic environmental conditions and suffer from severe gastrointestinal problems and enteric diseases, which are compounded by excessive alcohol intake and related to under nutrition. They also suffer from a high incidence of a range of complicated diseases like hypertension, diabetes etc. and adverse health conditions, including tuberculosis, diarrhea, musculoskeletal pain and many other chronic diseases. Thus, these communities, with their traditional perception along with modern facilities, are attempting to adapt to the modern world (i.e. urban culture). However, the avoidance or delay in seeking medical care in some cases needs an approach that considers their perception about health and illness. At present day, health education has also been heavily influenced by research of illness perceptions and health-seeking behavior.

The study showed that children of Bengali group are healthier and well-nourished than other two ethnic groups. Previous result and comparisons of some research papers also represent the same result like cross tabulation and frequency distribution table. Most of the children of Santhal and Oraon people are suffering from first degree of malnutrition. In 2013, Md. Masud Rana and his co-workers worked on "Comparative assessment of nutritional status among children of three tribal populations of Rangamati District, Bangladesh" and showed that among most of the respondents from 20-39 years age group, half of the participants completed primary level education. Most of the respondents were housewife and farmer. About 66.7% respondents earned >10000 BDT per month. Underweight, normal and overweight condition was 4.70%, 78% and 17.30% respectively. About 30%, 36.7% and 11.3% respondents had normal nutritional status who have no education, primary level and SSC level education respectively. This study also concluded that malnutrition among tribal people in Bangladesh is on a decreasing trend [18]. In 2006, Dr. Muhammad Samad studied on "The Santhal in Bangladesh: Problems, Needs and Development Potentials" and represented that there are about 70 distinctly recognizable indigenous nationalities in Bangladesh. Among them, Santhal are one of the most disadvantaged and vulnerable indigenous communities. Land-grabbing, threats, evictions and killings have marginalized them to such an extent that their existence in Bangladesh is currently at stake. Recently, another study has been conducted in order to assess the problems and needs of the Santhal and to initiate development intervention for improving their life situation. This article presents the predicaments of Santhal community and provides recommendations for the well-being of this disadvantaged indigenous community based on the findings of the study conducted. The Santhal do not have any say about what kind of 'development' they require. Very few organizations work with the Santhal, but even there, they do not have meaningful participation in the programs undertaken for their awareness. There is a significant lack of understanding among both the government officials and the NGOs about the needs of the Santhal as a nation and as a community. The major issues are thus unidentified, ignored, and finally, unheard by the 'development' agencies led by representatives of majority Bengali persons. It is not just a case of ignorance; a basic change of attitude is required [19]. In 2014, Dr. Md. Abdullah Al-Mamun and his co-researcher worked on "Knowledge and Practice of Oral Hygiene, and Oral Health Status of Tribal (*Oraon*) People in Northern Region of Bangladesh" and showed that most (87.6%) children brush their teeth regularly; about half (52.8%) children brush their teeth once and about one-third (32.6%) children brush twice daily; most (87.6%) of children brush their teeth after awake at morning and least (1.1%) children brush at bathing. It also found that, children aged ≤10 years have DMFT (mean±SD) 1.17±3.31; children aged 11-17 years have DMFT (mean±SD) 1.29±3.05; and children aged ≥18 years have DMFT (mean±SD) 0.33±0.58. It is found that, children aged ≤10 years have OHI (mean±SD) 2.87±1.80; children aged 11-17 years have OHI (mean±SD) 2.96±1.47; and children aged ≥18 years have OHI (mean±SD) 1.00±0.00 [20].

On the basis of both Quantitative and Qualitative data findings, the study attempt to give a brief discussion and some suggestions for development of tribal children based on their nutritional status related to food frequency and economic condition. This study indicates some reasons that may consider for their high rate of underweight and illness of tribal children includes: not economically solvent, unable to eating adequate balanced food, most of the children's fathers are farmer and domestic worker, have more than one brother/sister, not conscious about hygienic practice, potential internal problems include

gastrointestinal problems such as chronic diarrhea, disorders that hinder nutrient absorption, chronic illnesses, food allergies such as lactose intolerance etc. Many disorders and risk associated with low BMI are predominant in Santhal and Oraon community includes: development of acute illness, fatigued feelings and weakness, problems concentrating and focusing his/her attention, may also have delayed physical growth or if the underlying cause isn't treated soon, eating disorder such as anorexia, weakened immunity system, leading them at a higher risk of infections, abnormal physical skills such as rolling over, sitting, standing and walking, slow development of mental and social skills, abnormal secondary sexual characteristics (delayed in adolescents) etc. The treatment depends on the cause of the delayed growth and development. Delayed growth due to nutritional factors can be resolved by educating the parents to provide the well-balanced diet. If psychosocial factors are involved, treatment should include improving the family dynamics and living conditions. Parental attitudes and behavior may contribute to a child's problems and need to be examined. In many cases, a child may need to be hospitalized initially to focus on implementation of a comprehensive medical, behavioral, and psychosocial treatment plan.

Indigenous people all over the world are historically subjugated and discriminated against, which is explicitly and implicitly affecting their health status. Studies revealed that indigenous/ethnic population have less experience but more health related problems and inequalities compare to mainstream population. In particular, indigenous people or ethnic minorities are adversely affected by various health problems where blood pressure and diabetes rates are significantly higher. Health of indigenous people is poorer than the non-indigenous people across the world which is also true in the Bangladesh context. In Bangladesh, the general health status of the tribal populations is known to be very poor. The widespread poverty, illiteracy, malnutrition, absence of safe drinking water along with sanitary and living condition, poor maternal and child health services have been traced out in several studies as possible contributing factors for miserable health conditions prevailing among tribal population. However, little research has been done among indigenous people in this country. As a result, the present study was conducted among the Bengali, indigenous Santhal and Oraon people to comprehend their health status and the factors associated with it. Although we introduce ourselves as uniform national entity, a substantial part of the total population could not unite to a single point. There are many problems of the tribal peoples in our country that needs instantaneous attention and early solution. Knowledge of the nutritional status, family status and socioeconomic status of a population is necessary as under-nutrition is one of the major health problems in our country.

5. Conclusion

This study has revealed that the present two ethnic communities have been changing at a certain pace along with their poor health and illness. Changing lifestyle, food,

cultural values show a profound impact on illness and treatment profile among this community. On the other-hand, Bengali children are comparatively in rich health with better nutritional status. Poor nutritional status or malnutrition cannot be overcome by improving access to an adequate diet. This would only solve one or a part of the problem. Diseases and infections, poor maternal health and childcare practices may be some important a causes of malnutrition as well as inadequate food intake. Different levels need to improve at the same moment. Educational status, employment in good job and mainly, the socioeconomic condition of the tribal in our country should be improved to solve these problems. All the governmental and nongovernmental organizations who are working for the tribal people should take momentous steps to recover the above mentioned status of the concerned community. Implementation of some targeted approaches to fulfill the minimum basic healthcare needs of such migrant communities is essential in order to make the available public health interventions and medical care available, accessible and acceptable to these vulnerable communities.

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