



MALNUTRITION IN URBAN AREAS OF JHARKHAND: A CASE STUDY OF KARAMTOLI AREA OF RANCHI TOWN

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Good nutrition is the foundation for good health. Vegetables, fruits and grains carry an abundance of vitamins, minerals and numerous other natural substances called Phytochemicals plays an important role in making good health of children. Malnutrition is technically a category of diseases that includes under nutrition, obesity and overweight, and micronutrient deficiency among others. These Stunting, wasting, and underweight are the important nutritional status indicators for children. Stunting is caused by long-term insufficient nutrient intake and repeated infections, wasting is a result of acute food shortage and illness. Effects of stunting are delayed motor development and impaired cognitive development and are largely irreversible. Wasting, on the other hand, is a strong predictor of mortality and requires urgent response. Underweight combines information about linear growth obstruction and weight for length/height. The reduction in child under-nutrition is very important for economic and social development of a country. Child under-nutrition is associated with higher mortality and morbidity, and hence, it should be one of the priority areas for the policy-makers for taking urgent and appropriate actions, especially where the burden is high. One way to break down the inter-generational vicious cycle of malnutrition to improve the nutritional status of children prior to conception.

Keywords: Malnutrition, Micronutrients deficiency, Stunting, Wasting, Underweight

INTRODUCTION

Good health is important because a man of health can enjoy great happiness during his life time. Without health we cannot do anything in this world. A sound mind lives in a sound body. Good nutrition is the foundation for good health. Vegetables, fruits and grains carry an abundance of vitamins, minerals and numerous other natural substances (called Phytochemicals). Phytochemicals functions as antioxidants which fight of pre-radicals that could otherwise damage our cells, membranes and DNA. Numerous studies show that people who eats lots of vegetables and fruits have lower rates of heart disease and cancer. Fibers keeps our insides moving smoothly, helps to lower cholesterol, prevents gallstones and bowel cancer and keep our weight in check. Sugar in modest amounts adds to the flavor of cooking and is a useful fuel for athletics and other active people.

Malnutrition is a medical condition caused by an improper or insufficient diet. Malnutrition is technically a category of diseases that includes under nutrition, obesity and overweight, and micronutrient deficiency (known as 'hidden hunger') among others. However, it is frequently used to mean under nutrition from either inadequate calories or inadequate specific dietary components for whatever reason.

People who are Malnourished May

- ♦ not consume adequate calories and protein for growth and maintenance, such as under nutrition or protein–energy malnutrition (PEM)

- ♦ consume too many calories (over nutrition) have abnormal nutrient loss (due to diarrhoea or chronic illness) or increased energy expenditure (secondary malnutrition)

Stunting, wasting, and underweight are the important nutritional status indicators for children. While stunting is caused by long-term insufficient nutrient intake and repeated infections, wasting is a result of acute food shortage and illness. Effects of stunting are delayed motor development and impaired cognitive development and are largely irreversible. Wasting, on the other hand, is a strong predictor of mortality and requires urgent response. Underweight combines information about linear growth obstruction and weight for length/height.¹

Child under-nutrition continues to occupy a significant share of the global health burden: in total, around 161 million children under-five (U5) are chronically malnourished, 99 million children are underweight, and 45% of child deaths are attributable to malnutrition.²

India's recent National Family Health Survey (NFHS-4), conducted during 2015–2016, shows a very high prevalence of stunting, wasting, and underweight among children <5 years of age. Their prevalence is 38.4%, 21%, and 35.7%, respectively. This is certainly less than the previous NFHS survey (NFHS-3), conducted during 2005–2006, so far as stunting and underweight are concerned.³ However, there is an increase in the prevalence of wasting from the last survey which is a matter of concern because wasting is one of the underlying causes of child mortality.⁴ Furthermore, the recently released Global Hunger Index 2017 report by the International Food Policy Research Institute, in which India is ranked 100th out of 119 nations, shows a very sorry state of hunger in the country.⁵

According to NFHS-4 (2015-2016) Jharkhand is among the top five Indian states with malnourished – including stunted, wasted and underweight – children, according to an India Spend analysis of data from the ministry of health and family welfare's National Family Health Survey.

According to the National Family Health Survey (NFHS) 2015 data, analyzed by the International Food Policy Research Institute in New Delhi, Jharkhand's Infant Mortality Rate was considered worse than most of the African nations. A recent Child Well-Being Index (developed by NGOs World Vision India and IFMR LEAD), released this year also listed Jharkhand as one of the bottom performing states. The index mentioned poor nutrition and low child survival rate as the main cause of the state poor performance.

According to the Nutrition Atlas which has been prepared by the Hyderabad-based National Institute of Nutrition, Jharkhand is in top 15 Anaemic states of India with a higher percentage of anaemic women than the national average of 53.1 per cent. Jharkhand is at 65.2 per cent followed by West Bengal 63.2%, Haryana 62.7%, Bihar 60.3%, Andhra Pradesh 60%, Telangana 56.7%, and Tamil Nadu 55.1%.

Almost half (45.3%) of Jharkhand's children below the age of five are stunted, compared to the national average of 38.4%. Again, almost half (47.8%) of Jharkhand's children are underweight, placing Jharkhand behind only Bihar and Madhya Pradesh in child malnutrition levels, our analysis shows.

Many studies reveals that Acute poverty, high illiteracy among women, underage marriages, lack of sanitation, lack of awareness on nutrition, lack of access to nutritious and sufficient food, loss of habitat and indigenous local food and lack of proper healthcare are major reasons for malnourishment among children in Jharkhand.

Although Central governments have initiated various programs like MAA (Mothers Absolute Affection) to promote exclusive breast feeding; Pradhan Mantri Surakshit Matritva Abhiyan to combat the challenges of malnutrition in the country. But much remains to be done in this field.

The main focus of this study is to know the extent of malnutrition in 0-6 age group in the study area. Tribal and Non- Tribal children are very different from each other. Their life style, food habits are totally different. To capture it, it is important to know the extent of malnutrition in these groups separately. So the present study tries to know the health and nutritional status of these communities separately.

STATEMENT OF THE PROBLEM

There is widespread malnutrition in all ages, but the problem of malnutrition in 1-6 age group calls for special attention as good result at this age is the foundation of healthy citizens. The present study is based on the study of malnutrition in 1 to 6 age group in Karamtoli areas in Ranchi town in the state of Jharkhand. In our country, few details studies were done on those study area. Majority of he studies were done taking account the whole area of the state. Hence, the present work proposes to study the problem of malnutrition in 1 – 6 age group of the study area. The present study focused on urban areas malnutrition. In urban areas people don't have any self-produced goods, they fully depends on others. As the study area there are many slums, living heterogeneous people like tribal and non-tribal. The situation of this area will also affects in policy making of the government.

OBJECTIVES OF THE STUDY

- ♦ To study the extent of malnutrition in 1-6 age group of Tribals and Non-Tribals of the study area.
- ♦ To study the malnutrition by food type in children 0 -6 age group.
- ♦ To study the extent of stunting, wasting and underweight in tribal and non-tribal children in the study area

METHODOLOGY

Area of the Study

To study the child malnutrition among 1 – 6 age group in Ranchi town, Karamtoli area of Ranchi district is chosen. Jharkhand is a newly created state carved out of Bihar on Nov. 15, 2000, is a poor state where there is chronic and persistent malnutrition in both rural and urban areas. This area is in the heart of Ranchi town. It has a mixed population comprising of Tribals and Non Tribals. Also people of this area have varying levels of income, varying occupations & varying levels of education. The extent and cause of malnutrition in 1-6 age group has been estimated using data collected from randomly sampled households. The study area Karamtoli (Ward No. 21 of Municipal Area) situated in the heart of Ranchi town and having a heterogeneous population. The people of varying income levels, castes, occupations, family sizes etc. resides. The total population of this area is about 5000. 40% population are of tribal group and 60% population belongs to non tribal group. Tribal group consist of Hindus, Christians and Sarna while non-tribal population of the area includes Hindu, Muslim and Christian.

Scope of Study

The study undertakes an assessment of malnutrition in children of age group 0 – 6 of Karamtoli Mohalla, within the Block of Ranchi Sadar of Ranchi Town, Jharkhand. However, children below 1 year are normally only breastfed in this area and hence their food intake cannot be measured. The present study is based on analysis of primary data collected on food intake of children of 1 to 6 age only.

Data Collection

To study the malnutrition within the 1 – 6 age group two sources of data collection has been taken i.e. primary and secondary source of data. Secondary source of data has been used wherever appropriate and relevant and it is taken from books, magazines, articles, government offices, government reports, census figures, journals, websites etc. To collect primary data sampling method has been used which consists different stages. In the first stage different child of 1-6 age group has been selected. Then children were divided into tribal and non-tribal group, because of present area having both these two types of social group. In the first stage, every household in Karamtoli area of Ward 21 was visited and the list of children in 1-6 age group was prepared. Then 50 children were randomly selected out of tribal and non-tribal group.

In the present study the unit of study is child and not family. There are variable number of children per family (ranging from 1 to 6). To collect the 20 tribal children of age 1-6, visits were made to randomly select tribal families with children in the 1-6 age group. Information relating to question as mentioned in the questionnaire was collected for each child of that family. This process went on till 20 children were selected for the study. Similar process was adopted in non-tribal families to collect information for 30 children of 1-6 age group.

ANALYSIS

The collected data has been suitably tabulated for data analysis in the light of the objectives of the study and research question framed. The tabulated data has been analyzed using the techniques of average, standard deviation, correlation etc.

Malnutrition Index

The study of malnutrition of selected children required the calculation of malnutrition index. For this the computation was done in following three stages:

First stage – This required finding monthly consumption of 9 (nine) food items as per the 9 food plan of Swaminathan and making a chart according to balanced diet given by ICMR.

Second Stage – In this stage it was required to make a chart to show actual consumption of different 9 (nine) food items.

Third Stage – To find out Food Security Index dividing actual consumption by required consumption such as if actual consumption is x_i and required consumption is y_i

Then food security index (z_i) = x_i / y_i

Here FSI of different food items shows range 0 to 1, where 0 to 0.25 indicate Poor consumption, 0.25 to 0.50 Medium consumption, 0.50 to 0.75 Good consumption, 0.75 – 1 Sufficient consumption and above 1 shows consumption more than required.

Stunting, Wasting and Underweight Index

For calculating stunting, wasting and underweight index same process which discussed above has been applied. First the actual height, weight and age of the child has been taken through framed questionnaire. Then this height, weight has been compared with the standard measurement. For example if a child of age 5 year has 13 Kg weight and height 90 cm. then height for age i.e Stunting Index will 0.81.

Table: 1 Mean of Food Security Index of Non-Tribal Child in Study Area 2014

Sl. No.	Age Year	Cereals	Pulses	Vegetables	Fruits	Oils	Milk & Milk Product	Non-Veg. (meat/Fish / Eggs)	Sugar	Other Veg. Roots	Total	Mean
1	6	0.67	0.56	0.76	4.00	0.80	3.73	3.33	0.42	1.33	15.59	1.73
2	5	0.42	0.39	0.84	1.33	0.67	4.00	-	0.33	0.67	8.65	0.96
3	6	1.00	0.67	0.98	1.13	0.40	-	2.22	0.58	1.00	7.98	0.89
4	3	1.00	0.50	0.80	1.33	0.33	-	3.33	0.22	0.56	8.08	0.90
5	1	0.44	0.73	0.87	0.87	0.50	-	-	-	-	3.41	0.38
6	5	0.50	0.89	0.89	1.40	0.53	0.20	0.11	0.42	1.00	5.94	0.66
7	2	0.67	0.87	0.67	1.20	0.83	1.11	0.33	0.89	0.56	7.12	0.79
8	2	0.56	1.13	0.87	1.67	0.67	0.67	0.22	0.56	0.56	6.89	0.77
8	3	1.33	1.27	0.80	1.33	0.50	2.22	0.44	0.17	1.11	9.18	1.02
10	5	1.25	1.11	0.89	2.00	1.07	1.33	0.56	1.25	1.00	10.46	1.16
11	4	1.17	0.72	1.02	0.67	0.80	0.67	0.56	1.11	0.80	7.51	0.83
12	3	1.00	0.67	1.13	1.20	0.50	1.67	1.67	0.56	1.67	10.06	1.12
13	2	0.67	0.80	0.73	0.67	0.33	-	1.67	0.33	-	5.20	0.58
14	3	0.75	0.67	0.80	0.33	0.17	0.56	0.56	0.11	0.56	4.49	0.50
15	6	0.78	1.06	1.20	2.00	1.20	0.80	0.56	1.25	0.67	9.51	1.06
16	3	0.67	0.87	0.87	0.67	0.67	0.33	0.67	0.89	0.56	6.18	0.69
17	5	0.75	1.11	1.11	1.67	0.80	0.20	1.11	0.75	1.00	8.50	0.94
18	4	0.67	0.72	0.89	0.67	0.40	0.80	0.56	0.42	0.67	5.78	0.64
19	5	0.83	1.17	1.02	2.67	1.07	0.27	1.67	1.25	-	9.94	1.10
20	6	0.58	1.22	0.71	2.00	0.93	4.00	2.22	1.67	1.33	14.67	1.63
21	1	0.67	0.60	-	0.13	0.17	1.33	-	-	-	2.90	0.32
22	4	0.58	0.67	1.11	0.60	0.67	1.33	2.22	0.42	0.33	7.93	0.88
23	3	0.44	1.27	-	1.33	0.17	0.56	0.22	0.22	0.56	4.77	0.53
24	6	0.67	0.67	0.80	1.33	1.07	2.00	3.33	0.67	0.67	11.20	1.24
25	2	0.67	1.13	0.80	0.53	0.33	0.67	1.11	0.33	0.56	6.13	0.68
26	1	0.44	0.67	-	0.07	-	1.11	0.11	0.11	0.22	2.73	0.30
27	5	0.67	0.83	0.44	0.33	0.13	0.67	0.56	1.67	0.67	5.97	0.66
28	6	0.83	1.11	0.67	0.40	0.27	0.93	0.56	1.25	0.67	6.68	0.74
29	6	1.17	0.83	0.67	0.33	0.27	1.33	0.78	0.83	0.33	6.54	0.73
30	4	0.83	0.83	0.89	0.53	0.67	1.07	0.56	0.83	0.33	6.54	0.73
Total		22.67	25.72	23.22	34.40	16.90	33.56	31.22	19.50	19.36		
Mean (NT)		0.76	0.86	0.77	1.15	0.56	1.12	1.04	0.65	0.65		

Source: Own computation from primary Data

Table: 2 Mean of Food Security Index of Tribal Child in Study Area 2014

Sl. No.	Age Year	Cereals	Pulses	Vegetables	Fruits	Oils	Milk & Milk Product	Non-Veg. (meat/Fish /Eggs)	Sugar	Other Veg. Roots	Total	Mean
1	2	0.44	0.13	-	0.13	-	-	-	0.22	-	0.92	0.10
2	3	0.66	0.20	-	0.20	-	0.77	-	0.33	0.33	2.49	0.28
3	5	1.33	0.44	0.22	0.26	0.13	0.26	0.22	0.41	0.33	3.60	0.40
4	3	1.66	0.33	-	-	-	0.07	11.00	-	-	13.06	1.45
5	4	1.66	0.33	0.44	-	0.13	0.06	0.33	0.33	0.13	3.41	0.38
6	4	1.33	0.11	0.13	0.06	0.26	2.00	0.55	0.08	0.33	4.85	0.54
7	2	1.11	0.06	0.06	-	0.16	-	-	-	-	1.39	0.15
8	2	1.33	0.21	0.13	-	0.16	-	-	-	-	1.83	0.20
9	3	2.22	0.33	0.33	-	0.50	-	0.22	0.22	0.22	4.04	0.45
10	3	1.55	0.20	0.13	-	0.16	0.55	0.11	0.11	0.11	2.92	0.32
11	4	1.33	0.11	0.22	0.33	0.26	0.40	0.55	0.33	0.33	3.86	0.43
12	1	0.44	0.06	-	-	-	0.55	-	-	-	1.05	0.12
13	2	0.66	0.33	0.06	0.06	0.16	0.77	0.11	0.22	0.11	2.48	0.28
14	2	0.55	0.13	0.13	0.06	0.16	-	0.11	0.11	0.11	1.36	0.15
15	2	0.44	0.06	-	0.13	-	0.33	0.11	0.11	0.11	1.29	0.14
16	1	0.33	0.13	-	-	-	1.11	-	-	-	1.57	0.17
17	5	2.00	0.83	0.08	0.20	0.13	-	0.55	0.41	0.53	4.73	0.53
18	6	2.16	0.88	0.22	0.26	0.26	-	0.88	0.41	0.33	5.40	0.60
19	6	1.66	0.72	0.13	-	0.13	0.06	0.55	0.33	0.33	3.91	0.43
20	4	1.55	0.55	0.08	0.13	0.13	0.13	0.55	0.25	0.33	3.70	0.41
Total		24.41	6.14	2.36	1.82	2.73	7.06	15.84	3.87	3.63		
Mean (T)		1.22	0.31	0.12	0.09	0.14	0.35	0.79	0.19	0.18		

Source: Own computation from primary Data

Table: 3 Mean, Stand. Deviation and Coefficient of Variation in Food Security Index in 1-6 age group of Non-Tribal child in the study area in 2014

Age	Cereals	Pulses	Vegetables	Fruits	Oils	Milk	Non-Veg.	Sugar	Others
1	0.51	0.66	0.29	0.35	0.22	0.81	0.04	0.04	0.07
2	0.63	0.98	0.76	1.01	0.53	0.61	0.83	0.49	0.41
3	0.80	0.87	0.84	1.03	0.39	0.59	1.14	0.34	0.83
4	0.81	0.73	0.97	0.61	0.63	0.96	0.97	0.69	0.52
5	0.73	0.91	0.86	1.56	0.71	1.50	0.66	0.94	0.72
6	0.97	0.87	0.83	1.63	0.69	1.83	1.85	0.95	0.85
Mean	0.74233	0.83712	0.75869	1.03258	0.52694	1.04980	0.91562	0.57462	0.56742
S.D.	0.15728	0.11746	0.24113	0.50557	0.19177	0.50518	0.59607	0.35731	0.29818
Co-eff. Of Variance	21.18760	4.031	31.781	48.961	36.392	48.121	65.100	62.181	52.549

Source: Own computation from primary Data

Table 4: Mean, Stand. Deviation and Coefficient of Variation in Food Security Index in 1-6 age group of Tribal child in the study area in 2014

Age	Cereals	Pulses	Vegetables	Fruits	Oils	Milk	Non-Veg	Sugar	Others
1	0.39	0.10	-	-	-	0.83	-	-	-
2	0.59	0.15	0.16	0.06	0.11	0.18	0.06	0.07	0.06
3	1.52	0.18	0.12	0.05	0.17	0.35	0.11	0.17	0.17
4	1.46	0.28	0.22	0.13	0.20	0.65	0.50	0.25	0.28
5	0.77	0.64	0.15	0.23	0.13	0.13	0.39	0.41	0.43
6	1.91	0.80	0.18	0.13	0.20	0.03	0.72	0.37	0.33
Mean	1.10514	0.35681	0.13681	0.10056	0.13194	0.36139	0.29333	0.21097	0.21000
S.D.	0.60816	0.29011	0.07489	0.08068	0.07362	0.31519	0.28402	0.16236	0.16604
Co-eff. Of Variance	55.03030	81.30876	54.73891	80.22967	55.79337	87.21527	96.82458	76.95786	79.06770

Source: Own computation from primary Data

Malnutrition by Gender in Non-Tribal & Tribal:

Table 5: Mean of Food Security Index of Non-Tribal Girls & Boys in Study area in 2014

Mean FSI	Cereals	Pulses	Vegetables	Fruits	Oils	Milk Products	Non Veg.	Sugar	Tuber Root
NonTribal Girls	0.82	0.88	0.89	1.15	0.67	0.79	1.10	0.74	0.63
NonTribal Boys	0.71	0.84	0.69	1.15	0.48	1.37	0.99	0.58	0.66

Source: Own computation from primary Data

Graph No.1

Mean of Food Security Index of Non-Tribal Girls & Boys in Study area in 2014

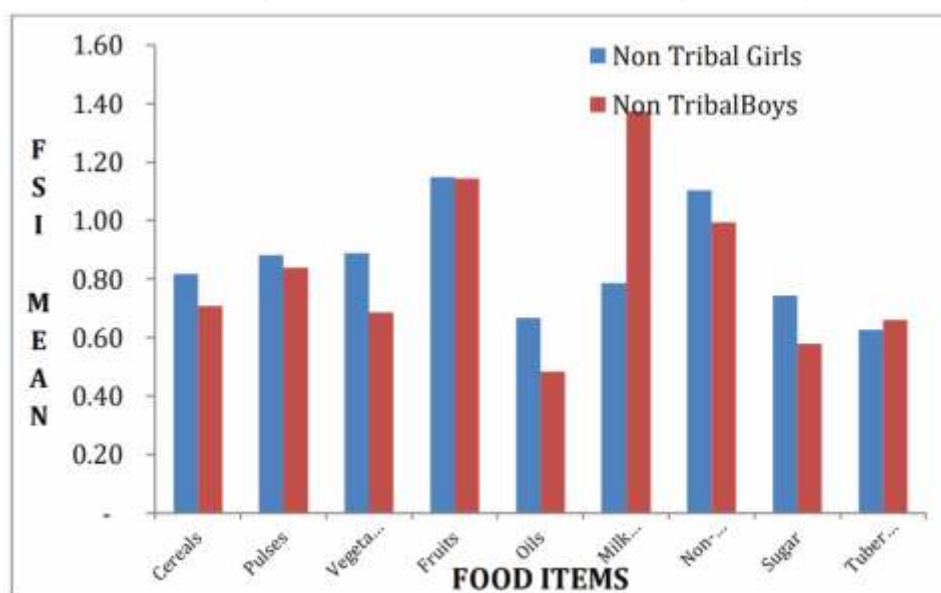


Table 6: Mean Food Security Index of Tribal Girls & Boys in Study area in 2014

Mean FSI	Cereals	Pulses	Vegetables	Fruits	Oils	Milk Products	Non Veg.	Sugar	Tuber Root
Tribal Girls	1.36	0.39	0.13	0.12	0.16	0.20	0.30	0.24	0.21
Tribal Boys	1.08	1.59	0.36	0.22	1.73	0.22	0.11	1.50	0.09

Source: Own computation from primary Data

Graph No.2:
Mean Food Security Index of Tribal Girls & Boys in Study area in 2014

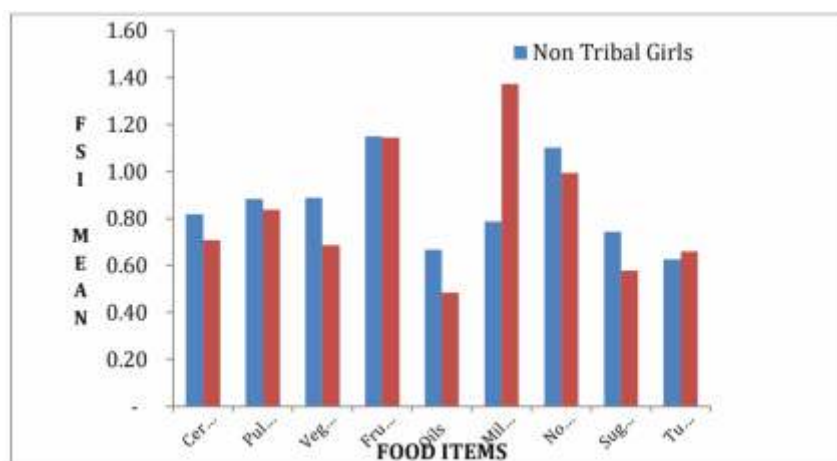
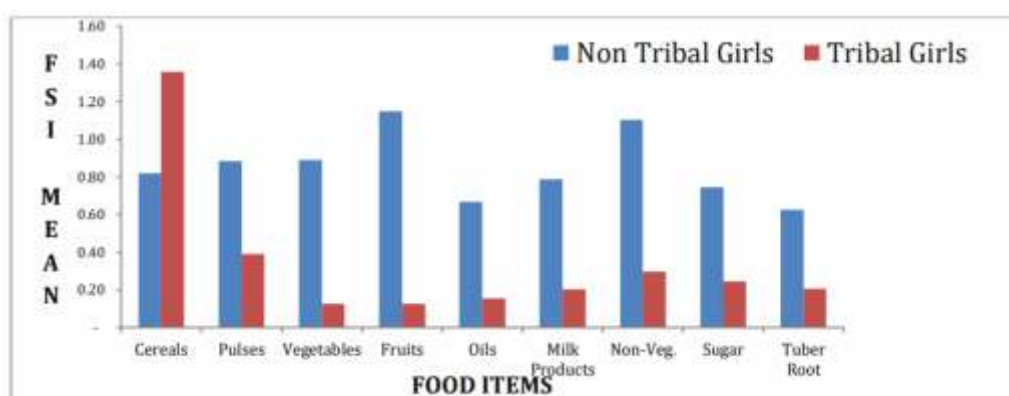


Table 7: Food Security Index of Non-Tribal and Tribal Girls in Study area in 2014

Mean FSI	Cereals	Pulses	Vegetables	Fruits	Oils	Milk Products	Non Veg.	Sugar	Tuber Root
Non-Tribal Girls	0.82	0.88	0.89	1.15	0.67	0.79	1.10	0.74	0.63
Tribal Girls	1.36	0.39	0.13	0.12	0.16	0.20	0.30	0.24	0.21

Source: Own computation from primary Data

Graph No.3:
Food Security Index of Non-Tribal and Tribal Girls in Study area in 2014



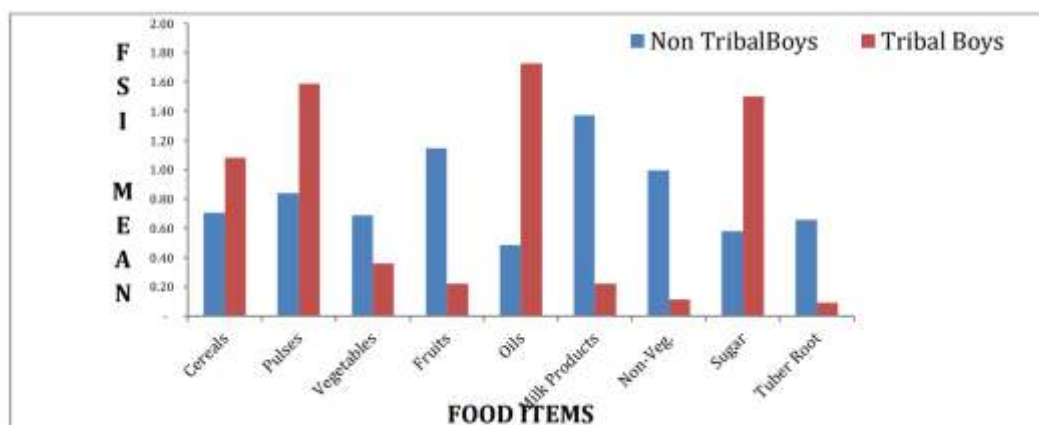
Source: Table No. 7

Table 8: Food Security Index of Tribal Boys in Study area in 2014

Mean FSI	Cereals	Pulses	Vegetables	Fruits	Oils	Milk Products	Non Veg.	Sugar	Tuber Root
Non-Tribal Boys	0.71	0.84	0.69	1.15	0.48	1.37	0.99	0.58	0.66
Tribal Boys	1.08	1.59	0.36	0.22	1.73	0.22	0.11	1.50	0.09

Source: Own computation from primary Data

**Graph No.4:
Food Security Index of Tribal Boys in Study area in 2014**



Stunting, Wasting & Underweight of tribal & Non-Tribal child of 0-6 age group in Ranchi in 2014

Table 9: Index of Malnutrition (Stunting, Wasting & Underweight) In 30 Non-Tribal Child of 1-6 Age Group In 2014 of Karamtoli Area, Ranchi, Jharkhand

S. No.	Age	Sex	Height (cm)	Weight (Kg)	Height for (Stunting)	Weight for Height (Wasting)	Weight for Age (Underweight)
					Standard	Standard	Standard
1	6	Male	62.50	18.00	0.53	1.56	0.87
2	5	Male	80.00	15.00	0.72	1.06	0.80
3	6	Female	95.00	17.00	0.81	0.94	0.87
4	3	Male	75.00	10.00	0.76	0.87	0.69
5	2	Male	60.00	8.00	0.67	1.00	0.65
6	5	Male	90.00	15.00	0.81	0.94	0.87
7	2	Female	67.50	10.00	0.78	1.08	0.81
8	3	Male	72.50	11.00	0.74	1.00	0.75
9	3	Male	70.00	10.00	0.71	0.93	0.69
10	5	Female	95.00	14.00	0.87	0.88	0.79
11	4	Female	67.50	10.00	0.65	0.93	0.63
12	3	Female	60.00	10.00	0.62	1.14	0.70
13	2	Female	67.50	12.00	0.78	1.31	1.02
14	3	Male	60.00	10.00	0.61	1.07	0.68
15	6	Female	102.50	14.00	0.91	0.72	0.72
16	3	Male	72.50	10.00	0.74	0.87	0.68
17	5	Female	90.00	15.00	0.82	1.00	0.82
18	4	Male	70.00	12.00	0.67	1.13	0.74
19	5	Female	92.50	18.00	0.84	1.19	0.98
20	6	Male	102.50	13.00	0.86	0.67	0.58
21	1	Male	60.00	10.00	0.78	1.23	1.00
22	4	Female	72.50	10.00	0.70	0.87	0.63
23	3	Male	72.50	10.00	0.74	0.87	0.68
24	6	Male	90.00	13.50	0.76	0.83	0.60
25	2	Female	60.0	09.00	0.69	1.15	0.80
26	1	Female	62.50	7.50	0.83	1.00	0.78
27	5	Male	90.00	13.00	0.81	0.82	0.67
28	6	Male	102.50	18.00	0.86	0.94	0.80
29	6	Male	72.50	12.00	0.61	0.89	0.54
30	4	Female	70.00	13.00	0.67	1.20	0.82
MEAN					0.75	1.00	0.75

Source: Own computation from primary Data

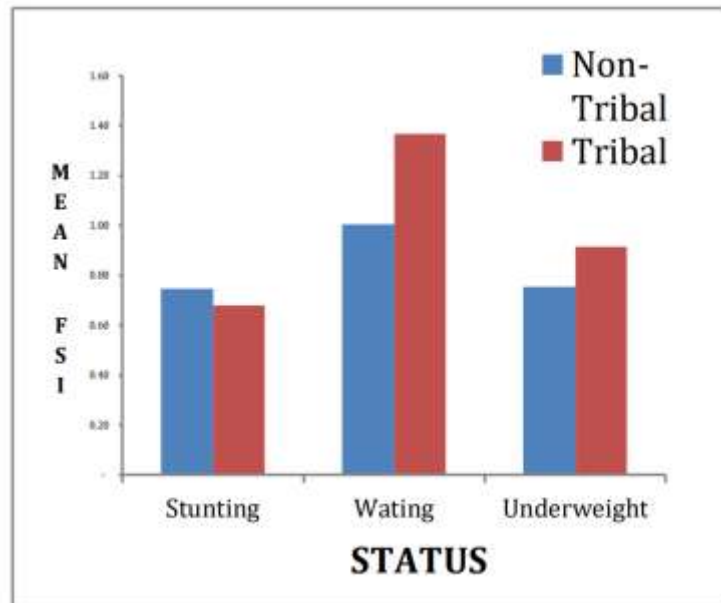
Table 10: Index of Malnutrition (Stunting, Wasting & Underweight) in 20 Tribal Child of 1-6

S. No.	Age	Sex	Height (cm)	Weight (Kg)	Height for (Stunting)	Weight for Height (Wasting)	Weight for Age (Underweight)
					Standard	Standard	Standard
1	2	Female	60	6	0.69	0.77	0.67
2	3	Male	72.5	8	0.74	0.73	0.54
3	5	Female	90	12	0.82	0.87	0.65
4	3	Male	60	15	0.61	1.67	1.02
5	4	Male	80	20	0.76	1.67	1.24
6	4	Male	72.5	12	0.69	1.07	0.74
7	2	Female	60	10	0.69	1.23	1.11
8	2	Female	50	9	0.58	1.38	1.00
9	3	Male	60	11.5	0.61	1.27	0.78
10	3	Female	72.5	11.5	0.75	1.07	0.83
11	4	Female	80	18	0.77	1.47	1.14
12	1	Male	50	6.5	0.65	2.31	0.65
13	2	Female	60	13	0.69	1.62	1.44
14	2	Male	62.5	11	0.70	1.31	0.90
15	2	Male	50	11	0.56	1.69	0.90
16	1	Male	50	8	0.65	1.23	0.80
17	5	Female	72.5	20	0.66	1.80	1.09
18	6	Female	80	22	0.68	1.50	1.01
19	6	Female	70	18	0.60	1.39	0.84
20	4	Male	72.5	15	0.69	1.33	0.93
MEAN		0.68	1.37	0.91			

Source: Own computation from primary Data

Malnutrition Mean Index		
	NonTribal	Tribal
Stunting	0.75	0.68
Wasting	1.00	1.37
Underweight	0.75	0.91

Figure-5 : Mean of Stunting, Wasting & Underweight in Tribal & Non-Tribal Group



Source: Own computation from primary Data

The above table shows that the status of Stunting as evident from Stunting Index, indicates that both Non-Tribal & Tribal children are stunted but the problem is more severe among Tribal Children. Wasting Index indicates that there is no problem of Weight for Height among Tribal and Non-Tribal Children, however, Tribal children have much better condition (1.37) than Non-Tribal Children (1). The problem of Underweight is in better situation among Tribal children (0.91), but it is more severe in Non-Tribal Children (0.75).

CONCLUSION AND SUGGESTIONS

The present study attempted an analysis of malnutrition of children below 6 years of age – Karamtoli Mohalla of Ranchi town. The two fold of present adapted were

- ♦ Input side as per the 9 food item plan of Swaminathan. The malnutrition index of each child – each food type has been calculated thereafter aggregate of all children have been obtained and interpreted. These studies have been done for the two broad social groups - Tribal and non-tribal.
- ♦ Malnutrition leads to certain traits – children which can be paths represented by the extent of stunting, wasting and under-weight. Stunting is the low height for age, wasting is the low weight for height and under-weight is low weight for age. The aggregate extent of stunting, wasting and under nourishment has been estimated and also estimates for the two social groups namely tribal and non-tribal has been obtained.

Gap of Consumption

There has been a large gap between the consumption of all the food items and the required figure. And this is more varying in tribal group in comparison of non-tribal group. It has been observed that in cereal the FSI of tribal child has much better than non-tribal group. But in other food items such as consumption of pulses, vegetables, fruits, oils, sugar, nonveg, milk and milk products and other vegetable and tuber roots the FSI of all these food types has been better in non-tribal group. It has been also observed that there is much variation in FSI and the sex. In tribal girl child has less FSI than tribal boy child. And also, non-tribal boy child better FSI of different food types.

Measurement Aspect

Malnutrition among the age group of 0-6 has been also observed through the aspect of measurement of malnutrition. It has been observed that stunting, wasting and under-weight has been found both in tribal and non-tribal child. The status of stunting (height for age) in tribal child is better than non-tribal. The status of wasting (weight for height) has been greater in tribal child. And the status of under-weight i.e. weight of age has been greater in tribal than non-tribal child.

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