

Parental Education and Nutritional Status of Children: A cross - sectional study among the Bharia – PVTG of Pataalkot District-Chhindwara of Madhya Pradesh

A.K. Ahirwar¹, R.K. Gautam² and M. Rana³

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¹Ajay K. Ahirwar, Department of Anthropology, Dr. Harisingh Gour Vishwavidyalaya (A Central University), Sagar (MP), India. E-mail: ajayahi996@gmail.com.

²Rajesh K. Gautam, Department of Anthropology, Dr. Harisingh Gour Vishwavidyalaya (A Central University), Sagar (MP), India. Email: goutamraj2006@gmail.com

³Monika Rana, Department of Anthropology, Dr. Harisingh Gour Vishwavidyalaya (A Central University), Sagar (MP), India. Email: monika.rana93@yahoo.com

Corresponding author: Rajesh K. Gautam, Department of Anthropology, Dr. Harisingh Gour Vishwavidyalaya (A Central University), Sagar (MP), India. Email: goutamraj@rediffmail.com

ABSTRACT

Background: Malnutrition is an underlying cause for more than half of the child deaths worldwide. It is a major public health problem in developing countries and under developed societies. The Indian tribes are most deprived group of population and having mass scale of undernutrition among the children. What are determinants of undernutrition among tribal children? Whether parental education is a determinant?

Methodology: The aim of the present study was to assess the impact of parent's education on nutritional status of Bharia girls and boys of Pataalkot, Chhindwara District of Madhya Pradesh. A cross sectional study was conducted on a total of 424 individuals; consisting of 215 girls and 209 boys aged 5 to 18 years.

Results: It found that overall 26.8% boys and 42.8% girls were underweight, 30.1% boys and 29.8% girls were stunted, 36.8% boys and 66.0% girls were undernourished. The chi-square test was computed to understand the association of parental education and nutritional status of children was found insignificant.

Conclusion: It can be concluded that PVTG are already deprived section of society still disparity in their educational attainment and socio-economic status matters in the nutritional status of their children, but statistically the association of parental education and nutrition of children was found insignificant.

Keyword: Z-score, underweight, stunting, undernourished, Body Mass Index (BMI), Parents education and occupation

INTRODUCTION

Malnutrition is a major public health problem leading to child morbidity and causing more than half of child deaths worldwide; particularly among poor socioeconomic communities of developing countries (Alkerwi et al. 2012; Smith & Brunner 1992). The tribal populations constitute 8.08 % of total population of Indian republic have widespread poverty, illiteracy and malnutrition (Tiwari et al. 2007).

Socio-economic status viz. education, occupation and income affect the nutritional status of most of the tribal and non tribal (Laliukka et al. 2007; Ahirwar & Gautam 2017; Thakur & Gautam 2017; Christopher et al. 2018; Kosińska et al. 2019; Liczbinska et al. 2019). The National Family Health Survey (NFHS-3, 2007) of India has reported that 60% of tribal children under-five years of age were underweight and 59% were stunted and 21% children were wasted. A total of 50% children <5 years of age in India, are moderately or severely malnourished, this rate are higher in socially and economically underprivileged communities.

According to the World Health Organization (WHO, 1995), Anthropometric measurement is an effective and reliable method for evaluating health and nutritional status in individual and society (Asfew et al. 2015).

The importance of parental education in the formation of child health is very essential (Strauss & Thomas, 1995). After Caldwell's (1979) important work, it has been generally considered that mother's education is one of the more critical determinants of child health. Several studies determined that maternal education is necessary for improvement of the child health (Matijasevich et al. 2012; Maiga, 2013; Singh et al. 2014).

Chen & Li (2009) explored that father education might be important than mother's, because in case of developing countries fathers are often more educated than mothers. Studies in several developing countries demonstrate that there is no level of maternal education that can be benefited for the development of child health, but it is seen that even small levels of education improve child survival (Hobcraft et al. 1984; Mensch, et al. 1985).

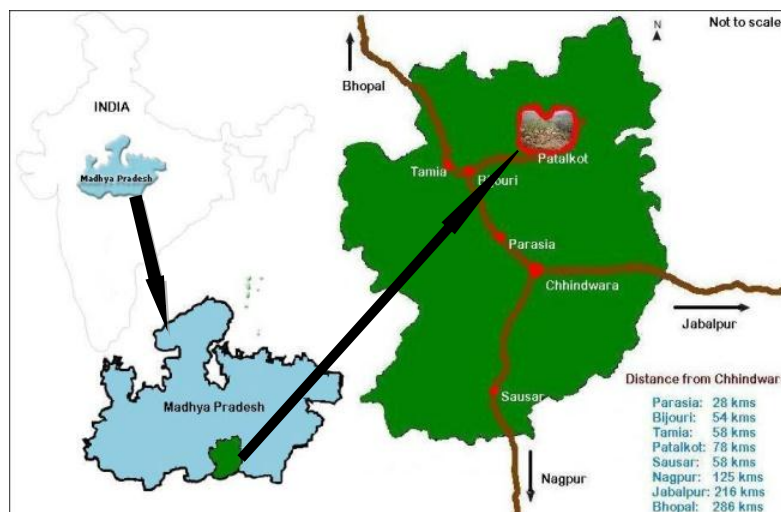
Keeping in mind the importance of parental education in the level of nutritional status of child the present investigation was carried out among tribal children and adolescents aged (5-18 years) of central India known as Bharia (PVTG) tribe of Patalkot region of district- Chhindwara (MP).

AREA AND PEOPLE

Patakot (Map 1) is the extremely inaccessible and mountainous region of Madhya Pradesh, where Bharia and Gond tribes reside. The term Patakot is derived from two Hindi terms i.e. Patal (=subterranean realms of the universe) and Kot (=Fort like protected area). According Hindu believes the universe is divided into the three worlds: Svarga (the upper regions or sky or space), Prithvi (earth) and Patala (the underworld). This gorge like earth formation quite deep and spread in an area of 79 sq km. The valley is located at a distance of 78 km from Chhindwara (District Headquarter) in the North-West direction; which is surrounded by hills and there are several pathways to reach the villages located inside the valley.

Bharia is one of the three identified PVTGs (Particularly Vulnerable Tribal Groups) of Madhya Pradesh state of Indian Union (Ahirwar and Gautam 2017). They are monogamous and observe clan exogamy. It is said that Bharias have been living here for more than 500 years. “According to locals, this region was ruled by a mythological character named-Ahiravan. He was the brother of “Ravana” (Ahirwar and Gautam 2015). According to great epic Ramayana- the Ravana was a monster and played a role of villain and killed by Ram. According to mythology, Ahiravana, the ruler of Patakot was also killed during the war”.

Bharias are dependent on agriculture and forest produce for their subsistence. The vast majority of the adult populations in the studied households were found to be engaged in unskilled manual labour and agriculture.



Map 1. Location map of study area Patakot (Not to Scale)

MATERIAL AND METHODS

The study was conducted from December 2012 to January 2013 among the Bharia (PVTGs) tribe of Patakot region of district Chhindwara. The purposive sampling method was used to collect information from a total of 424 individuals consisting of 215 (50.71%) girls and 209 (49.29%) boys aged 5-18 years were recruited from their home, hostels and schools of Patakot region of Chhindwara district of Madhya Pradesh. Information on indicators of household socio-economic status, dietary habits and anthropometric measurements were also collected along with anthropometric measurements. For the present investigation, body weight, stature were taken with all possible caution maintaining uniformity and accuracy in the techniques, after undergoing extensive training following the standard procedure as described by (Gibson, 2005). The authors confirm that all procedures contributing to this work comply with the ethical standards as per Helsinki Declaration of 1975, as revised (2008), the participants were told about the objectives of the study, written consent was obtained from the literate parents/guardians of participants in case of minors, whereas verbal consent were procured from illiterates. After collecting the data, SPSS (Statistical Packages for Social Sciences) and Microsoft-excel software were used for analysis and tabulation.

RESULTS

The findings of present investigation are being discussed in following with sub-titles i.e. weight for age (wasting), height for age (stunting) and BMI for age (undernourished) as well as impact of parental education on nutritional status.

Weight for age (wasting)

It is evident from Table 1 and Figure 1 that in early age (5-9 years) the prevalence of underweight is exceptionally higher (49.4%) among girls than boys (17.9%). With increasing age the prevalence of underweight is increasing in boys, whereas decreasing in girls. In age group 10-14 years of age, the prevalence of underweight among girls was 39.8% as compared to 22% of boys; followed by age group 15-18 years; in which almost equal proportion of boys (39.4%) and girls (34.4%) were diagnosed as underweight. Overall the girls (42.8%) were found more underweight than boys (26.8%). Prevalence of overweight was found negligible.

Height for Age (Stunting)

Further, it is evident from table 1 and figure 2 that in age group of (5-9 years), the prevalence of stunted is exceptionally higher among girls (25.9%) than boys (19.6%). With increasing age the prevalence of stunting is also increasing among both sexes. In age group of 10-14 years, the prevalence of stunting was found 30.5% among boys, while 33.7% girls were stunted. Similarly, in age group 15-18 years, the prevalence of stunting was found 38.0% and 28.1% respectively among girls and boys. Overall almost equal proportion of girls (29.8%) and boys (30.1%) were found stunted.

BMI for age

Alike weight for age and height, BMI for age was obtained for boys and girls of 5-18 years of age. It was found figure 3 that girls are more undernourished than boys. Among 5-9 years of age 26.8% boys and 61.2% girls were found undernourished. Similarly in age group of 10-14 years 31.7% boys and 65.3% girls were undernourished. The problem of undernourishment is further alarming for both sexes of 15-18 years of age group as a total of 50.7% boys and 81.25% girls were suffering from it. The chi-square test for all three cohorts of children and adolescents were found significant. Hence, it can be inferred that the girls or females are significantly more undernourished than males.

Table 1. Nutritional status among Bharia boys and girls of 5-18 years of age.

Nutritional status	5-9 age group				10-14 age group				15-18 age group				Over all			
	Girls		Boys		Girls		Boys		Girls		Boys		Girls		Boys	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Weight for Age																
Underweight	42	49.4	10	17.9	39	39.8	18	22.0	11	34.4	28	39.4	92	42.8	56	26.8
Normal	42	49.4	46	82.1	58	59.2	64	78.0	21	65.6	42	59.2	121	56.3	152	72.7
Overweight	1	1.2	0	0.0	1	1.0	0	0.0	0	0.0	1	1.4	2	0.9	1	0.5
Total	85	100	56	100	98	100	82	100	32	100	71	100	215	100	209	100
Height for Age																
Stunted	22	25.9	11	19.6	33	33.7	25	30.5	9	28.1	27	38.0	64	29.8	63	30.1
Normal	61	71.8	42	75.0	64	65.3	56	68.3	21	65.6	41	57.7	146	67.9	139	66.5
Tall	2	2.4	3	5.4	1	1.0	1	1.2	2	6.3	3	4.2	5	2.3	7	3.3
Total	85	100	56	100	98	100	82	100	32	100	71	100	215	100	209	100
BMI for Age																
Under Nourished	52	61.2	15	26.8	64	65.3	26	31.7	26	81.25	36	50.7	142	66.0	77	36.8
Normal	33	38.8	41	73.2	34	34.7	56	68.3	6	18.75	35	49.3	73	34.0	132	63.2
Total	85	100	56	100	98	100	82	100	32	100	71	100	215	100	209	100
Chi-square test	$\chi^2=49.8$ (p<0.001)				$\chi^2=20.16$ (p<0.001)				$\chi^2=8.59$ (p<0.001)				$\chi^2=36.20$ (p<0.001)			

Table 2. Distribution of samples as per nutritional status and Father's education.

Nutritional status	Father's education						Chi square χ^2
	Un-educated		Educated		Total		
Weight for age							0.35*
	N	%	N	%	N	%	
Underweight	72	36.4	76	33.6	148	34.9	
Normal	124	62.6	149	65.9	273	64.4	
Overweight	2	1.0	1	0.4	3	0.7	
Total	198	100.0	226	100.0	424	100.0	
Height for age							7.06*
Stunted	55	27.8	72	31.9	127	30.0	
Normal	133	67.2	152	67.3	285	67.2	
Tall	10	5.1	2	0.9	12	2.8	
Total	198	100.0	226	100.0	424	100.0	
BMI for age							2.89*
Undernourished	111	56.1	108	47.8	219	51.7	
Normal	87	43.9	118	52.2	205	48.3	
Total	198	100.0	226	100.0	424	100.0	

Chi-square tests are used to compare children's nutritional status and fathers' education was found insignificant ($P > 0.05^$)*

Table 3. Distribution of samples as per nutritional status and Mother's education.

Nutritional status	Mother's education						Chi square χ^2
	Un-educated		Educated		Total		
Weight for Age							0.36*
	N	%	N	%	N	%	
Underweight	96	33.9	52	36.9	148	34.9	
Normal	187	66.1	89	63.1	274	65.1	
Total	283	100	141	100	424	100	
Height for Age							0.25*
Stunted	87	30.7	40	28.4	127	30	
Normal	196	69.2	101	71.6	297	70	
Total	283	100	141	100	424	100	
BMI for Age							0.34*
Undernourished	149	52.7	70	49.6	219	51.7	
Normal	134	47.3	71	50.4	205	48.3	
Total	283	100	141	100	424	100	

Chi-square tests are used to compare children's nutritional status and mothers' education was found insignificant ($P > 0.05^$)*

Parental education and nutritional status

It is evident from Table 2 that underweight and undernourished children are slightly higher (36.4% and 56.1%) among un-educated fathers as compared to educated father (33.6%

and 47.8%). Contrary to that prevalence of stunted children is higher among educated fathers as compared to un-educated.

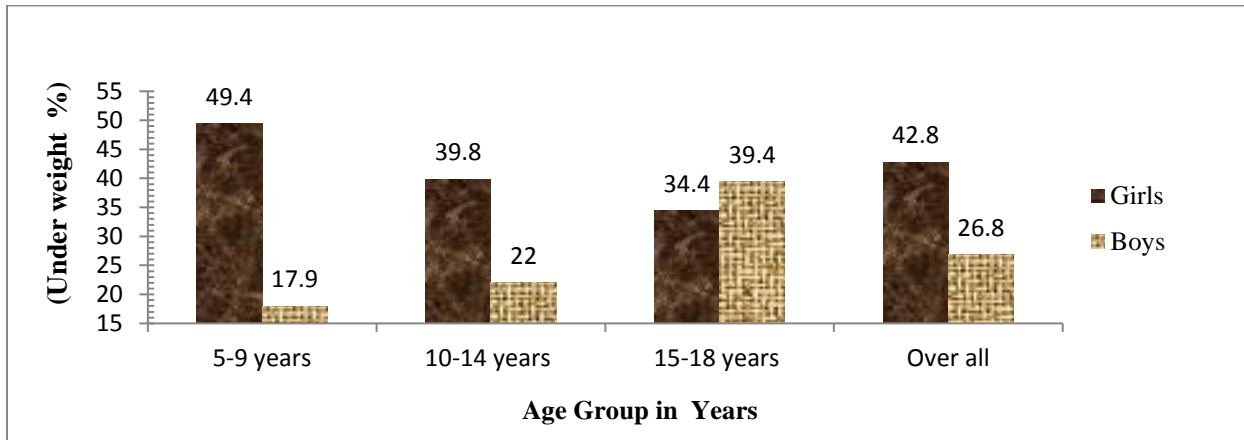


Figure1. Comparative bar diagramme showing age group wise percentage of Underweight

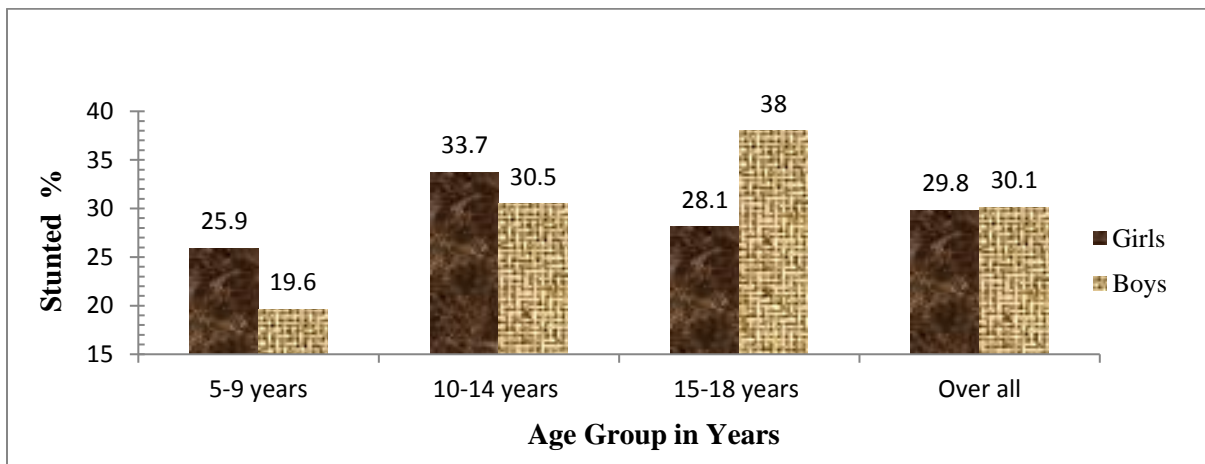


Figure 2. Comparative bar diagramme showing age group wise percentage of Stunted childre

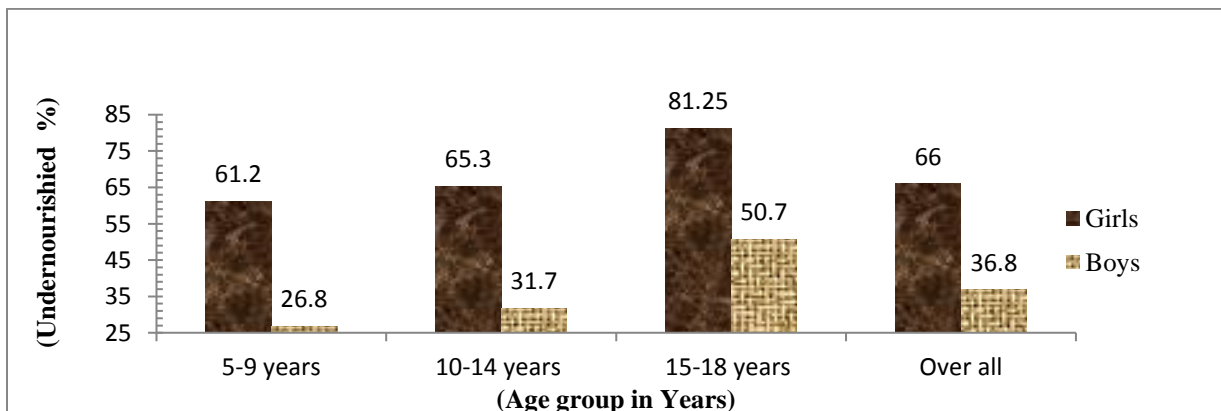


Figure 3. Comparative bar diagramme showing age group wise percentage of Undernourished

It is evident from table 3 that underweight and undernourished children are slightly higher (33.9% and 52.7%) among un-educated mothers as compared to educated mothers (36.9% and 49.6). Contrary to that prevalence of stunted children is higher among educated mothers as compared to un-educated.

Higher prevalence of stunting and undernourished children was found associated with un-educated mothers, although the chi-square test was found insignificant.

DISCUSSION

Worldwide, studies shows that there are strong association between nutritional status of children and parental education, socio-economic status and, income (Khongsdier & Mukherjee 2003; Dhargupta et al. 2009; Abuya et al. 2012; Erola et al. 2016; Vollmer, et al. 2016; Hooshmand & Udipi 2014; Christopher et al. 2019). At the same time *vice-versa* was also reported. In a study Christopher et al. (2018) have demonstrated how social and informational factors impact the relationship between nutrition knowledge and diet-related perceptions and behaviors. Kruitbosch, et al. (2013) were conducted a study in slums and health centers across central Kampala, Uganda. The overall Wald-test for paternal education showed that there is no significant relation with nutrition of children ($p < 0.111$). Both mid-level education ($p < 0.745$) and high-level education ($p < 0.109$) were found to have insignificant correlation. Al-Agha, et al, (2015) studied children and adolescent of 2-18 years age in Saudi Arabia, they have found that nutritional status of the children were not correlated with fathers' education. In both cases uneducated ($p < 0.816$) and higher educated fathers ($p < 0.907$) the correlation was insignificant.

In this way the correlation between nutritional status of children and education of parents is contradictory. It has been seen from the present investigation that nutrition of the children is not significantly related to the education of their parents. It is evident from some previous studies also that there is no significant relation between parental education and nutrition of the children (Al-Agha et al. 2015). Although the impact of education can't be ignored as it affects our life, income, occupation and standard of living which have direct and indirect effect on the nutritional status of the children.

Conclusion

Tribes are deprived section of society; disparity in their educational attainment and socio-economic status matters in the nutritional status of their children was hypothesis behind present

investigation. It is an alarming situation that after plenty of programs of tribal welfare and supplementary nutrition the tribal children are still lagging behind in nutritional status as 34.9%, 30% and 51.7% of them are underweight, stunted and undernourished.

It can be concluded that among present studied tribe: the parental education have insignificant association with the nutritional status of the children as the Chi-square tests was found insignificant.

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