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Functional Relationship between Income and Health Condition of Children: A Case Study in Salt lake City

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Abstract

Per Capita Income (PCI) is considered as the most important factor deciding status of life. In this article it is shown that there is a marked difference in nutritional level of children (6-14 years) in different PCI group. For nutrition level BMI (Body Mass Index) has been considered. Statistically it has been shown that age-wise increment of BMI level is not proportionate for lower income group and these children has significantly lower BMI than that of higher and middle PCI group. In addition to this parental reaction to the healthcare problem, especially for lower income group, is also alarming.

Keywords: Wellbeing, per capita income, body Mass Index.

Introduction

Physical and Psychological Wellbeing are the most important elements which contribute to the development of children. This is because wellbeing is valuable to build up his or her entire lifespan. While Physical Wellbeing expresses healthy choices about nutrition, hygiene and exercise, Psychological Wellbeing depicts creativity and experiencing a spiritual dimension in life. Absolute increase of 181 million populations were recorded in India during the decade 2001-2011, but there was a reduction of 5.05 millions in the population of children aged 0-6 years during the same period. During the period 1991 -2011, the overall sex ratio showed an improvement from 927 to 940, whereas child sex ratio declined from 945 to 914. These situations are enforcing a need of higher attraction to the health care of the children. Even with a number of schemes, considering wellbeing of children, there were certain differences in terms of nutritional status in the age group between 6 to 14 years.

Vaccination, Malnutrition and Mortality: Immunization is the most important aspect of children as per his or her health condition is concerned. 0-5 years of age group is the most important period of life as in this particular time they build themselves as resistant unit. Therefore some aspect of this time span should be discussed in details.

Coverage Evaluation Survey, 2009, reported that, 62% of the children aged 12-23 months have gone through thorough vaccination process, while among the females it was nearly 60%. Urban areas were at a better condition of this (67.4%) compared to the rural counterparts (58.5%). But surprisingly 8% children of the same age did not have even a single vaccine. It also decreases with increasing birth order. It has definitely a connection between the vaccination and health condition of the children. In United States refusal for this immunization has been recorded. Children who are not getting immunization during school (process of vaccine refusal) have augmented the risk for various diseases like, measles and pertussis and can infect others who are too young to be vaccinated[1].

The chances and incidents of live births less than 2.5 kg at birth were reported in NFHS 3 (National Family Health Survey) as 34.1% of all live births (60% of urban and 40% of rural). As per NFHS 3, the height of about 48% of children under age of 5 years are stunted which is reflecting that, fifty percent of the country's children are chronically malnourished. Acute malnutrition results very less weight of children considering his or her height. 19.8% of children less than 5 years age in the India are exhausted which means that, one out of every 5 children in India is wasted.

Infant and child mortality shows the heath and infrastructural facility of a country. In addition to this it is a prominent indicator of social and economic development of any population. In India, the percentage of infant deaths to total deaths differs significantly from one state to another. At the national level (2010), IMR was 47. It was significantly lower in urban areas (31) than in rural areas (51).

The most important point to note here is the rate of declining IMR from 1990 to 2010. According to National Family Health Survey Subject Reports, No. 11 the lowest and highest no. of survivor per 1000 life birth is found in Uttar Pradesh and Kerala respectively. In West Bengal 82 out of 1000 child died during 12 years of lifespan and it is just below the national average (88).

Study Area: West Bengal is home of about more than 9 crore people. Kolkata is the capital of this state and home of various people. This variation is recognized in terms of origin, caste and of course economic status. Salt lake is a planned township which is incorporated into Bidhannagar municipality.

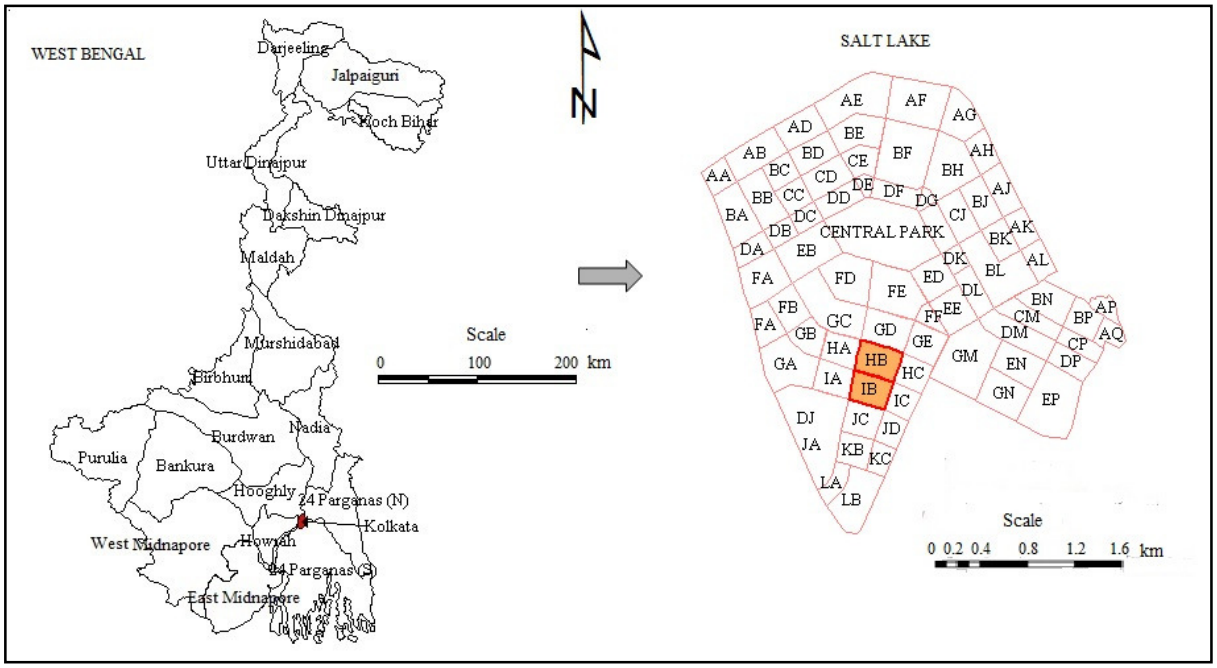

Figure-1
Location map of the study area, shaded zone is the study area in the map of Salt lake

The study area is constricted within two blocks of Salt lake which are HB and IB (figure 1). Salt lake is generally thought as the accumulation of the upper middle class and higher class society. From the questionnaire it was found that there are a considerable number of lower income group people in these two blocks. Slum areas are also found in these two blocks.

Materials, Objectives and Methods

Ample studies have been carried out in the quest of the interrelationship of child wellbeing and other socio economic factors. In United States of America, family income was found more strongly related to children's ability and achievement than to their emotional outcomes. In a case study done in India it was revealed that there is a significant difference in level of maturity between boys and girls in adolescent period [2]. Lower rates of school completion can be found in the group of children who experience poverty during their preschool and early school times. On the other hand children who experience this only in later years have high rate of completion of school[3]. In India it has been observed that urban poor has highest tendency to be out-of-school. In addition to this school dropout boys are generally engaged into financial activities and girls prefer household works[4].

In addition to this the countries like Asia and Africa registered decreased linear growth of BMI (Body Mass Index) for the children younger than 5 years[5].

Responsive Feeding (RF) corresponds to feed infants directly and also assist children who can feed themselves. This process includes the knowledge of hunger and idea of intake capacity. In one study this aspect has been regarded as one of the main nutritional aspect of infant and young children[6].

For the present study a set of data has been collected from Census of India, National Family and Health Survey, District level Household Survey. Primary survey has been carried out with the help of questionnaire. For weight and height of children Weighing Machine and Metre Tape has been used.

India has the highest proportion of undernourished children in the world[7]. This proportion is highest for the children in the slums and in tribal community. Supplementary feeding is one of the most important aspects which give additional nutrients that provide the desirable growth and change in health status [8]. Even sometimes the parents encourage the children to go for work instead of completing the education [9]. Therefore main objective of this study is to find out the degree of relationship between age and nutritional status of the children between 6-14 years age. This particular age group is chosen because it is the most vital time for children for their growth. In addition to this, they have the ability to answer about their food habit and degree of satisfaction about the food. The other objective was to find out condition of disease, and parental reaction to the problem.

To identify the quantitative relation, BMI (Body Mass Index) has been calculated.

$$BMI = w/h^2 \quad (1)$$

Where BMI is Body Mass Index, w (kg) is weight and h(m) is height

BMI is an effective indicator of the nutritional status of the people especially the children. These BMI values for different age group are considered in order to get an idea about the relation between age and BMI for different age group. Bi-variate correlations have been done for all three age group. To obtain the idea about the BMI for different income group anova test has been carried out. The anova test is done to ensure if there is any significant difference in BMI level for the children belonging to different income group (table 1).

Table-1
BMI level for children of different income group

BMI		
High income	**Middle income**	**Low income**
22.00	20.000	18.000
27.77	21.267	18.114
20.66	19.955	15.702
20.18	20.661	21.49
24.51	20.185	16.529
32.68	24.507	20.185
27.21	27.874	19.606
22.22	27.211	20.185
26.45	22.222	20.862
22.40	28.823	18.056
22.98	26.446	21.836
33.33	22.400	19.835
34.71	22.222	15.360
34.72	33.333	16.518
36.69	34.711	17.361
34.57	31.250	18.182
26.67	21.120	15.972
-	29.586	20.480
-	30.178	14.793
-	23.556	17.558
-	22.40	17.778
Average BMI		
27.633	25.234	18.305

From the whole sample the range of PCI was Rs. 1200 to 20,000. For distribution of total sample of 59, 3 groups are taken. The PCI ranges are 1200-2500, 2500-6500 and more than 6500. These 3 groups are designated as lower, middle and upper income group respectively. These groups are selected by discussing about the fulfilment of the requirement with the existing money. The level of satisfaction with the income was considered to form these groups. In high, middle and low income group 17, 21 and 21 children were considered.

Result and Discussion

Bi-variate correlation between PCI and BMI: There is a significant correlation between the age of children and BMI for higher income group. This means that the children get nourishment according to their age. The correlation is significant at 0.01 level of rejection (n=17) i.e. with 99% confidence it can be said that there is significant correlation between these two variables. Explained variance is 47% which is moderately high (figure 2.A). Therefore in addition to the age factor, there are other different factors which decide the BMI of the children. These factors are food intake capacity of children, feeding habit and parental concern. Due to less range of age group it seems that there is an uneven association between age and BMI. The age group between 11-13 is having the best nourishment.

In case of middle income group people the correlation is statistically significant at 0.05 level of rejection (n=21). This means that confidence level of certain significant relationship between age of children of this income group and BMI is 95%. In this particular case the children in 13 year age are well nourished and above the normal BMI (figure 2.B). Explained variance is 25 % which is lower than the aforesaid group.

Most concerning situation is for lower income group children. The desirable trend should follow an upward rising best fit line. For this particular case the trend is negative. Explained variance is 7% (n=21) and it is not statistically significant (figure 2.C). Surprisingly on an average BMI level decreases as the age increases. This particular situation is tremendously harmful for the children because this age group is the most vulnerable for diseases and disabilities.

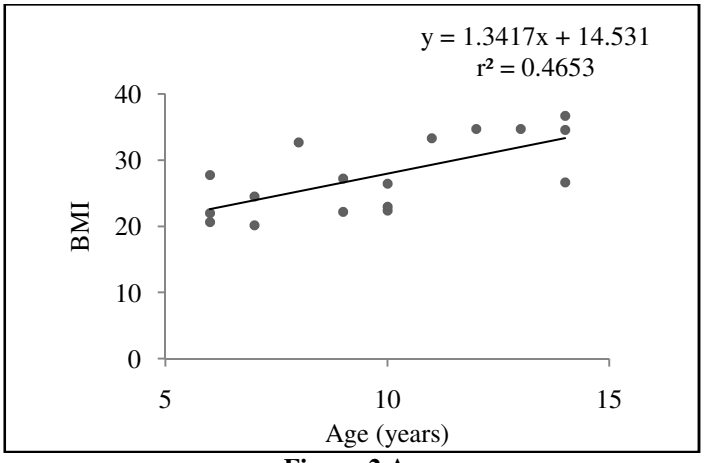

Figure-2.A
Bi-variate correlation between BMI and age of high income group

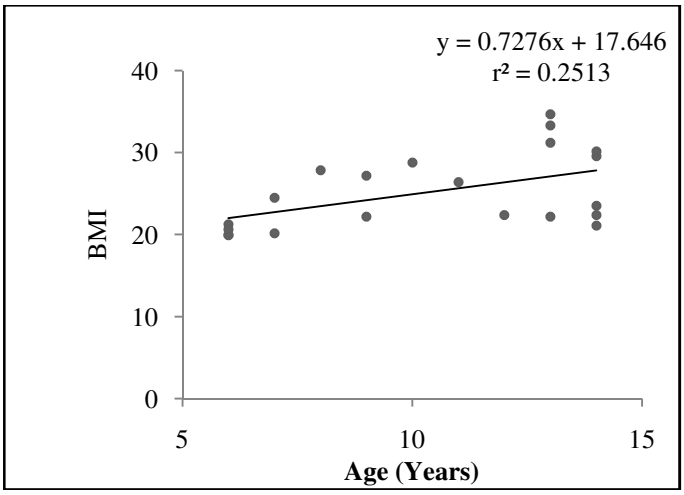

Figure-2.B
Bi-variate correlation between BMI and age of middle income group

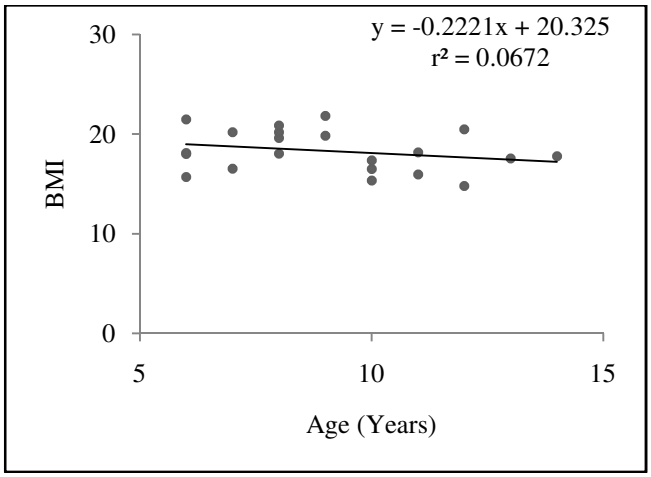

Figure-2
C Bi-variate correlation between BMI and age of low income group

Anova test: Anova test has been done to find if there is any significant difference of BMI in three different income groups. From anova it is confirmed that with 95% confidence level there is significant difference in BMI in three different income groups (table 2). To find out the higher BMI group, mean BMI has been calculated for each income group. From this it is observed that children in higher income group have significantly higher BMI than the other two income group (table 1).

Table-2
Result of anova test

F ratio	Table value (0.05 rejection)	Significance
24.933	3.15	Significant at 0.05 level

Parental reaction to the healthcare problem: Health is the most concerning point of the children as they have less immunity power than the adult persons. Here in the study area the concern of heath consciousness is found in the high income group people. Children of higher income group people do not have any chronic disease when this report was presented. Middle income group people have registered some proportion of chronic disease among the children and that is 19 %. The most pathetic condition is faced by the children of low income group people. 62% of their children have chronic disease (figure 3).

When it is about the treatment, disparity is readily seen. Low income group people mostly neglect the incidence of disease. 5 out of 21 respondents have mentioned that they were not bothered and do not consult doctor. Due to unavailability of resource, i.e. money, people could not take their children to the child specialist. On the contrary 15 out of 17 respondents in high income group have said that they consult child specialist at the time of health issue of children. Hospitals are preferred by the low and middle income group people (figure 4).

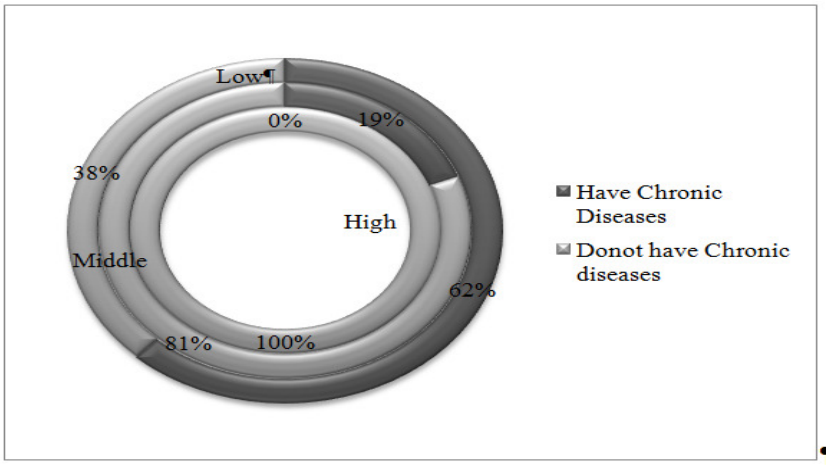

Figure-3
Occurrence chronic disease with variable income

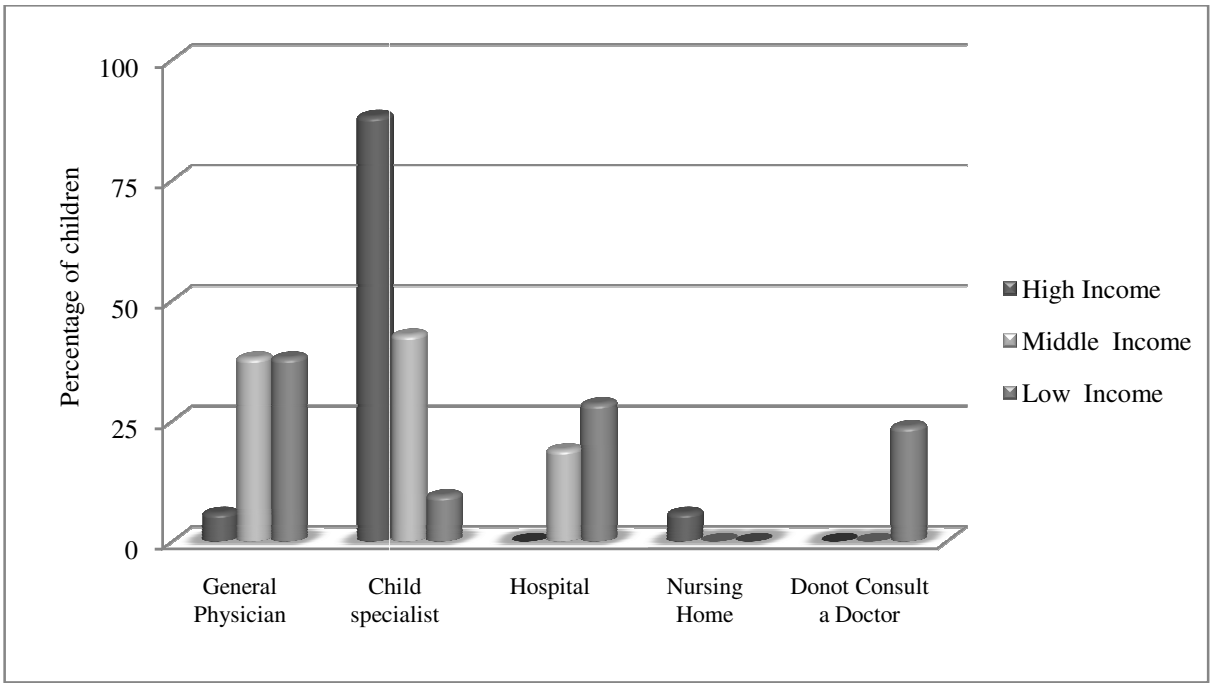

Figure 4
Parental reactions to the health care problem.

Conclusion

It is evident that a major portion of children in lower income group are deprived from getting equal opportunity to maintain a healthy standard of living and to fulfil basic necessities. This is mainly for the financial deprivation of their family. On the other hand, higher and middle income group children having the maximum facilities for a healthy standard of living. To solve this problem Govt. has to take long term policies for enlistment of the lower income group children for their better future. Adequate funds have to be allotted by the Govt. and NGO's to ensure the bottom up approach of the deprived children. Simultaneously, establishment of special schools, non-formal education, and free health care facility should be there to uplift all of them. Local self-government institution should have this strategy for micro level planning and should include the local people to mobilize them from the grass root level [10].

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