

## To Assess the Nutritional Status of Primary School Children in an Urban School of Faisalabad

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### ABSTRACT

**Aim:** To assess the nutritional status of primary school children in an urban area of Faisalabad, the third largest city of Pakistan.

**Methods:** A cross sectional study was performed in a primary school of private sector in a middle class area of Faisalabad. A Total of 432 children between the ages of 4-12 yrs were studied. A systematic random sampling technique was applied for sample collection and standardized technique recommended by Jelliffe was used for assessing nutritional status.

**Results:** In the Prenursery group more girls were stunted than boys, the ratio being 70%:30%, on the contrary under weight was more in boys than in girls, with the ratio of 57%:43%. In the Primary section both stunting and underweight were more in boys as compared to the girls. The ratios were 54.8%:45.2% and 82.9%:17% respectively.

**Conclusion:** Low socioeconomic status, low literacy rate and large family size seem to be associated with poor health status of primary school children. A lot more efforts are required on economic, political, educational and media fronts to improve the nutritional condition of the future generation of Pakistan.

**Keywords:** Malnutrition, primary school, stunting, under weight.

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### INTRODUCTION

Malnutrition contributes directly or indirectly to more than 60% of 10 million child deaths each year<sup>1</sup>. In the developing world, 43% of the children are stunted and 9% are wasted<sup>2</sup>. There are many determinants of malnutrition amongst school going children. These include poverty, illiteracy amongst both parents and environmental factors, diseases, inadequate diet etc, which are even more powerful than genetic predisposition in producing deviations from the reference values<sup>3</sup>.

School going children are at increased risk of malnutrition because of many factors like poverty, lack of maternal knowledge regarding proper nutritional requirement of growing children and poor hygienic practices. Mothers tend to give money to children and they buy poor quality food from canteens or from stalls outside the schools.

Primary school age is a dynamic period of physical growth and mental development of a child. Research indicates that nutritional deficiencies and poor health in primary school age children are among the causes of low enrolment, high absenteeism, early dropout and poor classroom performance<sup>3</sup>.

Thinness corresponds to wasting and indicates acute malnutrition, usually because of insufficient food intake or a high incidence of infectious diseases.

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Stunting results from long term nutritional deprivation inadequate childcare and poor environmental and sociocultural conditions. It is associated with higher morbidity and mortality, delayed mental development, poor educational achievement and reduced intellectual capacity, and is a strong predictor of human capital and social progress<sup>4,5,6</sup>.

### MATERIAL & METHOD

This was a cross sectional study among primary school children of a private sector school in middle class area of Faisalabad which is the third largest city of Pakistan. Its population is 4,177, 246 according to 2010 survey report<sup>7</sup>.

A total of 432 children between the age group of 4-12 years studying in an urban school belonging to middle class income group were included in the study. There were 272 boys and 160 girls in the study group. These were further divided into pre-nursery and primary groups. Pre-nursery group included 160 children between age group of 4-6 yrs. Primary group included 272 children in the age range of 7-12 years. The parents of the children included in the study were informed and consent was taken from them.

Height and weight of each child was measured in the metric system using standardized technique recommended by Jelliffe<sup>8</sup>. Body weight was recorded with an electronic weighing scale to the nearest 0.1kg. Height was recorded by anthropometric rod in the Frankfurt plane to the nearest 0.1cm. The data

collected was entered on a standardized proforma. Data was analysed using the Epi Info 6 software of CDC, Atlanta, USA. Height for age (stunted) and weight for age (under weight) was calculated for each child and compared with the WHO/NCHS standard. Cut off values between  $\pm 2SD$  were considered normal.

## RESULTS

A total of 432 children between the age group of 4-12 years were included in the study, with 160 children in the pre nursery group and 272 in the primary group. The data was analysed using the EPI info 6 software of CDC, Atlanta, USA.

The overall prevalence of stunting in the study population was 45.8% and under weight was 25.4%. In the Pre nursery group, out of 160 children 74(46%) were stunted and 28(17.5%) were under weight. In the Primary group out of 272 children 124(45.5%) were stunted and 82(30%) were under weight.

Table 1. Over all prevalence of stunted and over weight

n=	Stunted	Under weight
432	198(45.8%)	110(25.4%)

Table 2. Distribution according to pre nursery and primary groups: Pre nursery group

Age in yrs	n=	Stunted	%age	Under weight	%age
4-6	160	74	46.25	28	17.5

Table 3. Primary group.

Age in yrs	n=	Stunted	%age	Under weight	%age
7-12	272	124	45.5	82	30

Distribution of stunted and under weight according to Gender of children

Table 4. Pre nursery group

Gender	Stunted children (n=74)	Under weight (n=28)
Boys	22(30%)	16(57%)
Girls	52(70%)	12(43%)

Table 5. Primary group

Gender	Stunted children (n=124)	Under weight children (n=82)
Boys	68(54.8%)	68(82.9%)
Girls	56(46%)	14(17%)

The gender distribution of children showed that in the Pre nursery group out of the 74 children who were stunted 22 were boys (30%) and remaining 52(70%) were girls. While out of 28 under weight children boys were 16(57%) and girls were 12(43%). So there was a significantly higher number

of girls than the boys who were stunted. on the other hand this difference was less obvious regarding being under weight i.e, 57%:43% in boys:girls respectively. This difference is also seen in many previous studies conducted in Asia<sup>9</sup>.

In the primary group out of 82 stunted children 68(83%) were boys and 14(17%) were girls. There were 134 under weight children in this group with 72(54.8%) boys and 62(45.2%) were girls. So in the age group between 7-12 years more boys were stunted and under weight as compared to the girls.

## DISCUSSION

This study was conducted at a small level in an urban area of Faisalabad district of Pakistan and children belonging to middle socioeconomic class were included. Malnutrition continues to be a major problem in Pakistan. In the current study the overall prevalence of stunting was 45.8% and under weight was 25.4%. The prevalence of stunting was quite similar to that of the findings of PMRC National health survey of Pakistan NNS 2011 which revealed that indicators of stunting and wasting were worsening during last 10 years, which showed that 43.7 percent children were stunted; this was relatively high than NNS 2001(41.6 percent). Similar trends observed for wasting, 15.1 percent children in Pakistan were suffering from wasting in NNS 2011 as compare to 14.3 percent in NNS 2001. But luckily underweight rates remained constant during last one decade (31.5%)<sup>12</sup>. Despite a reduction in overall prevalence, child malnutrition remains a major public health problem in developing countries, where a third of all children under five are stunted; 70% of them live in South Asia<sup>13,14</sup>.

The study prevalence is comparable to the 47% prevalence of malnutrition found in a 1993 study among children aged 5-10 years in rural Peshawar, Pakistan<sup>15</sup>. Similarly high prevalence of malnutrition have been observed among school-aged children in low-income developing countries such as India and Indonesia<sup>16</sup>. There have been similar studies done in other countries such as Poland where a comparison of the local children with WHO standard charts have been done<sup>17</sup>. Thus, while generally children below the age of five are considered to be a nutritionally vulnerable age group, older, school-age children may be as nutritionally vulnerable.

The gender difference in pre nursery group (4-6 yrs) showed significantly higher prevalence of stunting among girls 70% than the boys, this is consistent with other studies in South Asia<sup>18</sup>. While the difference in under weight showed more boys 53% than the girls 43% who were under weight. The presence of stunting in early childhood will have a

disastrous effect on the learning ability and these children will do poorly in schools. The child's development which includes several domains such as the sensory-motor, cognitive and social, all of which are likely to be affected. In countries such as ours if a large proportion of our children are affected, the national development is likely to be affected.

In the primary group both the stunting and under weight were more in boys than the girls. This difference is probably related to growth spurt amongst the girls, which is seen earlier than the boys by approximately 2-3 years<sup>19</sup>. This fact was also observed in another study in Malaysia<sup>2</sup>. They hypothesized that the difference in the growth status among boys and girls may be attributed to other factors such as physical activity, food intake and infections. As the majority of the children were from middle income households, their food intake may be inadequate in terms of quality and quantity. If boys were more physically active than girls and in the presence of inadequate food intake (assuming that both the boys and girls had similar inadequate food intake), this may compromise their nutritional status or exacerbate their already poor growth status. Also, in addition to the consumption of inadequate diets, if boys were more susceptible to infection than girls, then they will be at greater risk of poor nutritional status. However, this hypothesis cannot be confirmed in this present study as data on children's food intake, physical activity and medical history was not obtained.

Due to time and resource constraints, the present study did not attempt to explore causative factors responsible for malnutrition.

## CONCLUSION

The prevalence of stunting and under weight in the school going children is found to be consistent with national health survey 2011 and other studies in Pakistan. Although more wider scale studies are required to understand the sociocultural correlates of malnutrition in the school going population of Pakistan.

Findings suggest the need to implement evidence-based child health policy and strategies, prioritizing the poor and socially disadvantaged population. Future national nutritional surveys in the developing countries ought to consider including school-aged children and nutritional component of the child health programs need to be strengthened.

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