

NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN – A CROSS-SECTIONAL STUDY IN MINGORA, SWAT

Muhammad Faisal Afridi¹, Arshad Khushdil², Sara Riaz³, Azra Ehsan⁴

¹ Medical Battalion, Swat - Pakistan.

^{2,4} Combined Military Hospital Lahore - Pakistan.

³ Nutritionist, Hayatabad Medical Complex Peshawar - Pakistan.

Address for correspondence:
Dr. Muhammad Faisal Afridi
Medical Battalion, Swat - Pakistan.

E-mail: fafidi@hotmail.com

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ABSTRACT

Objective: The main aim of the study was to assess the nutritional status of pre-school children in Mingora city of Swat.

Methodology: A community based, cross-sectional study was conducted in Mingora city - an urban area of Swat valley, from April to December 2013, to determine the current nutritional status of pre-school children (2-5years age group). A total of 550 children were selected by convenience sampling method. Anthropometric data was collected about height and weight. It was compared against National Center for Health Statistics (NCHS) standards. It was analysed using SPSS version 16 and Microsoft Excel 2010.

Results: Out of total of 550 children, 46% (n=253) were males while 54% (297) were females. Mean weights of the children ranged from 11.6 to 19.3 kg (± 1.9 kg) and mean heights of different age groups ranged from 85.7 to 111.6 cm (± 3.99 cm). Height for age parameter shows that 88% (n=484) of children are within normal range. Weight for Age parameter shows that 82% (n=451) of children had normal weight for age; 14% (n=77) were underweight; 8% (n=44) of the children were wasted; while 8% (n=44) were stunted.

Conclusion: The prevalence of childhood malnutrition was very low in the geographic area studied. Similar studies in other geographic areas are indicated to establish a complete regional nutritional profile.

Key Words: Pre-school children, Malnutrition, Wasted, Stunted

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INTRODUCTION

The nutrition of preschool children is of considerable importance not only because of concern over their nutrition in formative stage of life but is widely perceived to have a substantial and persistent impact on their physical and mental development and on their health status as adults¹. Growth failure is an important characteristic of childhood malnutrition. Anthropometric measurements especially that of children is particularly important in assessing their nutritional status. In this regard, heights and weights of children, particularly those less than 5 or 6 years of age, are accepted measures for monitoring their growth and nutritional status, and are also considered as an indicator of the nutritional status of the entire community².

Three indicators used for classification by comparison with a reference population are, weight for height, weight for age and height for age³. Low weight for height that is below 2 standard deviation (SD) of the median value of the National Center for Health Statis-

tics Standards (NCHS) International weight for height reference is referred to as Wasting. Malnutrition is still a major public health concern worldwide. Wasting affected more than 50 million children under the age of 5 years, or 8% of all under-fives, in 2011⁴. Underweight is defined as low weight for age at below 2SD of the median value of the NCHS/WHO International reference for weight for age. Stunting refers to shortness that is a deficit or linear growth that has failed to reach genetic potential. It is defined as low height for age at below 2SD of the median value of the NCHS/WHO International growth reference.

In view of the non-availability of the data from the area, we decided to conduct a study to assess the nutritional status of pre-school children in Mingora city of Swat.

METHODOLOGY

This community based, cross sectional study was conducted in Mingora – an urban locality of Swat district. It is mainly hilly area situated about 150 miles from

Islamabad. The entire population of the district is estimated to be around 1.7 million. Dominant ethnic group is Pashtuns, however significant proportion of other ethnic groups also reside in the area, including Kohistanis and Gujars; and there are Hindus and Sikhs as well living in the area. A sample of 550 preschool children was selected from Mingora city, by convenience sampling technique. Children were selected by house to house visits and also from public places like play grounds etc. Informed consent was taken from parents / guardians of the children. Anthropometric measurements were taken using standard methods. The help was taken from the trained paramedical staff for collection of data under direct supervision.

Subjects were made to stand on the platform of Salt-er scale without touching anything. Shoes and heavy clothing were removed. Readings were taken to the nearest of 0.1 kilogram.

The children were made to stand without shoes on the horizontal platform of the height meter rule, with their feet parallel, their heels, buttocks, shoulders and back of head were made to touch the upright part of the meter. The head was held comfortably erect in the same horizontal plane as the external auditory meatus. The arms hung at the sides in a natural manner. The head piece was then lowered gently, pressing hair and making contact with the head. Readings were taken to the nearest 0.5 centimeter. Data from anthropometric measurements were analysed using NCHS, standard of reference³. The indicators of nutritional status used were weight for height, weight for age, height for age. By

the use of the above indicators results, percentages of stunted, wasted, underweight and normal children were calculated. Mean and SD of the height and weight measurements were calculated and data was analysed using Statistical Package for the Social Sciences (SPSS) version 16 and Microsoft Excel 2010. The malnutrition was assessed by standard deviation classification⁵ based on weight for age, height for age and weight for height.

RESULTS

46% (n=253) of the subjects were males while 54% (n=297) were females. Figure 1 shows that mean weights of different age groups of the children ranged from 11.6 to 19.3 kg (± 1.9 kg) and Figure 2 shows mean heights of different age groups ranging from 85.7 to 111.6 cm (± 3.99 cm).

Height for age parameter in Table 1 shows that 88 % (n=484) of children were within normal range (± 1 SD of reference values for weight). Of these, male and female proportion is equal i.e. 44% (n=242) each; while 6 % (n=33) female children were stunted.

Weight for Age parameter in Table 2 shows that 82 % (n=451) of children had normal weight for age, while 14% (n=77) were underweight out of which 4% (n=22) were males and 10% (n=55) were females.

In general, 8 % (n=44) of the children were wasted, while 8% (n=44) of them were stunted and 14% (n=77) were underweight (Table 3).

Table 1: Results of Height for Age (H/A) in percentage

Gender	Normal % (n)	Stunted % (n)	Above Normal % (n)	GRAND TOTAL
Male	44 (242)	2 (11)	0 (0)	46 (253)
Female	44 (242)	6 (33)	4 (22)	54 (297)
Total	88 (484)	8 (44)	4 (22)	100 (550)

Table 2: Results of Weight for Age (W/A) in percentage

Gender	Normal % (n)	Under weight % (n)	Over weight % (n)	GRAND TOTAL
Male	42 (231)	4 (22)	0 (0)	46 (253)
Female	40 (220)	10 (55)	4 (22)	54 (297)
Total	82 (451)	14 (77)	4 (22)	100 (550)

Table 3: Summary of the results Weight/Height, Height/Age and Weight/Age in percentage

Parameters	Normal % (n)	Wasted % (n)	Stunted % (n)	Under weight % (n)	Above Normal % (n)
Weight for Height	90 (495)	8 (44)	-	-	2 (11)
Height for Age	88 (484)	-	8 (44)	-	4 (22)
Weight for Age	82 (451)	-	-	14 (77)	4 (22)

Figure 1: Mean Weights of different age groups

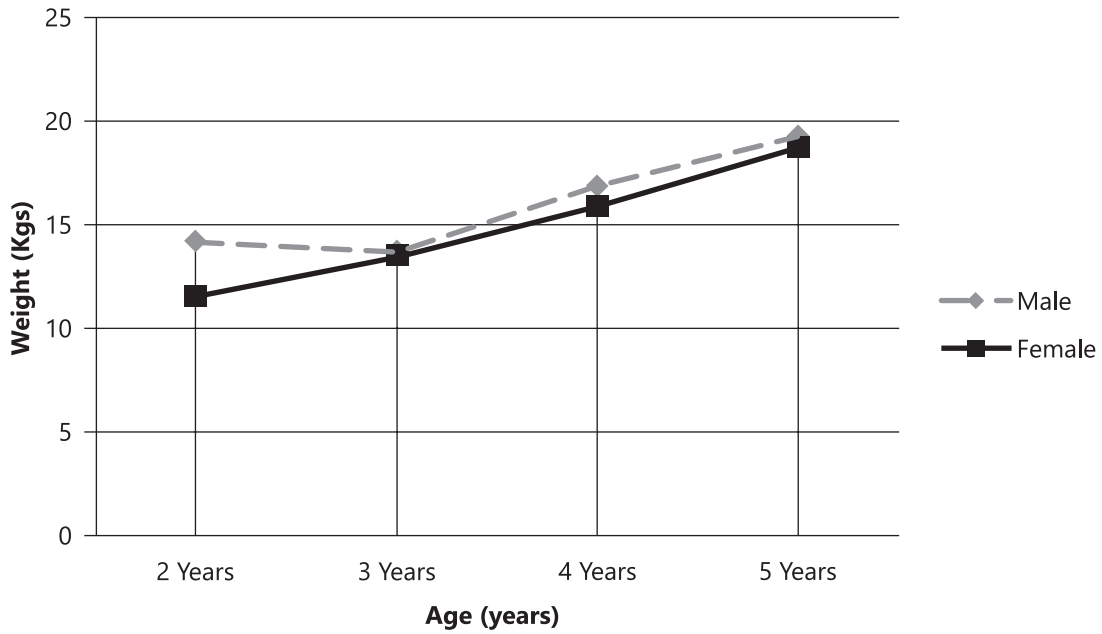


Figure 2: Mean Heights of different age groups

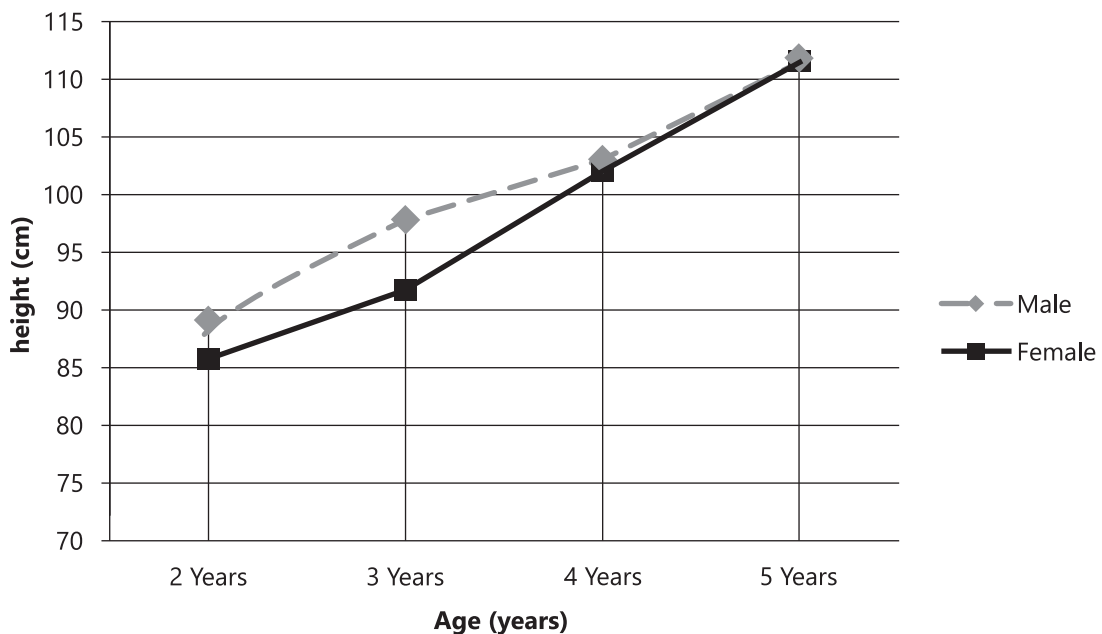
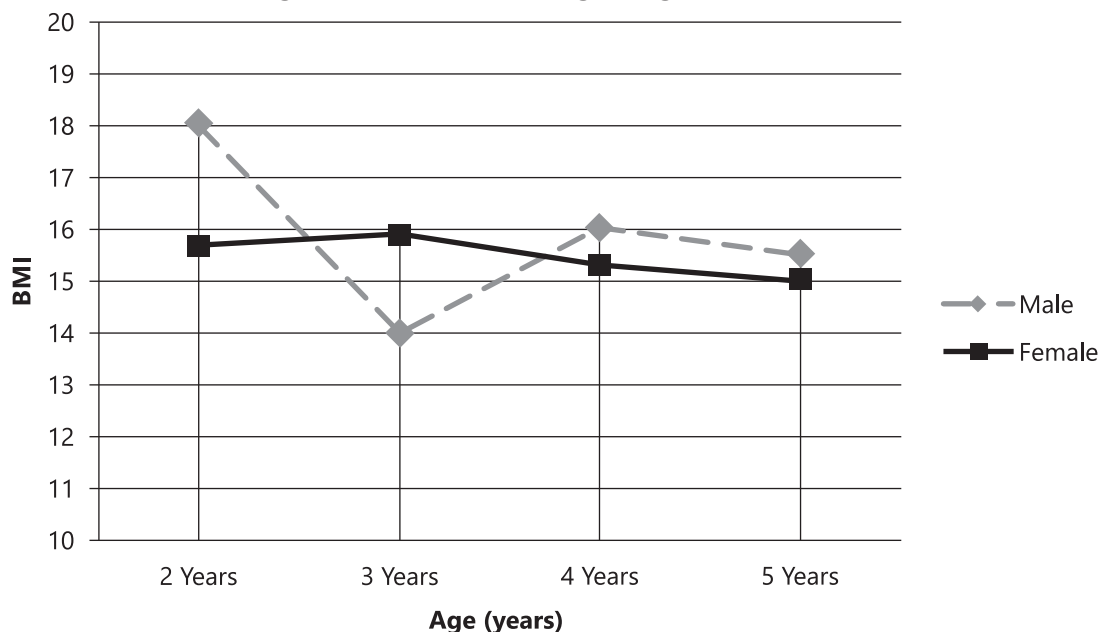


Figure 3: BMI according to Age and Gender

DISCUSSION

Growth assessment of children is considered as a sensitive indicator of health and socioeconomic development of communities⁶. In our study, 8% of 2 – 5 year old children were wasted, 8 % stunted and 14% underweight. The report by WHO shows that 37.7% and 39.1% of preschool children are stunted and underweight respectively⁷. Malnutrition is still a major problem in Pakistan. A report of PMRC National Health Survey of Pakistan (1990–1994), one out of every three children in Pakistan is malnourished, 30–40% of children have low (stunting) and over 14% have wasting and a high proportion are under weight (35%)⁸. Even though the values presented by this research are lesser than WHO reported values, these are not the representative values of the whole population of the area, as the sample was drawn from relatively educated locality.

True picture of nutritional status of the local population could have been depicted with larger sample size and random sampling technique. However due to the prevalent security situation this was not possible. We expect to extend our study in near future after greater logistic security is provided by Pakistan Government in Swat.

Out of 550 children, there were 14% who were underweight. Among male children there were 04% underweight and in female children the proportion was 10%. These figures are less compared to national figures that show that 35% of children under-5 years age are underweight. In countries like India, Nepal, Bangladesh

and Afghanistan 47%, 48%, 48% and 39%, of children under-5 year age were reported as underweight respectively⁹. These figures are the worst around the globe (in developing countries) with Pakistan doing better than its neighbors. A local study done in Abbottabad revealed 21% of children to be underweight and 21 % were stunted¹⁰.

As far height for age is concerned, our study found 08% children stunted. Studies from Afghanistan show that stunting in children is 54%. In Nepal it was 51%, in India 46%, and in Sri Lanka it was 14%. Except for Sri Lanka, the figures regarding stunting are the worst in the world among the South Asian countries.⁹

Our figures are at variance with the national figures which may be attributed to the fact that our study was carried out in an urban population and also due to a small sample size and non-random sampling technique.

CONCLUSION

Although our study shows very encouraging picture of nutritional status of the preschool children, but this may not be the representative of whole population of swat. However our study may provide the baseline data for comparison in future. Other studies may be planned in the light of this study in which population of far-away areas may be included on the basis of random sampling.

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CONTRIBUTORS

MFA and AK conceived the idea, planned the study and wrote the manuscript. SR and AE helped in drafting the manuscript as well as in statistical analysis and data interpretation. All authors contributed significantly to the final manuscript.