Pediatric Anthropometrics: An observational study from Indus Medical college, Tando Muhammad Khan, Sindh, Pakistan

Abstract:

Background: Children constitute a big proportion of human population and they are the future of any nation so their health is of prime importance. Child health care has the special focus in the health care policy of any system. **Study place, duration and design**: The current research was an observation study conducted during July to December 2021 in Pediatric outpatient department at Indus Medical College Hospital Tando Muhammad Khan. **Methods:** Consent was taken from parents and demographic data and anthropometric measurements were carried out and recorded on prepared proforma, frequency and percentage was calculated for various parameters **Results:** There were 956 children evaluated for anthropometric parameters out of which male were 637(66.63%) and females were 319(43.37%). The weight was normal in 603(63.10%), Low in 332(34.73%) and above normal in 21(2.20%) children. The height was seen normal 713(74.5%), short stature was seen in 201(21%) and 42(4.5%) children were taller.

Conclusion: Various abnormalities in weight and height of study children were observed.

Key Words: Anthropometrics, Low weight, Obesity, Short Stature

Introduction:

Normal anthropometric measurements especially weight and height child health are so essential for a prosperous society as these depict the health, nutritional, social and economic status of any country or region on the globe [1]. Adolphe Quetelet, a Belgian anthropologist was the 1st to describe the impact of socioeconomic status on the anthropometric parameters in children in 18th century [2]. Quetelet's work on pediatric anthropometry was followed by various researchers around the globe in 19th century with much progress in this field [3]. Child growth and development is deeply affected by physical activity and the

environment around that is why physical education and training has been a part of child education globally [4]. Many researchers have agreed on certain factors to influence growth and development out of which the socioeconomic status and the lifestyle of an individual are the two most important ones [5]. The height of children from Poland was highly affected due socioeconomic change in the 20th century [6]. Similarly the prevalence of obesity in the children is on rise globally and reported to be 20 % in school age children in some countries [7]. Poor economic status of a family leads to malnutrition while a rich economic status of a family leads to weight gain and obesity [8]. There was lack of data on this topic from our part of land so we manage to investigate the anthropometric parameters in children visiting our pediatric outpatient department at Indus medical college hospital.

Methodology:

The current research was an observation study conducted during July to December 2021 in Pediatric outpatient department at Indus Medical College Hospital Tando Muhammad Khan. Consent was taken in written from parents of children. Patients were selected through non-probability consecutive sampling technique and demographic data and anthropometric measurements using percentile and z-score were carried out and recorded on prepared proforma for the data collection. Children were categorized into normal, low weight and obese on the basis of their body weight similar they were categorized into normal, short stature and taller on the basis of their height. The frequency and percentage was calculated for various parameters and results were compiled and represented in the form of various tables and charts.

Results:

There were 956 children evaluated for anthropometric parameters out of which 637(66.63%) were males and 319(43.37%) were females [Table-1, Fig-1]. Majority of children were 668(69.87%) above 5 years where as 288 (30.13%)

children in our study participants were below 5years of age. The weight was normal in 603(63.10%), Low in 332(34.73%) and above normal in 21(2.20%) children. The height was seen normal 713(74.5%), short stature was seen in 201(21%) and 42(4.5%) children were taller [Table-2, Fig-2].

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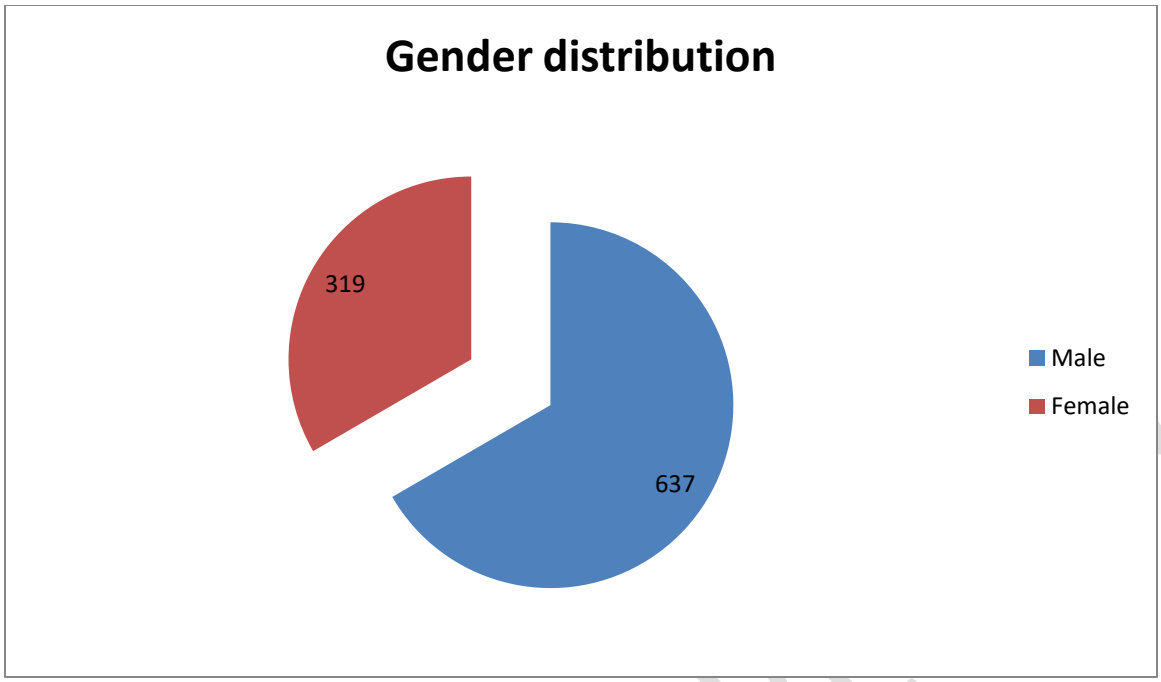

Fig-1: Pie chart representation of gender distribution

Table-1: Demographic data of the patients

Age	Below 5years	Above 5 years	Total patients
	288 (30.13%)	668(69.87%)	956(100%)
Sex	Male	Female	
	637(66.63%)	319(43.37%)	

Table-2: Weight and height of distribution in study patients

Weight	Normal	Low weight	Obese
	603(63.10%)	332(34.73%)	21(2.20%)
Height	Normal	Short Stature	Taller
	713(74.5%)	201(21%)	42(4.5%)

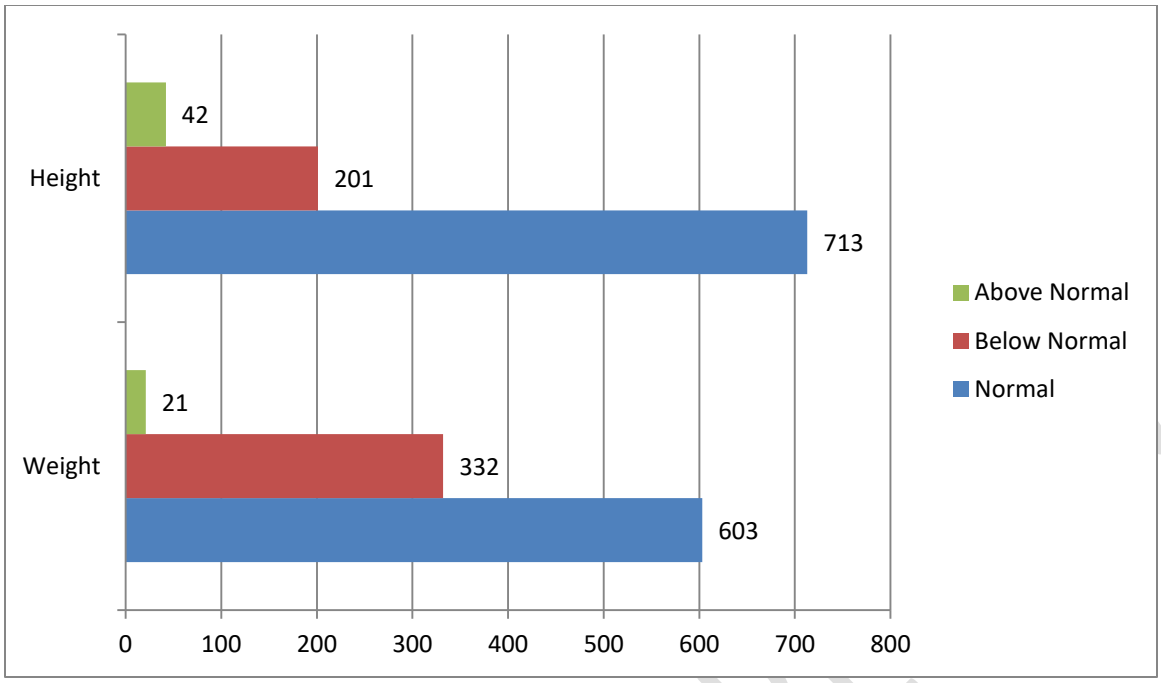

Fig-2: Bar chart distribution of anthropometric parameters

Discussion:

Physical development is reported to be modified by social factors with poor socioeconomic status associated with growth retardation and lower weight and a rich socioeconomic status with obesity and weight gain [9]. The previously published data shows that the prevalence of stunting was 14% and the obesity was 5% in Pakistani children which is consistent with our findings [10]. There are approximately 156 million stunted children on the globe out of which 89 million belong to south Asia [11].Obesity in children is assumed to result from increase intake high caloric diet, fatty meal, intake of excessive soft drinks, low physical activity affecting the physical, social and mental health of children profoundly along with unsatisfactory performance in academic career. Obesity in children may lead to many diseases like metabolic, cardiovascular, hepatic, kidney, neurological, orthopedic and pulmonary [12]. Short stature which is defined as a child's height above two standard deviations below mean age, or <3rd percentile and the same is known as Idiopathic short stature when the etiology unknown.

Majority of children presenting with short stature have usually constitutional growth delay, familial short stature or short stature of idiopathic nature only 5% children have some identified cause whereas 95% are of idiopathic nature[13]. The identifiable etiologies for short stature include celiac disease, growth hormone deficiency, genetic causes, hepatic failure, hypothyroidism, renal diseases and Turner syndromes [14]. We could not work on finding etiological factors responsible for various abnormal anthropometric parameters in our study children and we could not compare the ratio or proportion between the male and female children which were our study limitations. Researchers are further planning a long term study project on this topic in the near future covering wider range of parameters

Conclusion:

Abnormalities in anthropometric parameters like weight above and below normal and height as taller as well as short stature were observed in our study children

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard, parental written consent has been collected and preserved by the author(s).

Recommendations:

Authors recommend similar sort of the study from other districts of Sindh province especially, the remote areas. Studies are also recommended from other provinces of Pakistan so that a clear picture of the pediatric community may be drawn and the policy maker may be compelled to design proper programs for child health care.

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