

Anthropometric Measurements in Children and Their Relationship to Ocular Refraction

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Introduction:

Height and weight are usually considered important parameters of children well being. Variable anthropometric parameters were subjected to many studies as regards their effect on the psychological, cognitive, and visual state of children.

Patients And Methods:

100 children were subjected to the study with age range 5-12 years old. They were collected from the out-patient clinic of ophthalmology of Ain Shams University Hospital.

Height, weight, BMI, skull circumference and cycloplegic refraction were recorded for each child.

Cases were divided according to the refraction state into 3 groups:

1. Emmetropes (no error of refraction).
2. Hypermetropes (long sight) 3-Myopes (short sight).
3. Cases with astigmatism were converted into the spherical equivalent into either myopes or hypermetropes.

This study discussed growth in children as regards somatic, neurological and visual development. Determinants of growth were reviewed which are genetic factors, environmental factors including living conditions, state of nutrition, external insults and effect of diseases. (Silventoinen et al; 2001, Richard et al; 2003).

As regards ocular refraction; which is known by the position of focus of the incident parallel rays entering the eye from the object of regard, it is either:

Emmetropia; were the focus is on the retina without any effort and hence the visual acuity is sharp.

Hypermetropia; were the focus is behind the retina, but with the effort of accommodation can be brought on the retina.

Myopia; were the focus is in front of the retina and the distant vision is blurred.

Astigmatism; were there are more than one focus.

Ocular refraction is affected by four variables; corneal power, lens power, axial length of the eye-ball and depth of the anterior chamber. (American academy of ophthalmology; 2004-2005).

Results And Discussion

Our results showed that the anthropometric measurements were proportional to age and statistically correlated as $p < 0.05$ in all the studied groups. However, they were generally less than those recorded in the survey done in 2002 for the standard growth curves for Egyptian children and adolescents (Isis Ghaly et al. 2002), probably due to different socioeconomic levels in the two studies.

No statistically significant association was found between any of the anthropometric measurements and ocular refraction in all the studied groups as $p > 0.05$. This is in agreement with most of the reviewed researches though many of them found a positive correlation with the axial length of the eye-ball which can be explained by the ability of the eye to do emmetropization.