

# Comparative Morphometric Characteristics of Anthropometric Indicators of Childhood in Females and Males (Literature Review)

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**Abstract** Physical development is an integral indicator of the health of a growing organism. The childhood period of postnatal development has an important role in the formation of reproductive functions and social status, and this period also determines the physical and moral state of the future person. The study of the physical development of children in various environmental conditions is an urgent problem. Complex morphological and functional signs characterize, first of all, the ratio of total indicators, since they determine the structural, mechanical and functional qualities of the child's body.

**Keywords** Body length, Body weight, Chest circumference, Abdominal circumference

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## 1. Introduction

Among the primary theoretical and scientific-practical problems of medicine and human ecology, an important place is given to the problem of identifying specific, nonspecific and constitutional reactions to the impact of environmental factors. The priority task is to create conditions for the survival of humanity as a whole, and to ensure sustainable development. For the full implementation of the genetic program of human development, social and environmental conditions adequate to the genotype are needed.

## 2. The Main Results and Findings

One of the leading reasons for the deterioration of the health status of children and adolescents in recent years may be the growing morbidity of pregnant women, indicating the relationship between the level of health of children and a complicated family history, which confirms the need for dispensary observation, rehabilitation and treatment-and-prophylactic measures, which should begin with early childhood and have a family character [Kaznacheev V. P., Peterson V. D., Selyatitskaya V. G. 2004]. The identified deviations in the physical development and health of children born to women who were ill during pregnancy are more pronounced in girls than in boys. Consequently, the diseases that a pregnant woman has can contribute to the accumulation of negative changes in the

state of health not only in the first, but also in a number of subsequent generations, especially of the female sex. A comparative analysis of the level of sexual development of adolescent boys born to women who were healthy or sick during pregnancy showed that the onset of the development of secondary sexual characteristics in them was manifested from 10.5 and 11.5 years of age, respectively. By the age of 14, boys born to healthy mothers had a more intensive development in all considered characteristics (development of pubic hair, development of hair in the armpit, degree of voice mutation, development of Adam's apple, development of facial hair) than adolescent boys. Those born by women who were sick during pregnancy; 6 of these boys had no pubic or armpit hair. Among boys born to sick women, 5 had varicocele, and 4 had cryptorchidism. The sequence of the appearance of secondary sexual characteristics in adolescent boys from the two groups was the same. The results obtained indicate that deviations in growth and development in children born to mothers who were sick during pregnancy are manifested both during the neonatal period and at the age of 7, as well as 14 years, which coincides with a higher frequency of occurrence of disorders in their condition. health, including reproductive health. This connection between negative manifestations in the physical development and health of adolescents is quite natural. It is known that all biological functions in a child's body are in one way or another related to body size, organ and tissue growth processes, therefore, in general, physical development serves as the most important integral criterion for the adequacy of growth and development to the external conditions of a changing environment. Any deviations in physical development indicate a relative disadvantage in the state of health and should be taken into account.

The results of the studies of individual morphological and functional indicators of newborns, depending on the environmental situation, indicate the non-random nature of differences in the characteristics of body weight, head circumference, chest and abdomen, the levels of erythrocytes and hemoglobin in the blood and the Apgar sign, which is more pronounced in newborn boys. The study of the temporal dynamics of the studied characteristics indicates an increase in the levels of connections of individual signs of newborns with the ecological situation from 1985 to 1991, which can be explained by the manifestation of the urban factor, the accumulation of the effect of anthropogenic load over time and the nature of events in the political history of Russia. In the course of the research, it was found that most of the morphological and functional signs of newborn children are characterized by a temporary dynamics of a decrease in their level, starting from the middle of the 1980s. The abdominal circumference indicator demonstrates the opposite pattern of monotonic increase, which indicates a decrease in the development of the musculoskeletal somatic component of the body in newborns with an increase in the fat component. Areas with high and low levels of indicators of physical development of newborns have been identified. The main height and weight characteristics of newborn boys from the regional center exceed in size those of newborns from regional centers and villages. The main morphological and functional indicators of newborns from areas with critical environmental situations have higher average values than those of newborns from areas with satisfactory environmental situations, which is more pronounced in boys. The temporal dynamics of intergroup variability of anthropometric indicators of newborn children from areas with different ecological situations is characterized by a slight increase in the levels of connections of their individual characteristics with the ecological situation. By the end of the 20th century, the average values of the anthropometric characteristics of newborn boys and girls in areas with different ecological situations are leveled, which can be explained by a decrease in anthropogenic load in this time interval due to the general economic decline in production.

The main purpose of this article is to examine some of the determinants of anthropometric indicators in children in Ethiopia. (Ahmadi Davod, Amarnani Ekta, Sen Akankasha 2018) Malnutrition is a major contributor to infant mortality in Ethiopia. The currently established nutritional status of children is assessed by four anthropometric indicators. However, there are other factors that affect the anthropometric state of children. Growing Nutrition for Mothers and Children (GROW), a survey of 1,261 mothers and 1,261 children, was conducted in Ethiopia in 2016. Based on the data collected, GROW's goal is to improve the nutritional status of women of reproductive age (15-49 years) and boys and girls under 5 years of age in Ethiopia. To investigate the relationship between various factors and childhood anthropometric indicators, this study uses a variety of statistical methods such as ANOVA, T-test, and

linear regression. Child gender (confidence intervals for (wasting = -0.782, -0.151; stunting = -0.936, -0.243) (underweight = -0.530, -0.008), child's age (confidence intervals for (wasting = -0.020, 0.007; stunted height; = -0.042, -0.011) (underweight = -0.025, -0.002), MUAC for mother (confidence intervals for (wasting = 0.189, 0.985; BMI for age = 0.077, 0.895), mother's education (stunting = 0.095, 0.897; it was found that underweight = 0.120, 0.729) and open defecation (stunting = 0.055, 0.332; underweight = 0.042, 0.257) are significantly associated with anthropometric indicators. The mother does not matter in the aforementioned anthropometric indicators of children. Depending on the choice of the child anthropometric indicator, various conclusions were drawn that demonstrate the relationship between each factor and the child's nutritional status. and that the child's gender, age, region, open defecation, and the mother's MUAC significantly increase the risk of the child's anthropometric parameters. Highlighting factors affecting child malnutrition will help inform future policies and programs to address this serious problem in Ethiopia.

Akombi BJ, Agho KE, Hall JJ (2017) The authors look at stunting, wasting and underweight in sub-Saharan Africa. One third of all malnourished children in the world live in Sub-Saharan Africa (SSA). The aim of this study was to systematically review studies to identify factors associated with stunting, wasting and underweight in SSA, and to contribute to the available evidence for the design of effective interventions. This systematic review was conducted using the 2015 Preferred Reporting Elements for Systematic Reviews and Recommendations Meta-Analysis (PRISMA). Five computer bibliographic databases were found: Scopus, PubMed, PsycINFO, CINAHL, and Embase. The included studies were assessed using eight quality criteria derived from the Strengthening the reporting of observational studies in epidemiology (STROBE) checklist: sample size, sampling methodology, response rates, outcome measures, statistical analysis, confusion control, study limitation, and ethical consideration. Results received: Of 4910 articles, five databases, 49 studies met the inclusion criteria. The most persistent factors associated with stunting in childhood, wasting and underweight in SSA were: low level of education of the mother, age of the child, gender of the child (male), welfare index / SES (poor household), long duration of breastfeeding (> 12 months), low birth weight, maternal age (<20 years), drinking water source (not improved), low maternal BMI (<18.5), birth weight (small), episode of diarrhea, poor paternal education and residence (countryside). Thus, the main factors that predispose a child to insufficient physical development were identified, they are multisectoral. Achieving sustainable improvements in child nutrition in CCA requires a holistic, multipurpose, community-based approach that targets the drivers of malnutrition, thereby setting the region on track to achieve the WHO global nutrition goal by 2025.

### 3. Conclusions

1. Perinatology in recent years has acquired the status of one of the important priority areas of both world and domestic pediatrics.
2. The human fetus develops in difficult conditions of relationships both with the mother's body and with the environment, therefore, the protection and strengthening of the health of children should be carried out taking into account the health of the mother, her lifestyle, place of residence, the course of pregnancy and childbirth.
3. One of the most important factors in a comprehensive assessment of a child's health is physical development. The physical development of a child as a set of various anthropometric indicators characterizing his growth and development is due to a complex of factors, among which hereditary factors, including the physical development of both parents, the somatic and obstetric-gynecological status of mothers, play a major role.
4. The presented literature review provides an analysis of modern domestic and world publications from databases: Scopus, Springer Nature, Pubmed, Google scholar, etc. on a selected topic.

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