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Original article

THE IMPORTANCE OF THE MONITORING THE GROWTH AND DEVELOPMENT OF INFANT

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Abstract

Aim. The growth and development of infants constitute a fascinating process characterized by rapid changes, both quantitative (physical) and qualitative (cognitive, social, emotional, etc.). Understanding what happens in the child's first year of life has required scientific discoveries and progress in various fields (medical, nutritional, environmental, etc.). Thus, the growth and development of infants are influenced by genetic factors, environmental stimuli, as well as caregiving practices. The proposed case study tracks the progress of a child's first year of life, highlighting aspects related to growth and development.

Methods. The studied infant is a girl born at full term, weighing 2700 grams and measuring 50 centimeters. It appears that the infant included in the research had a favorable evolution of growth and development in the first year of life, as evidenced by monitoring weight, length, head circumference, as well as other signs of motor and cognitive development.

Results. The environment created by the parents provides the child with appropriate emotional and affective development for her age; the child is healthy and happy.

Conclusions. Age-appropriate physical activity can contribute to the child's growth and development, with benefits at the level of motor development (muscle development, etc.), cognitive development by influencing learning processes, etc. Another positive effect of engaging in physical activity at such a young age could be the possibility of forming long-term healthy habits. We recommend that the infant's physical activity be in line with their age and be carried out safely and supervised to avoid incidents with negative consequences.

Keywords: infant, growth, development

Introduction

The growth and development of infants is a fascinating process characterized by rapid changes, both quantitative (physical) and qualitative (cognitive, social, emotional, etc.).

Monitoring an infant's progress is essential to ensure healthy and harmonious growth and development, enabling the early identification and intervention for any developmental delays or health issues (UNICEF). Additionally, regular monitoring provides parents and families with reassurance that their infant is developing appropriately and that any disorders can be addressed effectively and promptly (Liu et al., 2017).

The study *"Use of Growth Charts for Assessing and Monitoring Growth in Canadian Infants and Children: Executive Summary"* (2004) supports the idea that growth monitoring involves regular measurements of weight, height (or length), and head circumference, where applicable, to assess the infant's progress over time and to detect significant deviations from growth standards.

After reviewing the specialized literature, it was found that both the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) have developed growth and development standards. These standards are useful for identifying malnutrition issues, such as underweight or overweight conditions, as well as detecting delays in neuro-motor development.

The case study examines the growth and development during the first year of life of a full-term baby girl (37 weeks and 4 days) delivered via cesarean section. At birth, she weighed 2740 grams, measured 50 cm in length, had a head circumference of 33 cm, and presented in a cephalic position. Her APGAR score at birth was 9 out of 10.

Research Question

What is the infant's growth and developmental trajectory according to standard growth charts (WHO), and what significant deviations can be identified in weight, length, and head circumference compared to age-appropriate percentiles?

Results

After monitoring growth throughout the first year of life and collecting longitudinal data, the results (figures 1–3) highlight that the infant under study exhibits favorable development in relation to the growth charts for weight, height/length, and head circumference.

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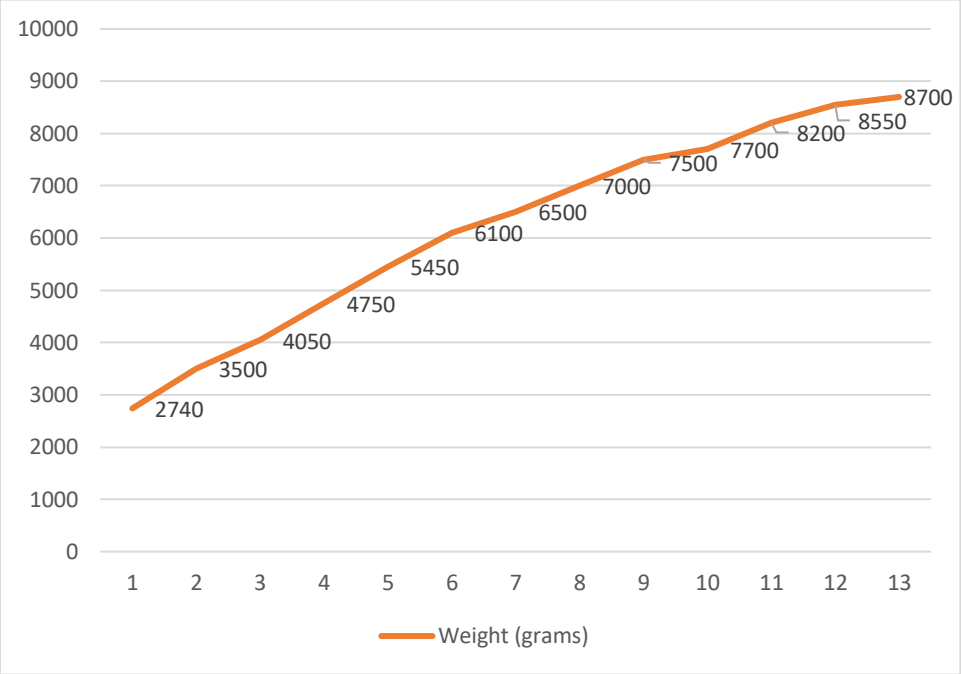

Figure 1. Weight progression

From the weight progression chart (figure 1), we observe that the small differences between the recorded weight gain and the recommended values suggest that the infant generally grew harmoniously. Although there were some minor fluctuations—both above and below the expected values—in various months, these variations are not significant and do not appear to indicate major feeding issues.

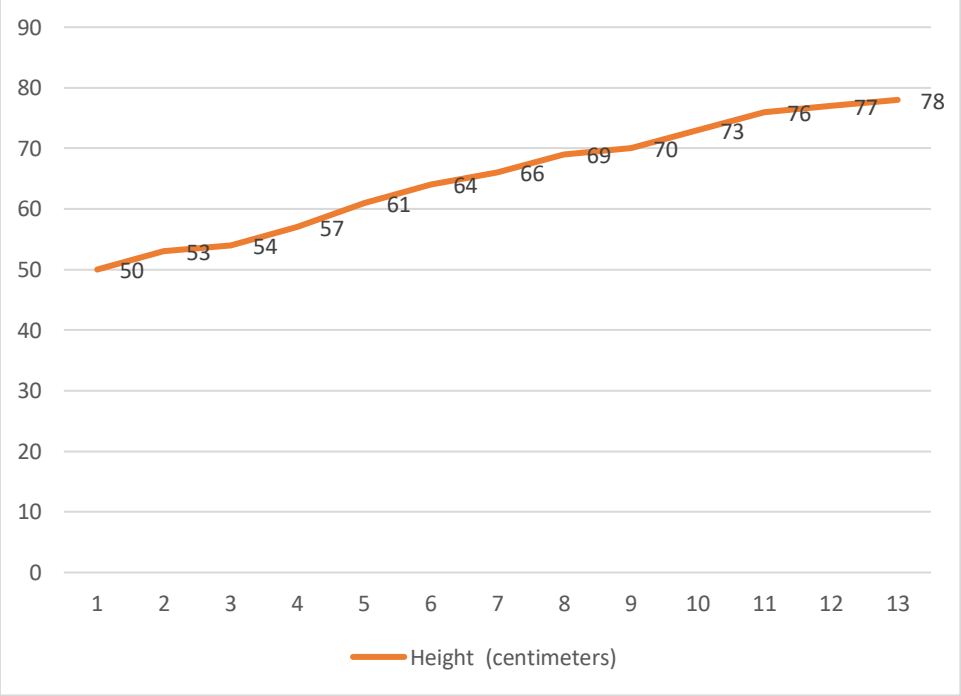

Figure 2. Height/Length progression

As can be seen in Figure 2, the infant's height/length showed a steady upward trend from birth to 12 months of age, reflecting significant physical development during the first year of life.

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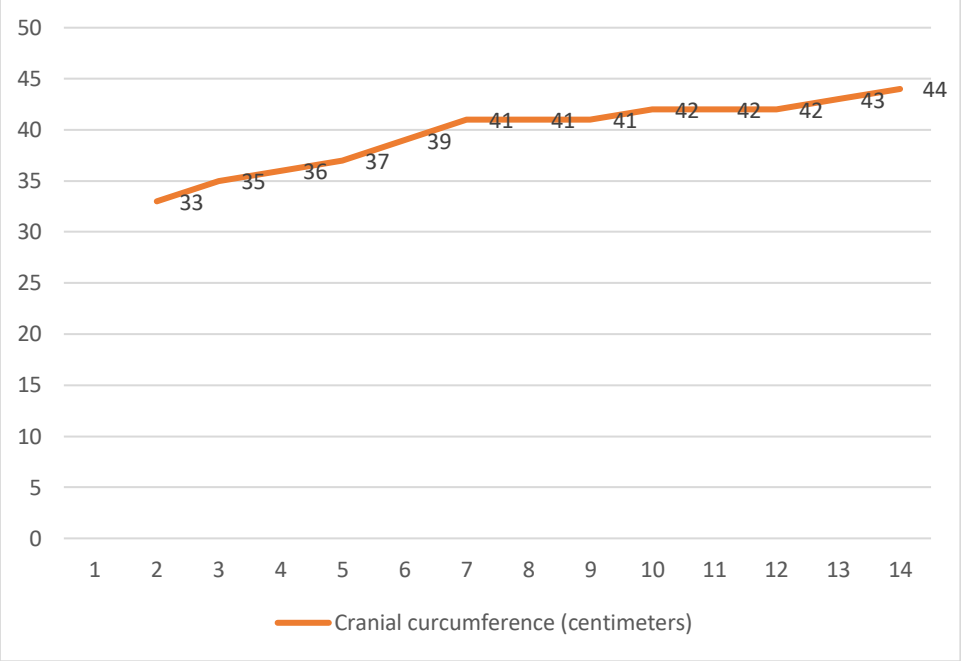

Figure 3. Head circumference progression

Regarding the head circumference progression (figure 3), it can be noted that growth is more rapid during the first six months and slows down during the second half of the first year of life. Nevertheless, the measurements remain within international reference standards.

For the statistical analysis of the infant's first year of life, the Pearson and Mann-Whitney U tests were used (Tables 1 and 2).

Table 1. Pearson's correlation analysis

	Age (months)	*Weight (g)*	*Height/Length (cm)*	*Head circumference (cm)*
Age (months)	1.000	0.989	0.994	0.950
Weight (g)	0.989	1.000	0.995	0.980
Height/Length (cm)	0.994	0.995	1.000	0.963
Head circumference (cm)	0.950	0.980	0.963	1.000

According to the Pearson correlation analysis (table 1) of the parameters studied, it was found that the infant's physical development follows a consistent and predictable pattern, with weight, length, and head circumference increasing in synchrony with age.

To conduct a detailed analysis of the presented data, the non-parametric Mann-Whitney U (table 2) test was also used. This test is applied to evaluate and compare two independent groups (the studied infant and the WHO reference averages for each month) in order to determine whether significant differences exist between them.

Table 2. Analysis using the Mann-Whitney U test

Analyzed Parameter	*U-value*	*z-score*	*p-value*
Weight	69	-0.76923	0.4413
Height	77.5	0.33333	0.7414
Head circumference	58	-1.33333	0.18352

Following the application of the Mann-Whitney U test (table 2), the results indicate that there are no significant differences between the infant's parameters (weight, length, and head circumference) and the World Health Organization (WHO) reference data.

Conclusions

Observing an upward trend in growth and development in accordance with WHO percentiles is an encouraging sign that the infant is developing appropriately for their age and gender. This trend suggests that both the living environment and the care received are conducive to healthy development.

The results presented through the charts, as well as the statistical analysis of weight, length, and head circumference, indicate that the infant's growth and development fall within the limits of standard growth charts, showing no significant discrepancies that would require additional attention. These findings support the idea that home care, daily routines, and proper nutrition have played a crucial role in ensuring normal and healthy growth.

It is important to continuously monitor the infant's anthropometric progress to detect any deviations or health issues at an early stage and to intervene appropriately if necessary.

Authors' Contributions

All authors have equally contributed to this study.

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