Nursing Nutritional Assessment in Early Childhood: The Association between Nutritional Status and Physical Activity

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Abstract

The identification of nutritional risk and the guarantee of continuous growth monitoring make nutritional assessment an essential tool for professionals to know the health conditions of pediatric patients. Physical activity and physical inactivity are known to be studied in various groups of people. Children and adolescents have received special attention, because at this stage habits and behaviors are formed and reflect to adulthood. Objective: to relate the nutritional assessment performed by nurses and the level of physical activity of schoolchildren aged 7 to 9 years, as well as to systematize, through protocols, the assessment of nutritional status of children aged 7 to 9 years in the public network of Ponta Grossa Parana - Brazil. Methodology: This is a cross-sectional study of quantitative approach, using anthropometric data survey of children from 7 to 9 years of public school in the city of Ponta Grossa - Parana - Brazil, from May 2014 to December 2016. Results: Of the 752 children surveyed, (60.11%) had eutrophy, (1.86%) thinness and (0.53%) marked thinness. (13.83%) overweight, (4.92%) obesity and (18.75) severe obesity. Regarding the level of physical activity (94.5) presented low level of physical activity, (0.93%) moderate activity and (4.12) no activity. Conclusion: It is necessary the multiprofessional participation, especially of the nurse in the nutritional assessment of children, so that there is an early diagnosis of the nutritional status of children in school, to be outlined strategies to prevent obesity and seek to reduce the incidence of this disease in adulthood.

***Keywords:** Nursing; Nutritional Assessment; Anthropometric Measurements; Child Nutrition; Motor Activity*

Introduction

According to the Manual of Nutritional Assessment of Children and Adolescents of the Ministry of Health Brazil [1], the growth process is complex and multifactorial, encompassing the genetic makeup of the individual, hormonal, nutritional and psychosocial factors. Nevertheless, the child usually grows in a very predictable way. Deviation from this normal growth pattern may be the first manifestation of a large variable of both exocrine and endocrine diseases.

The assessment of nutritional status has become increasingly important in establishing risk situations, in nutritional diagnosis and in planning health promotion and disease prevention actions. Its importance is recognized both in primary care, to monitor the growth and health of children and adolescents, and in the early detection of nutritional disorders.

Identifying nutritional risk and ensuring continuous growth monitoring make nutritional assessment an essential tool for healthcare professionals to know the health conditions of pediatric patients. By monitoring them, it is possible to gain knowledge of their growth pattern, an important tool in the prevention and diagnosis of nutritional disorders [1].

The early development of overweight and obesity has been alarmingly increasing among children and adolescents worldwide, being a public health problem that can lead to short and long term damage and is an important predictor of obesity in adulthood. This growing increase in overweight can be explained by environmental and behavioral factors, including: reduced physical activity and the adoption of inappropriate eating habits, with the increase of energy supply through the diet [2].

It is known that the level of physical activity and the prevalence of physical inactivity are studied in several groups such as children, adolescents, adults, and patients with chronic degenerative diseases. Children and adolescents have received special attention, as it is at this stage of life that habits and behaviors are formed and reflect to adulthood [3].

Given this, there is a prevalence of health risk behavior in children and adolescents correlated with insufficient levels of physical activity, inadequate eating habits, among others [4].

Given the above, it is observed that there are different approaches to child care and nurses should play a key role in this care, started from the intrauterine phase, through prenatal nursing consultations and continuing to this care in growth and child development follow-up consultations [5].

In general, nursing consultations in pediatrics are made measurements of anthropometric indices, which include weight, height and skin folds. The nurse's evaluation should be periodically made in an attempt to investigate changes arising from diseases that trigger abnormalities in the morphological and structural structure of the infant's body. For the nurse, this assessment is constituted by the food history, the physical examination directed to the identification of anthropometric indices. Such assessment is made with the purpose of monitoring child growth and development and, at the same time, establishing constant monitoring of anthropometric variables, considered significant health indicators [5].

Aim of the Study

The study aims to relate the nutritional assessment performed by nurses and the level of physical activity of schoolchildren aged 7 to 9 years, as well as to systematize, through protocols, the assessment of nutritional status of children aged 7 to 9 years in the public network of Ponta Grossa - Parana - Brazil.

Materials and Methods

This research is an umbrella project, which is in progress, consisting of five subprojects, this being the first phase of the initial project.

This is a cross-sectional study of quantitative approach, using anthropometric data survey of children from 7 to 9 years of public school in Ponta Grossa - Parana - Brazil.

Data were collected from May 2014 to December 2016. Students are selected according to the inclusion and exclusion criteria, namely: being 7 years old to 9 years old and enrolled in the municipal public school system; and the second, non-signing of the Informed Consent Form (ICF) by the guardians, as well as expressing the non-acceptance of their participation in the research, not having the researched age and full-time schools.

The sample consisted initially of 841 students, being these students from 2nd to 5th grade, but there was a need to exclude 89 students by the exclusion criteria, leaving a sample of 752 students.

With regard to the city areas, 92 children were in zone 1, 66 of zone 2, 51 of zone 3, 35 of zone 4, 113 of zone 5, 152 of zone 6, 107 of zone 7 and 136, as shown in figure 1 showing the location of schools on the city map.
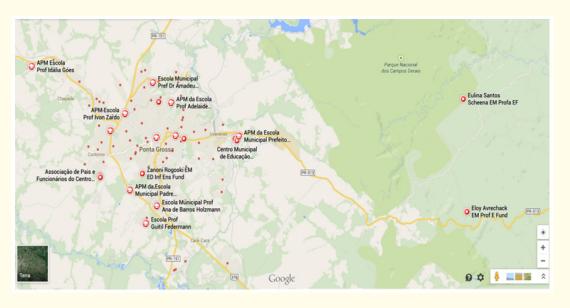

Figure 1: *Location of the Municipal Schools of Ponta Grossa- Parana - Brazil, 2019.*
Source: Google Maps, 2019.

The selection of participating schools was made by random sampling by region of the city, totaling 30 municipal schools, which had students enrolled in the morning and afternoon, requiring the exclusion of full schools due to the implementation of this teaching method.

Data collection occurred in two steps. The first involved explaining how the anthropometric survey of the research participants would be done, the delivery of the consent form to the parents or guardians of the child, a document requesting information about the parents or guardians, birth of the child, which should be completed and returned.

The second stage consisted of three substeps. The first approached the students who brought the completed information document and involved completing the Previous Day Eating Questionnaire (QUADA) and the Previous Day Physical Activity Questionnaire (QUAF-DA), a questionnaire validated by the Food Behavior Research Group - UFSC (2013) [6]. The second substep involved the evaluation of the anthropometric measures defined by the World Health Organization [7], which were weight, height and BMI. For these measurements, each child presented the minimum of clothes, and an anthropometric balance was used for weight and height, neither as a measure. Cescorf brand adipometer, with sensitivity of 0.1 mm, with reading range of 88 mm and pressure 10 g/mm^2, applied in the subscapular and triceps, and also the circumferences of the brachial, waist and hip with a simple tape measure.

Data were analyzed using a SPSS statistical program, using the following methods:

- Normality test: Opted for the use of Spearman correlation;
- Descriptive analysis: Initial stage of the analysis used to describe and summarize the data.

This research was approved by the Research Ethics Committee of Ponta Grossa State University - Parana - Brazil, under number: 380.228 and complies with the National Health Council 466/12.

Results and Discussion

Of the 752 children who participated in the survey 426 (56.64%) were female and 326 (43.35%) male, and of these 690 (91.76%) were white and 62 (8,24%) were black; the age ranged from 7 years to 9 years. Regarding the school period there was a predominance of 170 (22.60%) of the children attending the 2nd grade, the others are distributed in the 3rd grade 299 (39.76%), 268 (35.64%), 4th grade and 15 (2%) in 5th grade.

The nutritional diagnosis was evaluated as shown in table 1. The data showed that the occurrence of severe thinness, obesity, severe obesity and overweight. Data show that 452 (60.11%) children were eutrophic, 14 (1.86%) with thinness, 4 (0.53%) with severe thinness, 104 (13.83%) with overweight, 37 (4.92%) with obesity and 141 (18.75%) with severe obesity.

Nutritional status	Number of children	Percentage (%)
Eutrophy	452	60,11
Thinness	14	1,86
Sharp thinness	4	0,53
Obesity	37	4,92
Severe Obesity	141	18,75
Overweight	104	13,83

Table 1: Classification of nutritional diagnosis of children from Teaching Network of the Municipality of Ponta Grossa - Parana - Brazil, 2019.

In this study it is clear that most children, 452 (60.11%) are with nutritional status in the range of eutrophic, i.e. are within normal range for age, weight and height. Although eutrophic rates are high, this study shows that overweight and obesity are increasing, a fact also revealed in other studies [8,9], where eutrophic appears in 60.6% and 64%, overweight in 21.2 and 7.2% and obesity in 3% and 1.6% of the children evaluated, respectively, which confirms the severity of this problem in schoolchildren.

This study shows the incidence of children with severe obesity (18.75%), knowing that obesity can start at any age and be triggered by factors such as early weaning, poor diet, behavioral disorders and relationship. early identification of overweight is necessary, reducing the chances of becoming obese adults, as it is in childhood that habits are being formed, and there is a need for health professionals to encourage habits which will remain in adulthood.

Evaluating another study, conducted in 2008 in the Piracicaba city, at São Paulo State, Brazil [10], with 202 public schoolchildren, aged 2 to 6 years, which aimed to verify the growth and nutritional status of children. From public schools in the city of Piracicaba - SP, it was found that 27 children were overweight, 16 obese and 5 severe obesity, i.e. 23.7% of children were out of normal for age, weight and height.

The data confirm the nutritional changes that have occurred in Brazil in recent years, with the evidence of the growth of childhood obesity which contributes to the incidence of obesity in adulthood, it is necessary to adjust and plan the Brazilian health policies, which are aimed at preventing obesity and promoting physical exercise in schools and healthy eating, so that these children become active adults with healthy habits [11].

When assessing the physical activity of the previous day of these students, it was observed that the data were from 0 to 54, with a standard deviation of 9.38. Then mean the values of no physical activity, low intensity physical activity of moderate intensity physical activity, as shown in table 2 below.

Intensity	Number of children	Percentage (%)
Low activity	714	94,5
Moderate activity	7	0,93
No activity	31	
		4,12

Table 2: *Intensity of the previous day's physical activity performed by the children of Ponta Grossa- Parana - Brazil, 2019.*

Regarding daily physical activity in schoolchildren, a study conducted in the year 2000 with approximately 2500 students, which aimed to analyze the relationship between obesity in schoolchildren and physical activity and children's sleep hours, shows that boys practiced more than girls, and that sports are higher in children diagnosed with eutrophism than in children who were overweight [12].

The obesity-related abnormalities in nutritional diagnosis, 37.5%, found in this study may be related to the non-active and low intensity index, 99.7%, it is perceived that the practice of physical activity of the students studied is low. One study [13] mentions the use of electronic equipment, especially television can contribute to the onset of obesity, as these are very low energy expenditure activities and are related to food product advertisements inducing individuals to consume foods rich in fat and sugars. Technology, increased violence and reduced spaces for activities led to the abandonment of traditional games, reducing the levels of activity in the youth population.

A study that sought current Brazilian information on physical exercise practices for overweight and obese children and adolescents showed that there is no guideline in Brazil that gathers recommendations on exercise practice for adolescents with this problem [14]. Thus, it is necessary to create and plan guidelines for the orientation and recommendation of physical exercise in schools, union between the health unit and the school for the multiprofessional planning of activities that encourage the practice of sports in the period when they are not. at school, avoiding sedentary lifestyle and future overweight and obesity and also seeking to reduce the number of children who already have abnormalities in nutritional diagnosis.

Using Pearson's correlation between the students' nutritional diagnosis and physical activity, to verify if the intensity of the physical activity presented by these students and what this data could influence the nutritional diagnosis, it was observed that this correlation had a t = 1,34, thus showing that at this moment of the research there is no statistical significance between the variables and a spearman coefficient rs = 0,04, that is, having little correlation between the variables, showing the need to consider other variables that can also influence the nutritional diagnosis of the students.

Conclusion

It is noticed that there is a need for multiprofessional participation, especially of nurses in the nutritional assessment of children in school, so that there is an early diagnosis of the nutritional status of children in this school phase, to be outlined strategies to prevent obesity and seek to reduce the incidence. of this disease in adulthood.

Given the aspects presented, it is up to the care nurse to take care of child development in association with the professional nutritionist, to predict a better nutritional intervention for this age group, knowing that this intervention can influence the development of adulthood.

It is known that Brazil is a developing country and that public health, education and basic sanitation need to advance, since there are not many studies on nutritional assessment. This evolution will only be possible if there is engagement of health professionals, the population and public services in general, seeking to reduce these data and acting for the benefit of the population.

Conflict of Interest

No conflicts of interest.

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