56 - NUTRITIONAL STATUS OF STUDENTS FROM THE NEUROLOGICAL ADAPTATION CENTRE "NOSSO CANTO" IN FOZ DO IGUAZU CITY / PR, BRAZIL

FÁBIO ANDRÉ CASTILHA[1];
ELLEN MARIANO SAWAZAKI[2],
ADEMAR PINEZI JUNIOR[3];
LUCINAR JUPIR FORNER FLORES[3],
JOSÉ FERNANDES[4]
1 - Manaus Military School; 2 - UNIAMÉRICA;
3 - UNIOESTE – Foz do Iguaçu; 4 - Federal University of Rio de Janeiro

doi:10.16887/86.a1.56

INTRODUCTION

Anthropometry, defined as the science of body size measurement, is a branch of the biological science that aims to study the measurable characters of human morphology. The anthropometric method is based on systematic measurements and quantitative analysis of dimensional variations of the human body (SOBRAL, 1985).

Neurological pathologies are diseases of the central and peripheral nervous system, which include disorders of the brain, spinal cord, peripheral nerves and neuromuscular junction. The treatment of these diseases involves identifying the problems and a comprehensive treatment designed by a multidisciplinary team of neurologists, nurses, occupational therapists, dietitians, and Physical Education professionals (WHO, 2006).

Among the innumerous pathologies, the Cerebral Palsy (CP) is one of the most current ones; CP is defined as a group of permanent postural development and movement disorders, which cause movement limitations attributed to non-progressive disorders that occur during fetal development or infant brain development. The motor disorders are often accompanied by sensory, cognitive, perceptual, communication and behavior disorders, as well as epilepsy and secondary musculoskeletal problems. (RIBEIRO, BARBOSA & PORTO, 2011).

Nutritional changes are frequent in children with CP, and are of a multifactorial etiology, secondary to factors related to neurological damage, decreased intake and proper nutritional intake, morphological and functional digest changes, particularly those related to mobility disorders, growth characteristics and hormonal changes (ARAÚJO & SILVA, 2013).

Besides the CP, the Down Syndrome (DS), which is a genetic condition resulting in specific physical and mental characteristics, is also ranked as a very common genetic cause of mental disabilities; individuals with this syndrome usually present retarded development skills with a predominance of motor deficits in early childhood, and cognitive deficits at school age (RIBEIRO, BARBOSA & PORTO, 2011). Ribeiro Barbosa & Porto (2011) also state that parents have a hard time conceptualizing the CP and / or Down Syndrome, and to understand the causes and consequences. This has a negative impact, raises questions, and generates anguish and anxiety.

No less applicant, there's also the Autism, characterized by an abnormal or impaired development in social interaction and communication; it is a developmental disorder caused by an alteration of the central nervous system which, according Magliaro et al (2010), can lead to perception & social relationship disorders.

Understanding about these disorders, their genotypic, phenotypic & developmental characteristics, as well as drawing up anthropometric, nutritional, and general health profiles, are main importance actions for the development of multidisciplinary intervention strategies; understanding, recognizing and knowing the nutritional status of these special groups becomes essential for the development of any further intervention actions with them.

Based on such, the aim of this study was understanding and evaluating the nutritional status of students from the neurological adaptation centre "Nosso Canto", in the city of Foz do Iguassu, Paraná state, Brazil, an institution that serves students with special intellectual conditions; verifying and evaluating the students' weight and height in terms of age, performing an individual and collective nutritional assessment of students, and from the results, giving a speech about healthy eating aimed to students, parents and teachers from this institution.

This study is also justified by contemplating an activity that seeks the common well of the society, since it is an entirely voluntary service for students of the neurological adaptation centre, with the designing and presentation of a general report for the coordinators & teachers of the institution.

METODOLOGY

This is a field, descriptive and transversal research, and its sample consisted of 91 individuals, students from the neurological adaptation centre "Nosso Canto", in the city of Foz do Iguassu, Paraná state, Brazil: 53 men and 38 women, aged between 5 and 35 years-old. As the sample was too heterogeneous in terms of age, it was divided into two distinct groups: children - students aged between 5 and 17 years-old, and adults - students aged between 18 and 35 years-old, for the purposes of nutritional status evaluation protocols. The group of children was made up by most of students: 67 students, 74% of the total, and the group of adults was made up of 24 students, 26% of surveyed students.

All parents signed a free consent letter, and were properly instructed about the research goals, and reassured about the confidentiality of the data collected. The data collection took place in August 2014, at two different times: in the morning and in the afternoon, in order to include both students from the morning and afternoon shifts on the study. Some students were excluded from the study - the students on wheelchairs, due to the impossibility of data collection with them.

At first, the evaluation of the children's group was performed, with the measurement of their weight and height for nutritional assessment according to Body Mass Index - BMI. Later on, the group of adults was evaluated, with the measurement of weight & height for the BMI, and waist circumference, followed by data tabulation and classification for the BMI, waist circumference classification, and nutritional assessment through the Avanutri ® software.

Once the data collection and nutritional evaluations were completed, the results were then handed individually to the school coordinator, and were later on presented to the parents of each student individually, as well as a general nutritional and anthropometric report.

Finally, after the results presentation, a nutritional speech was organized and held, for the teachers, principal, coordinators and parents, in order to instruct everyone involved with the students' education about the best ways to plan and manage the diet of the students, balancing the energy balance thereof.

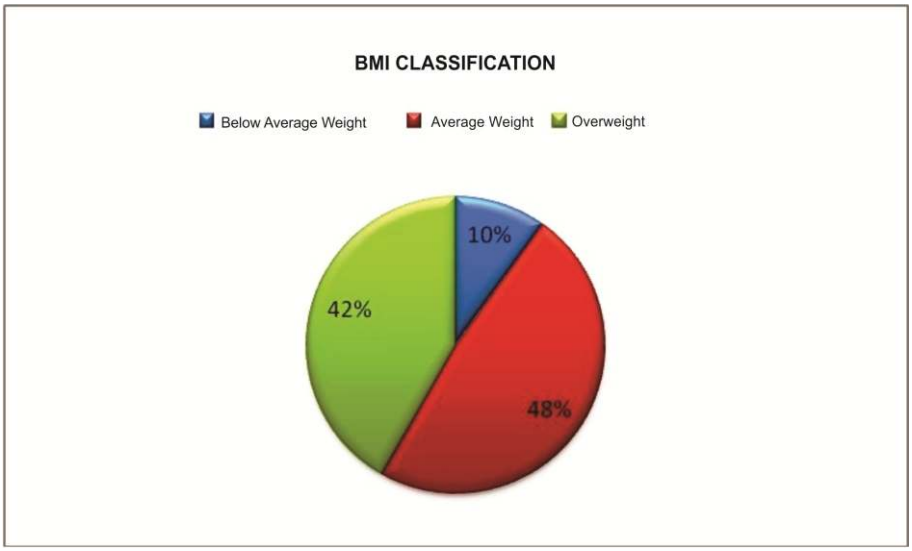
RESULTS & DISCUSSION

The sample consisted of 91 individuals: 53 men and 38 women, aged between 5 and 35 years old, split into two distinct

groups: children - students aged between 5 and 17 years old, and adults - students aged between 18 and 35 years old. The group of children was made up by most of students: 67 students, 74% of the total, and the group of adults was made up of 24 students, 26% of the students.

The weight and height of all students were measured, with subsequent classification of their BMI. Thus, 48% of them (n = 44) were classified on average weight; 42% (n = 38) were classified as with overweight, or in some degree obesity; and 10% were classified as underweight (n = 9), as shown in Figure 01:

Figure 01: BMI CLASSIFICATION OF STUDENTS FROM THE NEUROLOGICAL ADAPTATION CENTRE "NOSSO CANTO"



Studies on problems related to CP children feeding showed that the CP commitment level is directly related to difficulties in swallowing, increased dysphasia symptoms, and also to major complications of nutritional status. Such losses in the feeding may lead to weight loss, which is a hallmark of CPs, and translates the multifactorial and progressive malnutrition of these individuals, especially due to the state of hypermetabolism resulting from pancreatic inflammation and decreased food intake as a result of pain. The sitophobia, which is the fear of eating, it is also observed in patients with advanced alterations (SOUZA et al, 2011).

Abreu (2011) states that autistic children are two to three times more likely to be obese than the regular adolescents in the general population. The injuries to health, secondary to basic morbidities (such as CP, autism, etc.) are generally more frequent in obese adolescents, when compared to average weight & healthy adolescents. There is also a higher incidence of blood pressure variation (hypertension), dyslipidemia, hyperglycemia, changes in self-esteem and depression in such groups.

Simoni et al (2014) conducted a similar study to this; their sample was made out of 33 autistic men and women, aged between 5 and 44 years old. The data collected included their age, sex, weight and height. For the nutritional diagnosis of children and adolescents, the BM/I was used, and for the adults, the BMI. Out the total population evaluated, it was observed that 4 individuals (12.12%) had a low BMI/I, 13 (39.39%) were eutrophic – regular weight, 9, (27.27%) were overweight, and 7 (21.21%) were considered with obesity. However, the studied population showed a high prevalence of overweight / obesity in all age groups assessed, and a smaller but also significant prevalence of underweight, results which were similar to the ones found on this study.

Studies (SPUNGEN et al, 2003; WEAVER et al, 2007; GUPTA et al, 2006) have examined the prevalence of overweight and obesity according to BMI in individuals with neurological disorders, although some authors point out that the BMI is less sensitive to rate obesity in this population group. This is because, due to physical inactivity, these individuals are very likely to present high percentage of body fat, and a high risk for metabolic diseases and therefore health complications (WILT et al, 2008).

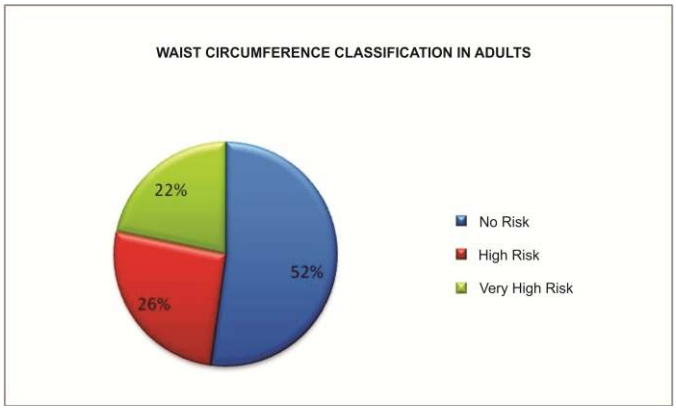
For the group of adults, the waist circumference was also measured as a marker for the risk of metabolic complications, specifically evaluating the accumulation of visceral fat. This is a parameter used by the World Health Organization - WHO (1998), which proposes the following reference table for the waist circumference:

Waist Circumference in Adults		
	Metabolic Complications Risk	
	High	Very High
Men	> or equal to 94 cm	> or equal to 102 cm
Women	> or equal to 80 cm	> or equal to 88 cm

Source: WHO, 1998

Below, in a graph form, the average results for the waist circumference of the adult group surveyed is presented (Figure 02):

Figure 02: WAIST CIRCUMFERENCE CLASSIFICATION OF STUDENTS FROM THE NEUROLOGICAL ADAPTATION CENTRE "NOSSO CANTO"



As seen in Figure 02, there is a prevalence of 52% of adults who have no risk of cardiovascular and metabolic diseases, according to the reference table proposed by the WHO (1998); 26% of them showed an increased risk, and 22% showed a very high risk.

According to Shils et al (2009), the combination of results of the waist circumference and BMI is useful in assessing health risks; a high BMI with a low measure of waist circumference can indicate that the BMI overestimates the risk for a particular individual, while a low BMI with a high measure of waist circumference can indicate the opposite.

The World Health Organization - WHO (2006), suggests that men with waist circumference greater than 102 cm and women with this same measure larger than 88 cm have an increased risk for metabolic diseases; overweight individuals, and high value of waist circumference is a predictor for increased visceral fat, which greatly increases the risk for metabolic disorders resulting from excess body fat, when compared to those with a low value of waist circumference.

It is worth to point out that nowadays there are no BMI cutoffs validated to diagnose the nutritional status of patients with neurological diseases, since the BMI was designed to assess individuals in good or excellent health conditions (WHO, 2007).

CONCLUSION

By analyzing the results found in the studied group, it was concluded that more than half of the students from the neurological adaptation centre “Nosso Canto” - 52% are outside the regular weight classification, according to the BMI reference table proposed by WHO (1998), and 48% out of all adults evaluated were classified with an increased and / or highly increased risk for cardiovascular and metabolic complications, data obtained by checking the mean values of the group waist circumference, and according to the reference table proposed by WHO (1998).

Thus, we see the need for a multidisciplinary professional intervention, especially by the dietitians and Physical Education professionals, in order to improve the quality of the students' diet & energy balance - intake versus daily caloric expenditure. And also that tests, ratings, specific guidelines and references are standardized for neurological patients, looking at encouraging the particularities of such public involved and encouraging researches centered in the area.

REFERENCES

ABREU, L. C., Condições relacionadas à obesidade secundária na interface do crescimento e desenvolvimento. Ver. Bras. Cresc e Desenv. Hum. n. 21, vol. 01, 2011;

ARAÚJO, L. A.; SILVA, L. R. Avaliação antropométrica dos pacientes com paralisia cerebral: quais curvas mais adequadas? Jornal de Pediatria. Rio de Janeiro, n. 89, vol. 03, 2013;

COSTA, I. et al, Terapia nutricional em doenças neurológicas – revisão de literatura. Rev. Neurocienc, n. 18, vol. 04, 2010;

GUPTA, N., WHITE, K.T., SANDFORD, P.R. Body mass index in spinalcord injury - a retrospective study. Spinal Cord. 2006;44:92-4.

MAGLIARO, F. C. et al. Estudo dos potenciais evocados auditivos em autismo. Pró-Fono Revista de Atualização Científica. n. 22, vol. 01, 2010;

RIBEIRO, M. F. M.; BARBOSA, M. A; PORTO, C. C. Paralisia cerebral e Síndrome de Down: nível de conhecimento e informação dos pais. Rev. Ciência & Saúde Coletiva, n. 16, vol. 04, 2011;

SCHILS, M. E. et al. Nutrição Moderna na Saúde e na Doença. Ed. Manole, 2009;

SIMONY, R. F.; CHAUD, D. M. A.; ABREU, E. S. de; BLASCOVI-ASSIS, S. M. Caracterização do estado nutricional dos pacientes neurológicos com mobilidade reduzida. Journal of Human Growth and Development, 2014.

SOBRAL, F. Curso De Antropometria. ISER-UTIL Lisboa. 1985.

SPUNGEN, A.M., ADKINS, R.H., STEWART, C.A., WANG, J., PIERSON, R.N., WATERS, R.L. et al. Factors influencing body composition in persons with spinal cord injury: a cross-sectional study. J. Appl Physiol. 2003;95(6):2398-407.

WEAVER, F.M., COLLINS, E.G., KURICHI, J., MISKEVICS, S., SMITH B., RAJAN, S. et al. Prevalence of obesity and high blood pressure in veterans with spinalcord injuries and disorders: a retrospective review. Am J Phys Med Rehabil. 2007;86(1):22-9.

WHO (World Health Organization). Child Growth Standards (2007). Disponível em http://www.who.int/childgrowth/standards/en/. Acesso em 23 de outubro de 2015

WILT, T.J., CARLSON, F.K., GOLDISH, G.D., MACDONALD, R., NIEWOEHNER, C., RUTKS, I., SHAMLIYAN, T. et al. Carbohydrate & Lipid Disorders & Relevant Considerations in Persons with Spinal Cord Injury. Evidence Report/Technology Assessment Nº 163. Rockville, MD: Agency for Healthcare Research and Quality; 2008.

WORLD HEALTH ORGANIZATION. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation on obesity. Geneva, 1998.

WORLD HEALTH ORGANIZATION. Neurological Disorders: Public Health Challenges, Geneva: World Health Organization; 2006, 217p.

NUTRITIONAL STATUS OF STUDENTS FROM THE NEUROLOGICAL ADAPTATION CENTRE “NOSSO

CANTO" IN FOZ DO IGUAZU CITY / PR, BRAZIL

ABSTRACT

This study aimed to check and evaluate the nutritional status of special students from the Neurological Adaptation Centre "Nosso Canto", in the city of Foz do Iguassu / PR, Brazil, checking and evaluating their weight and height, and then perform an individual and collective nutritional assessment of the students. A field, descriptive and transversal research, with a sample of 91 subjects (53 men and 38 women), aged between 5 and 35 years. The sample was divided into 2 different groups: children - 67 students aged 5 to 17 years, and adults - 24 students aged 18 to 35, for the purposes of evaluation protocols for the nutritional status. All surveyed students weight and height were measured, in order to assess their nutritional status by the Body Mass Index (BMI); for the adults group, the waist circumference was also measured. The BMI results showed that 48% of respondents (n = 44) were classified as a normal weight - within the normal range; 42% (n = 38) were classified as overweight; and 10% were classified as below the normal weight (n = 9). For the waist perimeter evaluation on the adult group, there was a prevalence of 52% for no imminent cardiovascular risk and metabolic diseases, according to the reference table proposed by the World Health Association (WHO, 1998); 26% of the sample showed an increased risk, and 22% showed a highly increased risk. Therefore, the study concluded that a multidisciplinary professional intervention for special students is essential, especially from dietitians and Physical Education professionals, in order to improve the quality of the students' diet and energy balance.

KEYWORDS: Special Education, Nutritional Status, Professional Intervention

ÉTAT NUTRITIONNEL DE ETUDIANTS DU CENTRE D'ADAPTATION NEUROLOGIQUE "NOSSO CANTO", DANS LA VILLE DE FOZ DO IGUAZU / PR, BRÉSIL

RÉSUMÉ

Cette étude avait pour objectif de connaître et évaluer l'état nutritionnel des élèves spéciaux du Centre d'Adaptation Neurologique "Nosso Canto" de Foz do Iguazu / PR, Brésil, en vérifiant et évaluant le poids et la taille de ceux-ci, pour alors effectuer une évaluation nutritionnelle individuelle et collective des étudiants. Champ de recherche descriptive et transversal, avec un échantillon composé de 91 sujets (53 hommes et 38 femmes), âgés de 5 à 35 ans. L'échantillon a été divisé en 2 groupes : les enfants (67 élèves âgés de 5 à 17 ans) et les adultes (24 étudiants âgés de 18 à 35) aux fins des protocoles d'évaluation de l'état nutritionnel. Le poids et la taille des participants ont été mesurés pour évaluer l'état nutritionnel par l'IMC, et pour les adultes, le tour de taille a également été relevé. Le résultat de l'IMC a montré que 48% des participants (n = 44) étaient de poids normal, 42% (n = 38) ont été classés comme étant en surpoids, et 10% (n = 9) ont été classés comme en dessous du poids normal. En se basant sur la table de référence proposée par l'OMS en 1998, l'étude du tour de taille du groupe des adultes a montré une prévalence de 52% d'élèves sans risque imminent de maladies cardiovasculaires et métaboliques. 26% de l'échantillon présentait un risque accru, et 22% présentait un risque des maladies grandement accru. Par conséquent, il a été conclu qu'une intervention professionnelle pluridisciplinaire pour les étudiants spéciaux est essentielle. Principalement d'un nutritionniste et d'un professionnel de l'éducation physique pour que les étudiants améliorent la qualité de leur alimentation et de leur équilibre énergétique.

MOTS-CLÉS: L'éducation Spéciale, L'état Nutritionnel, L'intervention Professionnelle

ESTADO NUTRICIONAL DEL CENTRO DE ADAPTACIÓN NEUROLÓGICA "NOSSO CANTO" EN FOZ DO IGUAZU / PR, BRASIL

RESUMEN

Este estudio tuvo como objetivo comprender y evaluar el estado nutricional de los estudiantes con minusvalía del Centro de Adaptación Neurológica "Nosso Canto", en la ciudad de Foz do Iguaçu / PR, midiendo el peso y la altura de los alumnos, para enseguida realizar una evaluación nutricional individualizada y colectiva de los estudiantes. Es una investigación de campo, descriptiva y transversal, composta de una muestra de 91 sujetos (53 hombres y 38 mujeres), con edades comprendidas entre 5 y 35 años. La muestra se dividió en 2 grupos: niños - 67 estudiantes de 5 a 17 años, y adultos - 24 estudiantes de entre 18 y 35, para efectos de protocolos de evaluación del estado nutricional. Se midieron el peso y la altura de todos los encuestados para evaluar el estado nutricional por medio del Índice de Masa Corporal (IMC), y para los adultos también se midió la circunferencia de cintura. El resultado del IMC mostró que 48% de los encuestados (n = 44) fueron clasificados como en peso normal; 42% (n = 38) fueron clasificados con sobrepeso; y el 10% fueron clasificados como debajo del peso (n = 9). En la evaluación del perímetro de la cintura del grupo de adultos, hubo una prevalencia de 52% de no riesgo inminente de enfermedades cardiovasculares y metabólicas, de acuerdo con la tabla de referencia propuesta por la Organización Mundial de la Salud (OMS, 1998); 26% de la muestra había mayor riesgo, y 22% con riesgo aumentado. Por lo tanto, se concluyó que es esencial la intervención profesional multidisciplinar para los estudiantes con minusvalía, principalmente de nutricionistas y profesionales de Educación Física, para que los estudiantes mejoren la calidad de sus alimentos y el balance energético.

PALABRAS CLAVE: Educación Especial, Estado Nutricional, Intervención Profesional

ESTADO NUTRICIONAL DOS ESTUDANTES DO CENTRO DE ADAPTAÇÃO NEUROLÓGICA "NOSSO CANTO", NA CIDADE DE FOZ DO IGUAÇU / PR, BRASIL

RESUMO

O presente estudo teve por objetivo conhecer e avaliar o estado nutricional dos alunos especiais do Centro de Adaptação Neurológica "Nosso Canto" na cidade de Foz do Iguaçu/PR, verificando e avaliando o peso e estatura dos mesmos, para então realizar um diagnóstico nutricional individual e coletivo dos alunos. Pesquisa de campo, de caráter descritivo-transversal, com amostra composta por 91 indivíduos (53 homens e 38 mulheres), com idades entre 5 e 35 anos. A amostra foi subdividida em 2 grupos: crianças - 67 alunos entre 5 e 17 anos, e adultos - 24 alunos entre 18 a 35 anos, para efeitos de protocolos de avaliação do estado nutricional. Foram aferidos peso e estatura de todos os pesquisados, para avaliação nutricional por meio do Índice de Massa Corporal (IMC), e para o grupo de adultos também foi aferida a circunferência da cintura. O resultado do IMC apontou que 48% dos pesquisados (n=44) estavam eutróficos – peso dentro da normalidade; 42% (n=38) foram classificados como acima do peso; e 10% foram classificados como abaixo do peso (n=9). Já na avaliação do perímetro da cintura do grupo de adultos, houve uma prevalência de 52% dos alunos sem risco eminente de desenvolvimento de doenças cardiovasculares e metabólicas, de acordo com a tabela de referência proposta pela Organização Mundial da Saúde (OMS, 1998); 26% da amostra possui risco aumentado, e 22% possui diagnóstico de risco muito aumentado. Diante disso, concluiu-se que é imprescindível a intervenção profissional multidisciplinar para alunos especiais, principalmente por parte do Nutricionista e do profissional de Educação Física, para que os alunos melhorem a qualidade de sua alimentação e balanço energético.

PALAVRAS-CHAVE: Educação Especial, Estado Nutricional, Intervenção Profissional.