

## 124 - ASSESSMENT OF WEIGHT EXCESS AND OBESITY IN ADOLESCENTS WITH THE DOWN'S SYNDROME

<sup>1</sup>IVANDRA MARI ROIESKI

<sup>2</sup>ADRIANA ARRUDA BARBOSA REZENDE

<sup>3</sup>ELIANA ZELLMER POERSCHKE FARENCENA

<sup>4</sup>GISELLE PINHEIRO LIMA AIRES GOMES

<sup>5</sup>IRIS LIMA E SILVA

<sup>1;2;3;4</sup>Mestranda em Ciência da Motricidade Humana/

<sup>1;5</sup>Universidade Castelo Branco/RJ

<sup>5</sup>Mestre em Ciência da Motricidade Humana/

<sup>5</sup>Pesquisadora do LABFILC/UCB

<sup>1</sup>ivandra.roieski@yahoo.com.br

<sup>2</sup>drikas.arruda@gmail.com

<sup>3</sup>elianafarencena@yahoo.com.br

<sup>4</sup>gipinheirolima@hotmail.com

<sup>5</sup>Irislimaucb@yahoo.com

### INTRODUCTION

The tendency for obesity in individuals with the Down's syndrome (DS) is a predominant characteristic and it starts between the third and the sixth year of age, and it's intensified during adolescence, what makes the appropriate body weight maintenance difficult when they grow older. This fact is a risk factor for other diseases, like cardiovascular and metabolic disturbs start to affect this people group (CRONK et al., 1988; SCHWARTZMAN, 1999; TOLEDO et al., 1999; VIEIRA et al., 2005; PUESCHEL, 2006).

Besides, people with the DS present a lower stature in relation with those who don't have the syndrome, and this reflects to bigger body mass or weight/height relation (CRONK et al., 1988).

Thus, the initial assessment concerning these individuals' nutritional state proves to be necessary so that preventive measures or reduction of the possible risks of diseases associated with weight excess and with obesity are established.

For this, some percentiles distribution of anthropometric indexes specific for children and adolescents with the DS were developed. These distributions reflect a lower growth speed and the stature deficit observed in this group. Among these distributions, the most referred one in the literature, especially in the United States of America, is the one proposed by Cronk et al., (1988) suitable for the assessment of individuals between 2 and 18 years old (FERNANDES et al., 2001; MYRELID et al., 2002; STYLES et al., 2002; PINHEIRO et al., 2003; DALPICOLO et al., 2004).

Facing this problem, the objective in this study was to assess the nutritional profile in adolescents with the DS and live in the South Region of Tocantins State to provide helpful information for the scientific planning of nutritional advice, which may benefit these individuals' health state.

### METHODOLOGY

For the research the context assessment was used and it allowed to develop a descriptive and co-relational study concerning the nutritional profile in 18 adolescents with the Down's syndrome and live in the south region of Tocantins state. They are between 10 and 19 years of age. Of them, 7 are male and 11 are female. According to Cochran (1956), they constituted a Group Census.

To instrumentalise the referred assessment the age weight indexes, specific for individuals with the DS (CRONK et al., 1998) were used as methodological technical resources.

The data collection related with stature, body mass and also with the consumption frequency of the food groups was obtained from the adolescents and parents or tutors in their own homes.

The stature was verified through the use of a non-extensible tape measure, fixed to a plane wall without skirting board. The individuals were instructed to be barefoot, backwards to the tape, with feet parallel, ankles together, arms loose along the body, standing upright position and with the head positioned so that the lower eye orbit part would be in the same level as the ear external opening – Frankfurt Plan. The ankles, the buttocks, the shoulders and the head must be in contact with the vertical surface. The body mass was checked through an only measurement. Portable scales, Plena brand, were used with precision of 50 grams. For this, the adolescents, barefoot and wearing light clothes, were instructed to distribute the weight equally on the two feet (JELLIFFE, 1968).

For the dietary assessment, the Food Frequency Questionnaire for Adolescents (FFQA) was applied. It was developed and validated by Slater et al (2003), adapted for the present study. This Questionnaire enabled to learn about these adolescents' eating habits in percentage terms related to food groups which were disposed according to the Adapted Food Pyramid (PHILIPPI, 1999) where the food is distributed in 8 groups.

It defines the number of servings per day in each of these groups, as it follows: Sugar and candies (minimum 1 serving, maximum 2 servings); Milk and dairy products (3 servings); Oils and fats (minimum 1 serving, maximum 2 servings); Cereal, bread, tubers and roots (minimum 5 servings, maximum 9 servings); Vegetables (minimum 4 servings, maximum 5 servings); Fruits (minimum 3 servings, maximum 5 servings); Grains (1 serving); Meat and eggs (minimum 1 serving, maximum 2 servings). These servings are stipulated in home measurement.

The nutritional state was classified according to the weight and height development curves specific for children and adolescents with the Down's syndrome. These curves are recommended by the Academy of Pediatrics and the Center for Disease Control and Prevention (CDC, in which charts of percentiles of age weight and stature established by Cronk et al. (1988) were used. The use of growth charts, appropriate for patients with the Down's syndrome, is extremely important, once they reflect the height and the lower speed of growth, expected in this individuals. (MYRELID et al., 2002).

This research project was submitted to the Research Ethics Committee involving Human Beings of the Castelo Branco University (UCB/RJ) and approved under protocol n. 194/2008 and, under these conditions, the data collection happened according to the resolution 196/96 of the Health National Council. Thus, initially, for the study to be developed, parents' or tutors' authorizations through a Clearing and free Authorization Term, in which the study nature was very clear, were required.

### RESULTS AND DISCUSSION

Table 1 shows the nutritional state according to curves proposed by Cronk et al. (1988), specific for the 2-to-18-year-

old individuals with the DS. It made it possible to observe that 44,5% had weight excess. Of them, 28% were overweight and 16,5% were obese.

Table 1 Nutritional Diagnostic

Classification	Female	Male	Total (n. - %)
Low weight	01	00	01 – 5,5%
Eutrophic	03	06	09 – 50%
Overweight	04	01	05 – 28%
Obesity	03	00	03 – 16,5%

Source: Research data

As for the eating habits, Table 2 shows the adolescents' consumption percentage according to the food groups. It made it possible to verify a consumption of vegetable and fruit group lower than the recommended amount in 78% of the adolescents and, as well as the milk and dairy products group consumption in 50% of these people. Besides, it was also verified an exaggerated consumption of both meat and egg groups, and sugar and candy group by all the individuals who took part in this study (100%), and the cereal, bread, tubers and roots group in 16% of the individuals.

Table 2 Dairy consumption according to food groups (Philippi et al., 1999)

Food groups	lower consumption	higher consumption	agreed consumption
Vegetables	78%	-	22%
Fruits	78%	-	22%
Milk and dairy products	50%	-	50%
Meat and eggs	-	100%	-
Oils and fat	-	-	100%
Cereal, bread, tubers and roots	-	16%	84%
Grains	-	-	100%
Sugar and candies	-	100%	-

Source: Research data

Similar results were found by other authors. Santos (2006) related that 86,7% have an inadequate consumption of fibers in 4-to-14-year-old individuals with the DS. Studies carried out with adolescents also showed low consumption of vegetables and fruits (GAMBARDELLA et al., 1999; VIEIRA et al., 2005). Other studies showed high consumption of meat and egg groups, and sugar and candies (BARBOSA et al., 2004; MOMO et al., 2006).

Consequently, because of the low consumption of the vegetable and fruit groups, these adolescents may present a deficit of vitamins and minerals, as in this age, there's a high necessity for vitamins, having in view the anabolism and puberty energy consumption. The vitamin necessity increase is also progressively higher during the pubescence because of the cell differences and the bone mineralization (EISENSTEIN et al., 2000). Moreover, because of the low consumption of these kinds of food it's possible to happen a deficiency in diet fibers ingestion. This makes the intestinal constipation, common in individuals with the DS, to grow worse, since fibers help intestines work. They also make the absorption of glucose and fats difficult and work as some kinds of cancer preventive, controlling the weight, among other functions (LUKE et al., 1996).

Some vegetable and fruit consumption frequencies also deserve special attention in the study. The most eaten foods were stewed beet, orange and banana an average of 3 times a week. This was due to the easy access, low cost and their texture; and the least eaten were cabbage and apple because of their texture and difficulty in chewing. It was observed that 34% of the adolescents never eat those foods and 27% of them never eat vegetables.

It was detected a low consumption of the milk and dairy products group, in fact, 50% of them don't consume the recommended amount (3 servings per day) to supply the organism calcium necessities. Such eating habit is rather harmful, seeing that this mineral has, as main function, to act on the bone growth and on the blood pressure maintenance (PHILIPPI et al., 1999; COZZOLINO, 2007).

The exaggerated consumption of protein sources, meat and eggs, and the sugar and candy groups also showed to be inadequate. The protein sources, consumed exaggeratedly and in long-term, may overload the kidneys and, acutely, cause dehydration, provoke a considerable calcium loss, consequently, the bone demineralization (osteoporosis); peripheral resistance to insulin and gout (COZZOLINO, 2007). As for the high consumption of sugar and candies, high calorie foods and low nutritional value, considering the relation between the unbalanced diet adoption and the chronic diseases appearance, this fact is thought to be worrying. They are found in the food pyramid top and should be randomly consumed.

It's also high the consumption of sugar-added beverages by the individuals participating in the research. They're represented by the high consumption of artificial juice mix (78%), addition of sugar (67%) and sodas (56%). This fact was also observed by other authors who point out the high consumption of candies as a common practice among the adolescents in general and it may contribute to the weight gain. It's associated with the obesity development (BERKEY et al., 2004).

## CONCLUSION

It's concluded that, although people with the Down's syndrome present specific dysfunctions, there's a probable relation between the weight excess prevalence and obesity and foods rich in sugar, candies and sodas in their daily diet. It's necessary to have a healthy diet and appropriate for the energy consumption of each individual to reduce the health risks.

It's also concluded that there's a necessity to encourage the consumption of healthy foods like fruits, vegetables, milk and dairy products, main food sources of vitamins and minerals through a food awareness and re-education process, which integrates schools, people with the Down's syndrome supporting institutions, families and friends, together with a professional of the nutritional area. These last ones may make evident the importance of healthy food and, thus, prevent non-contagious chronic diseases from developing, associated with the weight increase and with health complications in adulthood.

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**AUTOR RESPONSÁVEL PELA CORRESPONDÊNCIA**

IVANDRAMARI ROIESKI

E-mail: [ivandra.roieski@yahoo.com.br](mailto:ivandra.roieski@yahoo.com.br)

Av. Pará nº 1603 – Centro - Gurupi-TO

Telefone: (63) 3351-1759/ (63) 9984-2649

Área temática: 7 – Fisioterapia, nutrição, enfermagem em geral e áreas da saúde

**ASSESSMENT OF THE WEIGHT EXCESS AND OBESITY IN ADOLESCENTS WITH THE DOWN'S SYNDROME  
ABSTRACT**

The objective in this study was to assess the nutritional profile in adolescents with the Down's syndrome and live in the South Region of Tocantins State. They're between 10 and 19 years old. Of them, 7 are male and 11 are female and constitute a Group Census. To instrumentalise the referred assessment the age weight indexes, specific for these people, established by Cronk et al. (1988) were used. And for the dietary assessment a Food Frequency Questionnaire for Adolescents validated by Slater et al. (2003), adapted for the present study was also used. This questionnaire enabled to learn about these adolescents' eating habits in percentage terms related to the food groups that were disposed according to the Adapted Food Pyramid (PHILIPPI, 1999), where the food is distributed in eight groups. It was observed that 44,5% of the adolescents were fat. Of them, 28% were overweight and 16,5% were obese. It was verified that the adolescents' eating habits were inappropriate, since the consumption of vegetables and fruits was lower than the recommended amount in 78% of the adolescents as well as the consumption of milk and dairy products in 50% of these people. It was also observed that all the individuals who compound this study (100%) overeat meat and eggs, and sugar and candies, and 16% of the individuals overeat cereal, bread, tubers and roots. It's concluded that there's a probable relation between the prevalence of weight excess and obesity detected in this study and the inappropriate eating habits found in adolescents. It's advisable to encourage the consumption of healthy food through an awareness and eating reeducation process and this should, in turn, integrate schools, people with the Down's syndrome supporting institutions, families and friends to prevent non-contagious chronic diseases associated with the weight increase and with health complications in adulthood from developing.

**KEY WORDS:** Nutritional state, adolescents, Down's syndrome.

**ÉVALUATION DE SURPOIDS ET D'OBÉSITÉ CHEZ LES ADOLESCENTS TRISOMIQUES  
RÉSUMÉ**

L'objectif de cette étude était d'évaluer le profil nutritionnel de 18 adolescents atteints du syndrome de Down, résidents dans le sud de l'État de Tocantins, âgés entre 10 et 19 ans, et 07 du sexe mâles et 11 du sexe féminin qui ont été en recensement groupe. Afin de mettre en œuvre les évaluation, nous avons utilisé les indices de poids pour l'âge, spécifiques à cette population, établi par Cronk et al. (1988) et pour l'évaluation alimentaire, appliqués au questionnaire De fréquence alimentaire pour les ados, valable pour Slater et al. (2003), adapté pour cette étude, qui a conduit à connaître les habitudes

alimentaires des adolescents, en termes de pourcentages liés aux groupes d'aliments qui ont été organisés dans le adapté pour le dîner (PHILIPPI, 1999), qui distribue de la nourriture en huit groupes.

Il a été constaté que 44,5% des adolescents étaient en surpoids, et 28% avec surpoids et 16,5% étaient obèses. Il a été constaté que les habitudes alimentaires des adolescents étaient insuffisantes et ont été trouvés en consommant moins que la quantité recommandée pour les groupes les légumes et les fruits dans 78% des adolescents et le lait et les produits laitiers de 50% de cette population. pourtant il y avait une consommation excessive de viande et les œufs et le sucre et des bonbons à tous les individus qui ont participé à l'étude (100%) et des céréales, paim, tubercules et racines dans 16% des individus. Il a été conclu qu'il y a relation probable entre la prévalence du surpoids et l'obésité dans l'étude des habitudes alimentaires l'insuffisance identifiée chez les adolescents. Il est recommandé d'encourager la consommation d'aliments en santé grâce à une prise de conscience et de réadaptation qui intègre l'alimentation à l'écoles, pour les personnes atteintes du syndrome de Down, de la famille et aux amis de ceux ci, en empêchant le développement de maladies chroniques non transmissibles liées au gain de poids et les dommages à la santé dans l'âge adulte.

**MOTS-CLÉS:** État nutritionnel, les adolescents, le syndrome de Down

#### **EVALUACIÓN DEL SOBREPESO Y OBESIDAD EN LOS ADOLESCENTES CON SÍNDROME DE DOWN**

##### **RESUMEN**

El objetivo de este estudio fue evaluar el perfil nutricional de 18 adolescentes con síndrome de Down, los residentes en el sureño estado de Tocantins, con edades comprendidas entre 10 y 19 años, y 07 del sexo varones y 11 mujeres que fueron un censo de grupo. Con el fin de aplicar el la evaluación, hemos utilizado los índices de peso para la edad, específicos para esta población, establecido por Cronk et al. (1988) y para la evaluación de la dieta, aplicado al cuestionario la frecuencia de alimentos para los adolescentes, válido para Slater et al. (2003), adaptado para este estudio, que llevó a conocer los hábitos alimentarios de los adolescentes, en términos de porcentajes relacionados con los grupos de alimentos que se dispusieron en Adaptado de la Pirámide de Alimentos (PHILIPPI, 1999), que distribuye alimentos en ocho grupos. Se observó que el 44,5% de los adolescentes con sobrepeso y 28% con el sobrepeso y 16,5% obesidad. Se encontró que los hábitos alimentarios de los adolescentes eran insuficientes y se encontró que consumen menos de lo recomendado para grupos de hortalizas y frutas en el 78% de los adolescentes y el grupo de la leche y los productos lácteos en un 50% de esta población. Sin embargo, había un consumo excesivo de carne y los huevos y el azúcar Y caramelos para todos los individuos que participaron en el estudio (100%) y el grupo de los cereales, paes, tubérculos y raíces en el 16% de los individuos. Se concluyó que hay una relación probable entre la prevalencia de sobrepeso y obesidad que se encuentran en el estudio de los hábitos alimentarios inadecuados identificados en los adolescentes. Se recomienda estimular el consumo de alimentos saludable a través de una toma de conciencia y de rehabilitación que integra la alimentación escuelas, centros para personas con síndrome de Down, familiares y amigos para por lo tanto, prevenir el desarrollo de las enfermedades crónicas no transmisibles relacionadas con el aumento de peso y daños a la salud en la edad adulta.

**PALABRAS CLAVE:** Estado nutricional, adolescentes, El síndrome Down

#### **AVALIAÇÃO DE SOBREPESO E OBESIDADE EM ADOLESCENTES COM SÍNDROME DE DOWN**

##### **RESUMO**

Objetivou-se neste estudo, avaliar o perfil nutricional de 18 adolescentes com síndrome de Down, residentes na Região Sul do Estado do Tocantins, com idade entre 10 e 19 anos, sendo 07 do sexo masculino e 11 do sexo feminino que constituíram um grupo censo. Para instrumentalizar à referida avaliação, se utilizou os índices de peso para idade, específicos para esta população, estabelecidos por Cronk et al. (1988) e para a avaliação dietética, se aplicou o Questionário de Frequência Alimentar para Adolescentes, validado por Slater et al. (2003), adaptado para o presente estudo, o qual possibilitou conhecer os hábitos alimentares desses adolescentes, em termos de percentuais relacionados a grupos de alimentos que foram dispostos segundo a Pirâmide Alimentar Adaptada (PHILIPPI, 1999) que distribui os alimentos em oito grupos. Observou-se que 44,5% dos adolescentes estavam com excesso de peso, sendo 28% com sobrepeso e 16,5% com obesidade. Verificou-se que os hábitos alimentares dos adolescentes eram inadequados, tendo sido constatado consumo menor que o recomendado dos grupos das hortaliças e frutas em 78% dos adolescentes e do grupo dos leites e produtos lácteos em 50% desta população. Ainda verificou-se um consumo exagerado de carnes e ovos e de açúcares e doces por todos os indivíduos que fizeram parte do estudo (100%) e do grupo dos cereais, pães, tubérculos e raízes em 16% dos indivíduos. Concluiu-se que há provável relação entre a prevalência de sobrepeso e obesidade detectada no estudo com os hábitos alimentares inadequados identificados nos adolescentes. Recomenda-se estimular o consumo de alimentos saudáveis por meio de um trabalho de conscientização e reeducação alimentar que integre escolas, instituições de apoio às pessoas com síndrome de Down, familiares e amigos para assim, prevenir o desenvolvimento de doenças crônicas não-transmissíveis, associadas ao aumento de peso e a agravos à saúde na vida adulta.

**PALAVRAS-CHAVE:** Estado nutricional, adolescentes, síndrome de Down

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