145 - ASSOCIATION AMONG CARDIOVASCULAR RISK FACTORS AND NUTRITIONAL STATE IN SCHOOL-AGED INDIVIDUALS OF SANTA CRUZ DO SUL, RS, BRAZIL

Miriam Beatriz Reckziegel, Silvia Isabel Rech Franke, Daniel Prá, Miria Suzana Burgos
DEDFIS, UNISC, RS Brazil
miriam@unisc.br

1 Introduction

Along the last three decades, chronic non transmissible diseases (CNTD), including cancer and cardiovascular diseases (CVD), exceeded infectious diseases in incidence and mortality, through a phenomenon called epidemiological inversion (Viuninski, 2003). Globally, CVD related deaths are higher than those of all cancer together (Stocker e Keaney, 2004).

There are several risk factors for CVD: a) familial history (one of the relatives diagnosed with CVD before 55 years old or with cholesterol level higher than 240 mg/dl); b) hypertension (e.g. high intake of sodium); c) smoking; d) diabetes; e) physical inactivity; f) obesity; g) ethnics. Among these factors, dyslipidemias (especially hypercholesterolemia) are key aspects for compromising the endothelial function (Napoli, Williams-Ignarro *et al.*, 2004; Wilmsen, Spada *et al.*, 2005).

CNTD have early origin and a lag between their origin and their clinical manifestation. This lag is associated to several co-morbidities, with significant effects over the well being and the life time of individuals. Children and adolescents of the current generation possibly have a higher level of exposure to risk factors to CNTD than the previous generations, mainly due to their life style with low physical activity and unbalanced diet (rich in fats and carbohydrates and poor in micronutrients as vitamins and minerals).

The early identification of individuals with an increased risk is the basis for the adoption of measures aiming prevention or a closer clinical follow-up (Watters e Mcleod, 2003; Nebert e Vesell, 2004; Nakajima e Yokoi, 2005). Therefore, ensuring that children grow up in safe and healthy environments is a worthy goal. Building on evaluations of child nutritional status in developing periodic national nutritional surveillance programmes will contribute substantially to the planning and evaluation processes required by such endeavours (Arizaa e Binnsa, 2004).

The school-aged population of Santa Cruz do Sul, RS, Brazil has bad food habits and lack of physical activity. Thus, this work aims to: 1) characterize the school-aged population of Santa Cruz do Sul, RS, Brazil according to the body mass index (BMI) and the body fat percent (BFP); 2) characterize the levels of arterial pressure (AP), triglycerides (Tg) and total cholesterol (TC) in the same population; e 3) search for associations between the evaluated variables in order to relate the CVD risk with the nutritional state.

2 Material and Methods

2.1 Population and sample

The study population was composed by the school-aged individuals (8-18 years old) of Santa Cruz do Sul, RS, Brazil. A random sample based in the prevalence of obesity of 20% as detected by the study of Gigante et al. (1997), error of 3% and confidence of 95% was selected from this population. A total of 578 individuals randomly selected within 16 schools already sampled in previous researches (data not showed) were used in the study. The studied variables were: gender, age (as interval), nutritional state, AP, Tg and TC.

2.2 Anthropometric evaluation and measurement of arterial pressure

The weight and the height of individuals were obtained by standard methods and the BMI was calculated by dividing the weight in Kg by the square of the height in meters. Overweight and obesity were classified according to the percentile distribution to gender and age standardized by Must, Dallas e Ditz (Vitolo, 2003), through the percentile 85 for overweight and obesity. Triceptal and subscapular skin-fold thickness were measured using skin-fold calipers and used to calculate the BFP, which was classified according to the table of fat percent for children of Lohman (Heyward e Stolarczyk, 2000).

The AP was measured by the use of an esfignomanometer in individuals in rest for about 30 minutes previously to the measure. The percentile distribution adapted from *The fourth report on the diagnosis, evaluation and treatment of high blood pressure in children and adolescents* by the IV Diretrizes Brasileiras de Hipertensão (Sociedade Brasileira De Cardiologia, 2004) was used to classify AP; being the values between the percentiles 90 e 95 considered in the limit and the values over the percentile 95 considered as hypertension.

2.3 Evaluation of triglycerides and total cholesterol

Blood samples of the individuals under 12 hour rest and fasten were analyzed for Tg and TC by an Accutrend GTC monitor. The reference values for the ages from 2 to 19 years of the I Diretriz de Prevenção da Aterosclerose na infância e na adolescência were used in order to classify the level of Tg and TC (Sociedade Brasileira De Cardiologia, 2005).

2.4 Statistical analysis

Data were tabulated and analyzed in the Statistical Package for Social Sciences (SPSS) version 10.0. Chi-square test was used to detect differences and associations between variables. The level of significance was of $P < 0.05$.

3 Results and discussion

From the 578 individuals that participated in the study, 42.2% were males and 57.8% were females. Regarding to age, 36.3% had 10-12 years, 32.7% had 13-15 years, and 15.9% had 8-9 years, and 15.1% had 16-18 years.

Table 1 shows the nutritional state in the study population. Males showed BFP than females. The incidence of individuals with BFP high or very high was of 21.3% and 24.9%, for males and females respectively. According to BMI, the incidence of low weight (7.8%) and overweight or obesity (25.4-27%) was very similar between males and females.**Table 1.** Classification of the nutritional state according to the body fat percentage and body mass index in school-age individuals of Santa Cruz do Sul-RS, Brazil.

A - Body fat			
Classification	**Males**	**Females**	**Average**
Very low	0.0	0.6	0.3
Low	16.4	6.3	10.6
Normal	51.6	44.9	47.8
Low high	10.7	23.4	18.0
High	7.8	11.7	10.0
Very high	13.5	13.2	13.3
Total	100.0	100.0	100.0
B - Body mass index			
Classification	**Males**	**Females**	**Average**
Low weight	7.8	7.8	7.8
Eutrophy	65.2	66.8	66.1
Overweight or obesity	27.0	25.4	26.1
Total	100.0	100.0	100.0

Obesity is a widespread problem worldwide. In US, the percent of children (6 to 11 years of age) and adolescents (12 to 19 years of age) with obesity has increased up three fold between the late 1970s and 2000, harming nowadays about 15% of the overall school-age individual in the country; and even higher values among vulnerable groups. This value would double if one includes individuals defined as at risk for overweight in the statistics (BMI greater than the 85th percentile) (Baker, Barlow *et al.*, 2005). In Brazil between 1974 and 1997, the prevalence overweight (including obesity) increased 3.5 fold. In 1997, the average prevalence of obesity/overweight was of 14% (17% for 6-9 years and 13 % for 10-18 years old) (The International Association for the Study of Obesity, 2004).Albano & Souza (2001) detected very high levels of overweight (19.1%) and obesity (10.5%) in individuals with 11-17 years old in the city of São Paulo, Brazil. In a study in children and adolescent aging 7-17 years in Maceió, Brazil, Silva et al (2005) observed the prevalence of 9.3% of risk of obesity (overweight) and 4.5% of obesity. The level of overweight (including obesity) detected in Santa Cruz do Sul, Brazil was intermediate to the ones found in Maceió and São Paulo, Brazil.

There were more subjects with limit hypertension than hypertensive individuals in either males or females. The level of hypertension was higher among females (Table 2).**Table 2.** Classification of the level of systolic arterial pressure in school-aged individuals of Santa Cruz do Sul-RS, Brazil.

Classification	Males	Females	Average
Normal	93.0	93.1	93.1
Limit	4.5	3.6	4.0
Hypertension	2.5	3.3	2.9
Total	100.0	100.0	100.0

Epidemiological studies about AP in children and adolescent in Brazil showed prevalence ranging from 0.8-8.2%, depending on the method used for measuring the arterial pressure, on the parameter for defining diastolic pressure, in age and in the number of measures (Sociedade Brasileira De Cardiologia, 2005).The prevalence of hypertension in Santa Cruz do Sul, RS was in the bottom of the range observed in Brazil. The prevalence was bellow an study in Bento Gonçalves, RS, Brazil with individuals aging 6-14 years showed systolic hypertension in 5% of the studied population (Gerber e Zielinsky, 1997). Santa Cruz do Sul and Bento Gonçalves are countryside cities 250 Km away that were established by European immigrants.

Hypertriglyceridaemia was more prevalent among females and present in about 1/3 of the individuals of this gender (Table 3a). The incidence of hypercholesterolemia was similar between males and females (10.7-11.4%), being higher among females (Table 3b).**Table 3.** Classification of the level of triglycerides and total cholesterol in school-aged individuals of Santa Cruz do Sul-RS, Brazil.

A - Triglycerides			
Classification	**Males**	**Females**	**Average**
Normal	58.6	44.0	50.2
Limitrofe	20.9	22.2	21.6
Higher	20.5	33.8	28.2
Total	100.0	100.0	100.0
B - Total cholesterol			
Classification	**Males**	**Females**	**Average**
Normal	67.6	64.1	65.6
Limitrofe	21.7	24.6	23.4
Higher	10.7	11.4	11.1
Total	100.0	100.0	100.0

Several studies in different Brazilian cities with school-age individuals showed that the prevalence of hypertriglyceridaemia in the country ranges from 4.7% in Itajaí, SC (Grillo, Crispim *et al.*, 2005) to 22.5% in Londrina, PR (Seki, Seki *et al.*, 2001). The prevalence of hypercholesterolemia ranges from 3.1% in Itajaí, SC (Grillo, Crispim *et al.*, 2005) to 35% in Campinas, SP (Moura, De Castro *et al.*, 2000). The average level of hypertriglyceridaemia of the population of Santa Cruz do Sul, RS was higher than the city with the highest prevalence, Londrina, PR and higher level among females must be monitored closely in future. Conversely, the prevalence of hypercholesterolemia is in the middle of the range observed in literature. The values observed agree with those found in Florianópolis, Brazil that showed 22% of hypertriglycerdaemia and 10% of hypercholesterolemia among individuals aging 7-18 years (Giuliano, Coutinho *et al.*, 2005).There was a significant association between HA, Tg and BMI and BFP for both males and females as well as an association between TC and BFP only for males (Table 4). Moreover, there were significant associations between TC and Tg (p<0.001) and PAS and TC (p<0.01) (only for males.

Table 4. Result of the chi-square test comparing arterial pressure, triglycerides and total cholesterol according to body mass index and body fat percentage in the tested population.

Nutritional state	Cardiovascular risk factor					
	Arterial pressure		Triglycerides		Total cholesterol	
	Gender		Gender		Gender	
	Males	Females	Males	Females	Males	Females
BMI						
Difference	p<0.01	--	--	p<0.05	--	--
Association	p<0.05	p<0.05	p<0.001	p<0.05	--	--
BFP						
Difference	p<0.05	P<0.001	p<0.01	p<0.01	--	p<0.05
Association	p<0.001	P<0.001	p<0.001	p<0.001	p<0.01	--

A large study on American adults showed that obesity is associated with a relative adjusted risk of 3.4 for diabetes mellitus, 3.5 for hypertension, 1.9 for hypercholesterolemia, and 1.8 for poor health. Although the data in childhood are less exhaustive, about 60% of overweight 5- to 10-year-old children are reported to have at least one associated cardiovascular risk factor, and 25% have 2 or more. Diabetes mellitus, hypercholesterolemia, and arterial hypertension have been showed to promote atherosclerosis by their cumulative effects on the vascular endothelium (Gielen e Hambrecht, 2004). This association was also evident in the result of this study.

Like our study, Coronelli & Moura (2003) showed association relating BMI and CT classifications. Increased levels of low density lipoproteins (LDL), decreased levels of high density lipoproteins (HDL) and raised serum Tg levels are highly correlated with increased triceps skin-fold thickness among adolescents as well as with the with centile scores of BMI. According to a prospective studies, Lipoprotein levels in childhood were associated with their levels when they became adults; more strongly for TC (r = 0.6) and LDL (r = 0.4-0.6) than for high-density lipoprotein cholesterol (r = 0.4) and Tg (r = 0.1-0.4), being TC the best predictor for adult dyslipidaemia. Moreover, an effect of weight gain on future lipid and lipoprotein levels was also demonstrated (Lobstein, Baur *et al.*, 2004). In spite of the fact that 20-30% of obese children have hypertension with a 2.4 risk to present it than the eutrophyc (Oliveira, Mello *et al.*, 2004), Coronelli & Moura (2003) did not find association between BMI and AP in children aging 7-10 years. There was a significant association between CT and Tg and AP only for males. While some studies found association between AP levels and TC [e.g. (Rona, Qureshi *et al.*, 1996) in British children] others found no association [e.g. (Gerber e Zielinsky, 1997) in Bento Gonçalves, Brazil].

The high incidence of overweight and hypertriglyceridaemia are comparable with the levels of urban areas of Brazil and USA in spite of the fact that Santa Cruz do Sul, RS, Brazil is a countryside city with availability of healthy foods and recreation sites. Indeed, these individuals must be closely monitored in order to reduce the risk of CVD and other CNTD.

4 Acknowledgements

Authors acknowledge UNISC for financial support and the managers of the schools, the children and adolescents and their relatives for cooperation.

5 References

Albano, R. D. e S. B. D. Souza. Estado nutricional de adolescentes: "risco de sobrepeso" e "sobrepeso" em uma escola pública do Município de São Paulo. Cad. Saúde Pública, v.17, n.4, p.941-947. 2001.

Arizaa, A. J. e H. J. Binnsa. Childhood nutritional status: ongoing surveillance is necessary. SWISS MED WKLY, v.134, p.511-513. 2004.

Baker, S., S. Barlow*, et al.* Overweight Children and Adolescents: A Clinical Report of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. Journal of Pediatric Gastroenterology and Nutrition, v.40, p.533-543. 2005.

Coronelli, C. L. S. e E. C. D. Moura. Hipercolesterolemia em escolares e seus fatores de risco. Rev Saúde Pública, v.37, n.1, p.24-31. 2003.

Gerber, Z. R. S. e P. Zielinsky. Fatores de Risco de Aterosclerose na Infância. Um Estudo Epidemiológico. Arq Bras Cardiol, v.69, n.4, p.231-236. 1997.

Gielen, S. e R. Hambrecht. The Childhood Obesity Epidemic: Impact on Endothelial Function. Circulation, v.109, p.1911-1913. 2004.

Gigante, D. P., F. C. Barroso*, et al.* Prevalência de obesidade em adultos e seus fatores de risco. Revista de Saúde Pública, v.31, n.3, p.236-246. 1997.

Giuliano, I. C., M. S. Coutinho*, et al.* Lípides séricos em crianças e adolescentes da rede escolar de Florianópolis - Estudo Floripa Saudável 2040. Arq Bras Cardiol, v.85, n.2, p.85-91. 2005.

Grillo, L. P., S. P. Crispim*, et al.* Perfil lipídico e obesidade em escolares de baixa renda. Rev Bras Epidemiol, v.8, n.1, p.75-81. 2005.

Heyward, V. H. e L. M. Stolarczyk. Avaliação da composição corporal aplicada. São Paulo: Manole. 2000

Lobstein, T., L. Baur*, et al.* Obesity in children and young people: a crisis in public health. Obesity reviews, v.5, n.suppl. 1, p.4-85. 2004.

Moura, E. C., C. M. De Castro*, et al.* Perfil lipídico em escolares de Campinas, SP, Brasil. Rev Saude Publica v.34, n.5, p.499-505. 2000.

Nakajima, M. e T. Yokoi. Cancer pharmacogenomics: achievements in basic research. International Journal of Clinical Oncology, v.10, n.1, p.14. 2005.

Napoli, C., S. Williams-Ignarro*, et al.* Long-term combined beneficial effects of physical training and metabolic treatment on atherosclerosis in hypercholesterolemic mice. PNAS, v.101, n.23, p.8797-8802. 2004.

Nebert, D. W. e E. S. Vesell. Advances in pharmacogenomics and individualized drug therapy: exciting challenges that lie ahead. European Journal of Pharmacology, v.500, n.1-3, p.267. 2004.

Oliveira, C. L. D., M. T. D. Mello*, et al.* Obesidade e síndrome metabólica na infância e adolescência. Rev. Nutr., v.17, n.2, p.237-245. 2004.

Rona, R. J., S. Qureshi*, et al.* Factors related to total cholesterol and blood pressure in British nine year olds. Epidemiol Community Health, v.50, n.5, p.512-518. 1996.

Seki, M., M. O. Seki*, et al.* Estudo do perfil lipídico de crianças e jovens até 19 anos de idade. J Bras Patol Med Lab, v.37, n.4, p.247-251. 2001.

Silva, M. A. M. D., I. R. R. M. R. M. T. Ferraz*, et al.* Prevalência de Fatores de Risco Cardiovascular em Crianças e Adolescentes da Rede de Ensino da Cidade de Maceió. Arquivos Brasileiros de Cardiologia, v.84, n.5, p.387-392. 2005.

Sociedade Brasileira De Cardiologia. IV Diretrizes Brasileiras de Hipertensão. . Arq Bras Cardiol, v.82, n.Supl. 4, p.7-14. 2004.

_____. I Diretriz de Prevenção da Aterosclerose na Infância e na Adolescência. Arquivos Brasileiros de Cardiologia, v.85, n.Suplemento VI, p.1-36. 2005.

Stocker, R. e J. F. Keaney, Jr. Role of oxidative modifications in atherosclerosis. Physiol Rev, v.84, n.4, Oct, p.1381-478. 2004.

The International Association for the Study of Obesity. Child overweight and obesity prevalence IASO. Obesity reviews, v.5, n.suppl. 1, p.86-97. 2004.

Vitolo, M. R. Nutrição: da gestação à adolescência. Rio de Janeiro: Reichmann & Autores Editores Ltda. 2003

Viuninski, N. Epidemiologia da obesidade e síndrome plurimetabólica na infância e adolescência. . In: A. Dâmaso (Ed.). Obesidade. Rio de Janeiro: MEDSI, 2003. Epidemiologia da obesidade e síndrome plurimetabólica na infância e adolescência.

Watters, J. W. e H. L. Mcleod. Cancer pharmacogenomics: current and future applications. Biochimica et Biophysica Acta (BBA) - Reviews on Cancer, v.1603, n.2, p.99. 2003.

Wilmsen, P. K., D. S. Spada*, et al.* Antioxidant activity of the flavonoid hesperidin in chemical and biological systems. J Agric Food Chem, v.53, n.12, Jun 15, p.4757-61. 2005.

Miriam Beatrís Reckziegel. Endereço: Universidade de Santa Cruz do Sul, Laboratório de Atividade Física e Saúde. Av. Independência, 2293. CEP: 96815900. Santa Cruz do Sul, RS - Brasil. CP: 188. Fone: (51)37177604. Fax: (51)37171855.

ASSOCIATION AMONG CARDIOVASCULAR RISK FACTORS AND NUTRITIONAL STATE IN SCHOOL-AGED INDIVIDUALS OF SANTA CRUZ DO SUL, RS, BRAZIL

Abstract: Nutritional transition has increased the prevalence of overweight worldwide. Overweight in children and adolescent increase the risk of chronic non-transmissible diseases (CNTD), including cancer and cardiovascular diseases (CVD). Risk factors such as high level of arterial pressure (AP), triglycerides (Tg) and total cholesterol (TC) can be influenced by the nutritional state. This paper aims: 1) to characterize the population of school-aged individuals of the municipality of Santa Cruz do Sul, RS, Brazil as evaluated by body mass index (BMI) and body fat percentage (BFP); 2) to evaluate the levels of AP, Tg and TC in the same population; and 3) to search association among the evaluated variables in order to relate the cardiovascular risk factors and the nutritional state according to genders. A sample of 578 school-aged individuals (42.2% males and 57.8% females) aging 8-18 years was used in the research. Results indicated high incidence of overweight (including obesity) by BFP (21.3% for males and 24.9%, for females) and BMI (25.4 for males and 27% for females); moderate incidence of hypertension (2.5% for males and 3.3% for females); high incidence of hypertriglyceridaemia (20.5% for males and 33.8% for females); and moderate incidence of hypercholesterolemia (10.7% for males 11.4% for females). There was significant association between HA, Tg and BMI and BFP for both males and females as well as an association between TC and BFP only for male. The high incidence of overweight and hypertirglyceridaemia are comparable with the levels of urban areas of Brazil and USA in spite of the fact that Santa Cruz do Sul is a countryside city with availability of healthy foods and recreation sites. Indeed, these individuals must be closely monitored in order to reduce the risk of CVD and other CNTD. **Key Words:** children and adolescents, cardiovascular risk factors, anthropometry.

RELATION ENTRE LES FACTEURS DE RISQUE CARDIOVASCULAIRES ET L'ÉTAT NUTRITIONNEL DES ÉCOLIERS DE SANTA CRUZ DO SUL, RS, BRÉSIL

Résumé: La sédentarisation et la transition nutritionnel ont augmenté le surplus de poids globalement, en augmentant le risque des maladies croniques non-transmissibles (DCNT), y compris le câncer et les maladies cardiovasculaires (DCV). Cet étude a pour objectif: 1) caractériser la population écolière de Santa Cruz do Sul, RS, Brésil suivant l'indice de masse corporelle (IMC) et le pourcentage de grasse corporelle (PGC); 2) faire une évaluation des niveaux de PA, Tg et CT sur la même population; et 3) chercher l'association entre les variables evaluées afin de rélationner les facteurs de risque cardiovasculaires avec l'état nutritionnel. L'exemple comprend 578 élèves (42,2% du sexe masculin et 57,8% du sexe féminin) âgés entre 8 et 18 ans. Les résultats montrent un surplus de poids (y compris l'obesité) a travers le PGC (21,3% dans le sexe masculin et 24,9% dans le sexe féminin) et l'IMC (25,4% dans le sexe masculin et 27% avec le sexe féminin); une incidence moderée de hypertension (2,5% avec le sexe masculin et 3,3% avec le sexe féminin); une haute incidence de hypertrigliceredomie (20,5% avec le sexe masculin et 33,8% avec le sexe féminin); et aussi une incidence moderée de hypercolesterelomie (10,7% avec le sexe masculin et 11,4% avec le féminin). Ces données montrent une association très significative entre PA, Tg et IMC et le PGC, aussi marqué pour le sexe masculin que pour le féminin, éalement une association entre le CT et le PGC seulement pour le sexe masculin. En conclusion, les incidences sont élevées concernant les excédents de poids et l'hypertriglicerodomie, lequels sont comparables à celles rencontrées dans les zones urbaines do Brésil et aussi des USA, même en étant une ville de l'intérieur du Brésil, avec à sa disposition des aliments salutaires et des zones pour les pratiques sportives. Les individus dans cet étude doivent être suivis en vue d'une réduction du risque de DCV et autres DCNT. **Mots clefs:** enfants et adolescents, risque cardiovasculaire, et antropometrie.

ASOCIACIÓN ENTRE FACTORES DE RIESGO CARDIOVASCULAR Y ESTADO NUTRICIONAL EN ESCOLARES DE SANTA CRUZ DO SUL, RS, BRASIL

Resumen: El sedentarismo y la transición nutricional han aumentado la prevalencia de sobrepeso globalmente, aumentando el riesgo de enfermedades crónicas no transmisibles (ECNT), incluyendo cáncer y enfermedades cardiovasculares (ECV). Este estudio transversal objetiva: 1) caracterizar la población escolar de Santa Cruz do Sul, RS, Brasil según el índice de masa corporal (IMC) y el porcentual de gordura corporal (PGC); 2) evaluar los niveles de PA, Tg y CT en la misma población; y 3) buscar asociación entre las variables evaluadas para relacionar los factores de riesgo cardiovascular con el estado nutricional. La muestra incluye 578 escolares (42,2% masculino y 57,8% femenino) con edades entre 8 y 18 años. Los resultados indican alta incidencia de sobrepeso (incluyendo obesidad) por el PGC (21,3% en el sexo masculino y 24,9% en el sexo femenino) e IMC (25,4% en el sexo masculino y 27% en el sexo femenino); incidencia moderada de hipertensión (2,5% en el sexo masculino y 3,3% en el sexo femenino); alta incidencia de hipertrigliceridemia (20,5% en el sexo masculino y 33,8% en el sexo femenino); e incidencia moderada de hipercolesterolemia (10,7% en el sexo masculino y 11,4% en el sexo femenino). Los datos apuntan una asociación significativa entre PA, Tg e IMC y PGC, tanto para el sexo masculino como para el femenino, así como una asociación entre el CT y PGC sólo para el sexo masculino. Concluyemos que son altas incidencias de sobrepeso e hipertrigliceridemia, las cuales son comparables a aquellas encontradas en áreas urbanas de Brasil y de EEUU, a pesar de la ciudad ser del interior, con disponibilidad de alimentos saudables y áreas para prácticas deportivas de ocio. Los individuos de este estudio precisan ser atentamente monitorados con vistas a la redución del riesgo de ECV y otras ECNT. **Palabras clave:** niños y adolescentes, riesgo cardiovascular, antropometria

ASSOCIAÇÃO ENTRE FATORES DE RISCO CARDIOVASCULAR E ESTADO NUTRICIONAL EM ESCOLARES DE SANTA CRUZ DO SUL, RS, BRASIL

Resumo: A transição nutricional tem aumentado a prevalência de sobrepeso globalmente, aumentando o risco de doenças crônicas não-transmissíveis (DCNT), incluindo câncer e doenças cardiovasculares (DCV). Fatores de risco como alto nível de pressão arterial (PA), triglicerídeos (Tg) e colesterol total (CT) podem ser influenciados pelo estado nutricional. Este trabalho objetiva: 1) caracterizar a população escolar de Santa Cruz do Sul, RS, Brasil segundo o índice de massa corporal (IMC) e o percentual de gordura corporal (PGC); 2) avaliar os níveis de PA, Tg e CT na mesma população; e 3) buscar associação entre as variáveis avaliadas para relacionar os fatores de risco cardiovascular com o estado nutricional. Uma amostra de 578 escolares (42,2% masculino e 57,8% feminino) com idades entre 8 e 18 anos foram utilizados neste estudo. Os resultados indicam alta incidência de sobrepeso (incluindo obesidade) pelo PGC (21,3% no sexo masculino e 24,9% no sexo feminino) e IMC (25,4% no sexo masculino e 27% no sexo feminino); incidência moderada de hipertensão (2,5% no sexo masculino e 3,3% no sexo feminino); alta incidência de hipertrigliceridemia (20,5% no sexo masculino e 33,8% no sexo feminino); e incidência moderada de hipercolesterolemia (10,7% no sexo masculino e 11,4% no sexo feminino). Os dados apontam uma associação significativa entre PA, Tg e IMC e PGC tanto para o sexo masculino quanto para o feminino, bem como uma associação entre o CT e PGC apenas para o sexo masculino. As altas incidências de sobrepeso e hipertrigliceridemia são comparáveis àquelas encontradas em áreas urbanas do Brasil e dos EUA; apesar de Santa Cruz do Sul ser uma cidade do interior com disponibilidade de alimentos saudáveis e áreas de recreação. Os indivíduos deste estudo precisam ser atentamente monitorados com vistas à redução do risco de DCV e outras DCNT.

Palavras chave: crianças e adolescentes, risco cardiovascular, antropometria.