Nursing Diagnosis of overweight and related factors in adolescents

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Objective. The objective of the study was to compare the related factors to the nursing diagnosis (ND) of overweight in adolescents with and without overweight. **Methodology.** Transversal study conducted in 2013 with 347 adolescents that attended public schools in Natal, Rio Grande do Norte, Brazil, answered a questionnaire and had anthrometric evaluation. The subjects were divided into two groups, the group without ND (n=247) and the group with ND (n=100). **Results.** The prevalence of adolescents with ND overweight was 28.8%. The groups presented an unsatisfactory frequency of physical activity and a low consumption of healthy foods. The group with the ND overweight showed greater chance of consuming sweets and fried foods. The group with ND overweight had higher frequency of history family of illnesses. **Conclusion**. The prevalence of the ND overweight among adolescents in the public schools of Natal constitute a relevant nutritional deviance and the associated factors diet and family history disease are an alert for nursing in activities of prevention and follow-up for this population.

Key words: nursing; adolescent; overweight.

Diagnóstico de Enfermería de sobrepeso en adolescentes y factores relacionados

Objetivo. Comparar los factores relacionados con el diagnóstico de enfermería (DE) *exceso de peso* en adolescentes con y sin exceso de peso. **Metodología.** Estudio transversal que se llevó a cabo en 2013 con 347 adolescentes de escuelas públicas en Natal, Rio Grande do Norte, Brasil quienes respondieron un cuestionario y a quienes se les tomó el peso y la talla. Los sujetos fueron divididos en dos grupos: sin exceso de peso (n=247) y con exceso de peso (n=100). **Resultados.** La prevalencia de adolescentes con DE exceso de peso fue 28.8%. Ambos grupos tienen frecuencias inadecuadas de actividad física y de consumo de alimentos saludables. Además el grupo con DE exceso de peso tiene un riesgo mayor de consumir golosinas y comidas fritas: además, tienen antecedentes familiares de enfermedades del

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corazón, riñón o diabetes. **Conclusión.** La alta prevalencia de DE exceso de peso y de factores asociados con la alimentación y la herencia en adolescentes de las escuelas públicas de Natal es un gran reto para enfermería, ya que debe establecer acciones de prevención y acompañamiento de esta población.

Palabras clave: enfermería; adolescente; sobrepeso.

Diagnóstico de Enfermagem excesso de peso e fatores relacionados em adolescentes

Objetivo. Comparar os fatores relacionados ao diagnóstico de enfermagem (DE) excesso de peso em adolescentes com e sem excesso de peso. **Metodologia**. Estudo transversal, realizado em 2013 com 347 adolescentes de escolas públicas de Natal, Rio Grande do Norte, Brasil, eles responderam um formulário e foram submetidos a medição de peso e altura. Os participantes foram divididos em dois grupos: sem excesso de peso (n=247) e com excesso de peso (n=100). **Resultados**. A prevalência de adolescentes com o DE excesso de peso foi 28.8%. Ambos os grupos apresentaram frequências insatisfatórias de atividade física e consumo de alimentos saudáveis. O grupo com o DE excesso de peso apresentou maior chance de consumir guloseimas e frituras, e de ter história familiar de doenças no coração, rins e diabetes. **Conclusão**. A alta prevalência do DE excesso de peso e os fatores relacionados a alimentação e a história familiar de doenças em adolescentes de escolas públicas de Natal é um alerta para a enfermagem, que deve estabelecer ações de prevenção e acompanhamento dessa população.

Palavras chave: enfermagem; adolescente; sobrepeso.

Introduction

Adolescence is the age group that presents the chronological period between 10 and 19 years.[1] The health care of this population is a challenge because they seek health services only when they are sick, and the forms of organization of services, especially Primary Health Care (PHC), have developed a few specific activities for this age group.[2] In Brazil, in 1989 there was the creation of the Adolescent Health Program, with emphasis in the growth and development.[3] Actually, it is highlighted the risk for overweight,[4] which increases the chances of developing cardiovascular disease, one of the most important cause of death in the world.[5]

However, the nurse of the PHC, one of the responsible for monitoring the growth, has difficulty to meet those needs, such as: not having a suitable place to hold consultations; overload of activities; is not routine nursing consultation to every children and teens in the enrolled area;

lack of experience in public health field and in the application of the systematization of nursing care, which results in little resolute actions.[6] In order to minimize this problem, was released in 2008, the School Health Program (SHP). Its first goal was to assess the evaluation of health conditions of adolescents, through the classification by nutritional status and early identification of hypertension and diabetes. This program is responsibility of Primary Health Care unit that takes into its territory public schools develop this assessment with the students.[7]

This issue includes nursing practice, given that excess weight is a Nursing Diagnosis (ND), according to the International Classification of Nursing Practice (ICNP), which focuses on: committed weight, high weight and body mass condition, triggered by the increase in the number and size of fat cells, coupled with excessive nutrient intake and lack of physical activities.[8] Despite this

presented context, increasing prevalence and the chances of success of the actions developed in the PHC, it is not yet the routine of screening for the identification of adolescents with this ND.[9] For the ICNP®, as evidenced by the own description of the diagnosis, related factors are limited to excess food intake and lack of physical exercise, so it was considered important to identify which food intake excess have triggered the ND, confirm if the exercise is related and identify if the family component influences the outcome of ND.

The study is justified due to the difficulties faced by nurses in the care of this population and the need to identify the related factors, thus facilitating the activity of the nurse in planning her assistance, considering the multiple causes of this ND. Besides the possibility of advancing knowledge about overweight in adolescents, which is inserted in the National Agenda for Research Priorities in Health.[10] In order to seek answers to the magnitude of this problem and identify related factors in order to contribute the planning of nursing care, implementation and monitoring, as proposed by the SHP, asked itself: What is the prevalence of ND overweight in adolescents? What are the related factors? In assuming that adolescence is a critical period for the development of overweight due to conditioning factors of activities of sedentary leisure and inadequate feeding practices, in addition to the determinant of family history of overweight and related disorders,[4] the present study aimed to compare the factors related to ND overweight in adolescents with and without excessive body weight.

Methodology

Cross-sectional analytical study carried out between March and June 2013, with adolescents students of public schools in Natal, Rio Grande do Norte (RN), Brazil. To calculate the sample size, it was considered: the value of 16.5%, representing as prevalence of overweight adolescent in northeastern Brazil,[11] the population of 27 377

adolescents enrolled in the education system of the city of Natal;[12] and the error threshold, that satisfied 0.95. The obtained sample n was 211, being applied to multiplication by the correction constant of 1.5 for sampling with stratification, resulting in n=316. Then this value was fixed in 10% to minimize losses during the data collection. Therefore, the sample consisted of 347 adolescents. This total was divided proportionally by district areas, which resulted in four sub-samples: 96 from the North, 70 in the West, 104 East and 77 South.

For selecting the adolescents were initially drawn two schools in each area, totaling eight participating schools. The subsample number of each zone was divided into two schools; in each one, one class was drawn among classes available from the 7th year of elementary school to the 3rd year of high school; all students from selected class were invited to participate, when they received at which surrendered the Consent Term for presentation to parents. Not reaching the preset number for each school, a second class was drawn; exceeding the number of students was admitted to search only the equivalent calculated in the sample.

Inclusion criteria were being between 12 and 18 years old and be enrolled in public schools of the city of study. Exclusion criteria were do not be present during the data collection period and being underweight or very underweight at the time of collection, as their inclusion would compromise comparisons between groups. The adolescents were undergone to anthropometry and answered a form with questions about socioeconomic data, physical activity, eating habits, family history of obesity and associated diseases. This form was submitted to content validation by experts who were selected according to the eligibility criteria: be doctor or master whose thesis/dissertation would deal about overweight in adolescents and have publications in journals of nursing. The search was conducted via Lattes Platform, resulting in an intentional sample of fifteen experts who were contacted via e-mail, with the final sample consisting of five who have confirmed

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participation. Anthropometry was performed by a nurse and two under graduating of nurse course, and the value considered the average of two measurements. For weight, were used the digital scale with bioimpedance of Beurer® brand, with the adolescents barefoot, light clothes and positioned in the center of the platform. Height was measured by a portable stadiometer of WCS® brand, with the adolescents barefoot, arms at their sides, feet together, knees straight, head oriented in the horizontal plane of Frankfurt, after deep inspiration.[13]

Factors related to ND overweight were defined based on ICNP®: lack of physical activities and poor eating habits, by improper intake of nutrients.[8] To contemplate the family component, according to Brazilian Society of Cardiology, was also considered the factor related to family history of obesity and associate diseases.[14] Data were tabulated and analyzed using Statistical Package for Social Sciences (SPSS) 19.0 using the chi-square test and odds ratio, considering: a significance level 5% (p <0.05) to determine the factors related to overweight.

Participants had the nutritional status classified as body mass index for age and sex based on the Z score: Severe thinness (<-3), thinness ($\geq$ -3 to <-2), eutrophic ($\geq$ -2 and $\leq$ +1), overweight (> +1 and +2 $\leq$) and obesity (> + 2).[15] The ND analysis was determined by the presence of overweight: overweight or obesity.[8] From this, the sample was divided into two groups, with and without ND of overweight, and practical factors of physical activity, eating habits and family history of disease were investigated in the groups. Were considered the criteria for physical activity and eating habits used by the National Research of Health at School (NRHS), in order to compare the findings of this study, since in the NRHS were attended adolescents of the 9th year of primary education in public and private Brazilian schools in capitals and Federal District, ie, population with similar profile of this study.[16] Thus, the adolescents were classified in relation to physical activity in both groups: actives (students who have accumulated 300 or more minutes

of physical activity per week) and insufficiently active (students who reported having practiced less than 300 minutes of physical activity per week). Were used the accumulated physical activity indicator in the last seven days, with respect to three different domains: displacement to school, physical education classes and other extracurricular physical activities.

To measure the feeding habits, was provided a list of healthy and unhealthy eating markers food, and they said how often consumed in the last seven days. For healthy food was satisfactory consumption $\geq$ five days a week. For unhealthy foods was considered as satisfactory consumption less than twice a week. About the history of family diseases, with reference to the first-degree relatives (parents, brothers, uncles and grandparents), the adolescents answered if in their family there was history of these diseases and/or health problems: diabetes, hypertension, obesity, heart and kidney diseases. The presence of these diseases in the family is considered a risk factor for cardiovascular diseases.[14]

The project was approved by the Ethics Committee of the Federal University of Rio Grande do Norte, Brazil, Presentation Certificate for Ethics Assessment (CAAE) in 10200812.0.0000.5537 and respecting the rules of research on human beings of Resolution 466 of 2012. The participation of adolescents occurred after parental consent and signature of the Consent Term.

Results

Among the 347 participants, there was a prevailing of women (72%), non-white (brown and black) (73.6%), with family income up to two minimum wages (considered the benchmark for minimum wage in March 2013, of 195 American dollars) (76.8%), living with four to seven people (69.1%) and maternal education as incomplete primary education (32.5%). In the formation of interest groups, 100 were part of the group of teenagers with ND overweight, because in the nutritional

status they were classified as overweight (20.4%) or obese (8.4%), which represented 28.8% of sample. The remaining 247 adolescents formed the comparer group, ie, without ND, once they didn't show nutritional alteration.

As regards the analysis of the association between cumulative physical activity and the ND overweight, as shown in Table 1, there was no significant difference in frequencies. Were discreetly highlighted adolescents with ND, as half of them were classified as satisfactory accumulated physical activity because claimed to have performed at least 300 minutes in the last seven days.

Table 1. Association between accumulated physical activity and the ND overweight in adolescents. Natal, 2013

Variable	Group				$p*$
	Without excessive body weight		With excessive body weight		
Accumulated physical activity	n	%	n	%	
≥ 300 minutes	116	46.9	50	50.0	0.347
< 300 minutes	131	53.1	50	50.0	

(*) Chi-Square.

With respect to consumer of products classified as healthy food markers, by comparing the two groups, it was observed that there was no association. But it was found that the majority of adolescents, in general, said have an unsatisfactorily consume of the following products: fruits, legumes and vegetables. Only the consumption of beans was satisfactory in both groups, as shown in Table 2.

About unhealthy diets markers products, there was an association in groups for the following foods: sweets and fried foods. The frequencies in the group with the ND overweight were higher when compared to another group. It was found that adolescents with ND overweight were more likely to consume sweets and fried foods. It was emphasized also the high consumption of sausages and soda in both groups (Table 3).

Finally, as shown in Table 4, there was an association between ND overweight and the following family diseases: diabetes, hypertension and obesity. The group with the ND had the highest frequency in the presence of these diseases in the family. This group had 1.63 more chances to have relatives with diabetes; 2.77 for hypertension; and 2.47 to obesity.

Discussion

The prevalence of ND overweight was 28.8% in the studied population. Better result than indicated by the research of household budget carried out with families of all Brazilian capitals whose average among Northeast adolescents was 16.5.[11] Another research with school children from all Brazilian capitals identified prevalence of 18.5% of adolescents with overweight in Northeast capitals.[16] The high prevalence identified in this study was similar to that presented by American children and adolescents. A research conducted in the United States analyzed the nutritional status of 4,111 participants from 0 to 19 years of age, and found that 31.8% were overweight or obese and that these were the most prevalent nutritional disorders.[17]

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Table 2. Association between the consumption of healthy food markers and ND overweight in adolescents. Natal, 2013

Variable	Group				p*	OR (CI$_{95\%}$OR)
	Without excessive body weight		With excessive body weight			
	n	%	n	%		
Beans						
satisfactory	198	80.2	82	82.0	0.409	0.88
insatisfactory	49	19.8	18	18.0		(0.48-1.61)
Fruits						
satisfactory	113	45.7	45	45.0	0.497	1.03
insatisfactory	134	54.3	55	55.0		(0.64-1.64)
Legumes						
satisfactory	75	30.4	33	33.0	0.360	0.88
insatisfactory	172	69.6	67	67.0		(0.53-1.45)
Vegetables						
satisfactory	89	36.0	37	37.0	0.480	0.95
insatisfactory	158	64.0	63	63.0		(0.59-1.55)

(*) Chi-square; OR = *odds ratio*; CI = confidence interval

Table 3. Association between the consumption of unhealthy diets markers and ND overweight in adolescents. Natal, 2013

Variable	Group				p*	OR (CI$_{95\%}$OR)
	Without excessive body weight		With excessive body weight			
	n	%	n	%		
Sausage						
Satisfactory	92	37.2	43	43.0	0.191	0.78
insatisfactory	155	62.8	57	57.0		(0.49-1.26)
Sweets						
Satisfactory	192	77.7	24	24.0	<0.001	4,72
insatisfactory	55	22.3	76	76.0		(3.84-5.81)
Soda						
Satisfactory	68	27.5	32	32.0	0.240	0.80
insatisfactory	179	72.5	68	68.0		(0.48-1.33)
Fried foods						
Satisfactory	208	84.2	20	20.0	0.003	4.13
insatisfactory	39	15.8	80	80.0		(3.78-5.23)

(*) Chi-quadrado; OR = *odds ratio*; CI = confidence interval

Table 4. Association between history of family diseases and ND overweight in adolescents. Natal, 2013

Variable	Without excessive body weight		With excessive body weight		p*	OR (CI$_{95\%}$OR)
	n	%	n	%		
Diabetes						
Yes	100	40.5	70	70.0	0.042	1.63
No	147	59.5	30	30.0		(1.38-2.04)
High blood pressure						
Yes	69	27.9	80	80.0	0.024	2.77
No	178	72.1	20	20.0		(2.42-3.40)
Obesity						
Yes	77	31.1	54	54.0	0.004	2.47
No	170	68.9	46	46.0		(2.29-2.77)
Heart disease						
Yes	99	40.1	36	36.0	0.435	1.21
No	148	59.9	64	64.0		(0.74-1.99)
Kidney disease						
Yes	58	23.5	23	23.0	0.517	1.03
No	189	76.5	77	77.0		(0.58-1.83)

(*) Chi-quadrado; OR = *odds ratio*; CI = confidence interval

Another study, in Ghana, with children and adolescents from six to 12 years, identified prevalence of 9.8% for overweight and 7.5% for obesity, with association to study in a private school, higher maternal education, access to computer games and eating in snack bars.[18] The participants of this study are from public schools and had higher frequency of overweight. On socioeconomic data, there is a prevalence of women, brown or black, with a family income of up to two minimum wages, living with four to seven people and maternal education as incomplete primary education. Other studies have found similar results, with female students being most in public schools. In addition, other data show the expected characteristics in less favored economically parcel. However, regardless of economic status, it is necessary to prevent and intervene in this ND.[4,19]

As regards the aspects relating to ND overweight, in factor practice of physical activity, most of the adolescents said not exercise at the recommended frequency. However, a research of 5 613 adolescents from Ghana and Uganda concluded that, regardless of nutritional status, the adolescents practiced little physical activity and there was no association with overwheight.[20]

The NRHS identified similar results to the present study because its research indicated that in Natal, 51.6% of the interviewed students practiced at least 300 minutes of physical activity a week in which it was held interview.[16] This result differs from a study with 393 students in Santa Catarina, in which was showed low adherence to regular physical activity, with strong association with BMI. The students who attended physical education classes at least three times a week were mostly

eutrophic.[19] In this point we can consider that in public schools that participated in this research, it was expected a higher frequency of physical activity, despite the lack of appropriate place to carry out such activities or environments in very bad condition, and the lack of teachers.

It is noteworthy that regular physical activity alone is not a determining factor for the prevention of overweight, being necessary to examine other factors such as eating habits. Participants said consume beans satisfactorily, and fruit and vegetables unsatisfactorily, similar to the results of NRHS, where 69.9% said consume satisfactorily beans, 43.4%, vegetables, and 30.2%, fruits.[16] Therefore, when considering the relationship of habits food, it was found that teenagers generally not consume satisfactorily healthy foods. And adolescents with ND overweight had higher frequencies in the consumption of unhealthy foods: sweets and fried foods. This reality is mainly related to the consumption of food at school, where adolescents spend most of hours of their days. This scenario can be modified through the development of healthy eating programs at school.[21]

The results of this study corroborate a research with 255 children and adolescents in the interior of Paraíba, Brazil, which concluded that the youngers understand the evils of risk foods and the benefits of protective foods, but do not decrease the consumption of risk foods and neither consume it satisfactorily.[22] It is noteworthy that despite the consumption of healthy foods be predominantly unsatisfactorily and the practice of physical activity is lower than that advocated for half of the sample, these variables were not associated with ND overweight. Thus, it is considered necessary to evaluate others factors associated with ND, such as disease with family history.

By analyzing the family history of obesity and related diseases, it was found that adolescents with ND overweight were more likely to have relatives with the following diseases: diabetes, hypertension and obesity. Therefore, nurses should plan an intervention strategy, considering the nuclear family, because despite being more complex, integrated care of family is fundamental.[23] To prevent or intervene on ND overweight in adolescents, it is suggested that nursing is a mediator between the health service, school and family,[22] considering the factors related to regular physical activity, eating habits and family history of related diseases.

Thus, the following nursing interventions are essential: guiding regarding eating habits; sensitize the family and school about the importance of prevention; inform adolescents/family/school about the disease, its causes and consequences; do follow-up; anthropometry; encouraging physical activity; evaluate the psychosocial status; analyze appearance of opportunistic infections; refer to specialist when the state persists or became worse.[22] With nursing care the trend is changing habits, even if they cannot meet all guidelines. It is suggested praise from small changes, for example, exchange chips for fruit in school snack. The treatment is long, so prevention must be encouraged at PHC in order to contribute to building a healthier population.[24]

This study advances in knowledge presenting that there is a ND for facing overweight, and that this issue also focuses on the younger and financially underprivileged portion of population. We showed up related factors and their investigated characteristics. This set of information can contribute to raising awareness of nurses about their responsibility in serving this clientele and planning the actions. Furthermore, the ND contained in the ICNP® relates overweight exclusively to excessive food intake and inadequate physical activity.[8] In this aspect, this study indicates association only for consumption of unhealthy foods and family history of obesity and related diseases. The advance in knowledge of ND is in need of inclusion of the previous history of disease in the family with related factors. For thus the nurse include the nuclear family in the intervention activities. Another relevant aspect was the identification of low consumption of healthy foods in both groups, which can warn about the need for dietary guidelines, especially in the PHC.

In seeking a ND to this problem in NANDA-I has found the following: Unbalanced nutrition more than the body needs, with only unsatisfactory diet as related factor to overweight.[25] What may have influenced the consulted studies, developed by nurses, which had the objective of identifying the related factors to overweight and that did not include, in a single study, all aspects analyzed here.[9,19,23,26] Finally, identify related factors collaborate in quick measurement, with easy comprehension useful in ND overweight identification, with possible impact on the quality of the nursing process for this demand. It is significant overcome the challenge of systematizing nursing care PHC, with development of activities also in the scholar environment, so as to be able to direct more effective practice of nursing and provide better quality of care to adolescents.

Thus, for the people of Natal, this ND can be considered a relevant nutritional deviation. And, consume more often unhealthy diets and present a family history of obesity, hypertension and diabetes were associated with ND overweight among analyzed adolescents. The prevalence of ND found in adolescents is a warning to the nursing teams in the PHC to program preventive actions and periodic monitoring. It is important for adolescents, parents and educators to take ownership of this knowledge, to promote change in the modifiable factors, and alert about no modifiable factors, which may contribute to the awareness and adherence to healthier living habits. Therefore, the performance of nursing in an efficiently way about this ND, In the PHC, is the vehicle that can transformer the society, contributing to the construction of a healthier population.

The fact of data collection occurred only in public schools not allowed to compare variables with a population of adolescents with different socioeconomic status. It is considered, also, that the focus on associated factors is a limitation of the study, given that there is no possibility of establishing causal relationships between the analyzed, knowledge that heavily subsidizes the ND overweight. In this sense, the implications of the associations observed here should be made with caution. Therefore, it suggests the development of future studies of time trends, to be performed with this sample, in other regions of the country and other countries, to confirm the related factors to ND presented here related in order to subsidize the reformulation of the focus on ND overweight contained in ICNP®.

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