



ADMINISTRACIÓN – GESTIÓN - CALIDAD

Instrument validation for screening of adolescents with overweight at school

Validação de instrumento para o screening de adolescentes com excesso de peso na escola

Validación de instrumento para la detección de adolescentes con sobrepeso en la escuela

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Keywords: Nursing; Validation Studies; Primary Health Care

Palavras chave: Enfermagem; Estudos de Validação; Atenção Primária à Saúde

Palabras clave: Enfermería; Estudios de validación; Atención primaria de salud

ABSTRACT

The aim was to validate the content of a nursing instrument for the screening of overweight adolescents in schools. Methodological study conducted in three phases: construction of the "Overweight Screening Form for Adolescents in Schools"; psychometric evaluation by specialists; modification of instrument according to specialists' suggestions. The Kappa and Chi Square tests were used in the analysis. The frequency of positive responses for the psychometric criteria was $\geq 80\%$, with some agreement differences among the specialists ($p < 0,001$). Some criteria presented low agreement ($k=0,20-0,39$) or no agreement ($k=0$). The physical evaluation item obtained a Kappa 1 in all criteria. After Form alterations were made, all criteria reported high agreement ($k=1$), except for "Sociodemographic profile and general data". The instrument was considered to have content validity and useful for the identification of nursing diagnosis of overweight adolescents. It can serve as a tool in the implementation of the nursing process with this population.

RESUMO

Objetivou-se validar o conteúdo de instrumento para uso do enfermeiro no *screening* de adolescentes com excesso de peso na escola. Estudo metodológico realizado em três etapas: construção do “Formulário para o *screening* de adolescentes com excesso de peso na escola”; avaliação do Formulário por especialistas, segundo critérios psicométricos; modificação do Formulário conforme os pareceres. Utilizaram-se os testes Kappa e Qui-Quadrado. Os critérios psicométricos atingiram frequências $\geq 80\%$ de respostas positivas, com diferença entre os especialistas ($p < 0,001$). Alguns critérios apresentaram fraca concordância ($k = 0,20-0,39$) ou nenhuma concordância ($k < 0$). O item sobre avaliação física obteve valor Kappa 1 em todos os critérios. Após as alterações no Formulário, todos os critérios atingiram alta concordância ($k = 1$), exceto o item “Perfil sociodemográfico e dados gerais”. O instrumento foi considerado válido quanto ao conteúdo e útil para a identificação do diagnóstico de enfermagem excesso de peso, podendo impactar na implementação do processo de enfermagem nessa população.

RESUMEN

El **objetivo** fue validar el contenido del instrumento de enfermería para la detección de adolescentes con sobrepeso en la escuela. Estudio metodológico llevado a cabo en tres etapas: creación del “Formulario para la detección de adolescentes con sobrepeso en la escuela”; evaluación psicométrica por especialistas; modificación del instrumento de acuerdo con las recomendaciones. Las pruebas estadísticas de Kappa y Chi-Quadrado fueron utilizadas en el análisis. Las frecuencias positivas de los criterios psicométricos fueron $\geq 80\%$, con algunas diferencias de concordancia entre los especialistas ($p < 0,001$). Algunos criterios presentaron pobre concordancia ($k = 0,20-0,39$) y otros sin concordancia ($k = 0$). El ítem de evaluación física tuvo valor Kappa 1 em todos los criterios. Después de hacer las alteraciones, todos los criterios tuvieron alta concordancia ($K = 1$), con exención del ítem “Perfil sociodemográfico y datos generales”. El instrumento fue considerado de contenido válido y útil para la identificación del diagnóstico de enfermería de sobrepeso y para la implementación del proceso de enfermería en esa población.

INTRODUCTION

The Primary Health Care (PHC) is a set of health actions developed through the exercise of management and sanitary practices, aimed at populations of well-delimited territories. From the implementation of PHC, the nursing incorporated health promotion as an integral element of its operations, being one of the main strategies to adolescent health care⁽¹⁾. Among the specific actions of this population, the Ministry of Health emphasizes the need for nurses to be involved with growth and development monitoring (GD)⁽²⁾.

Aiming to meet especially adolescents, who have a little habit of attending health services for preventive purposes, the School Health Program (SHP) was entered in 2008, which the first goal is to assess the health conditions through the classification of nutritional status and early identification of hypertension and diabetes. This assessment of students at school is performed by professionals of the Basic Health Unit (BHU), which territory is under their responsibility. All students, mostly asymptomatic, should be evaluated for the presumptive identification of the disease not previously recognized⁽³⁾. For this reason, the use of the *screening* method fits the suggested health assessment.

The word *screening* has English origin, in Portuguese could be translated as tracking. It is a method in which a low complexity testing is performed, of a large number of individuals to select those with the interest changing. Through clinical or laboratory examinations, usually of fast realization, the apparently healthy individuals are

classified as suspicious or not having a given change. Suspects must undergo further tests for a final diagnosis and cases confirmed to treatment⁽⁴⁾.

The high rate of obesity in the juvenile age group is emphasized, as another factor which reinforces the Health Ministry's concern in performing this assessment at schools. The Household Budget Survey, between 2008 and 2009, revealed that 21.7% of male adolescent and 19.4% females were overweight. In contrast, the height deficit, an important indicator of malnutrition, was 7.2% in boys and 6.3% in girls, which shows the Brazilian nutritional transition⁽⁵⁾.

Obesity is a chronic disease that affects all age groups and social classes⁽⁶⁾. Obese adolescents have decreased life expectancy, due to its association with cardiovascular disease (CVD), the leading cause of death in the world. But also interferes with psychological issues such as depression, low self-esteem and social isolation⁽⁷⁾.

Given the growing concern about this disease, especially among adolescents, the Ministry has encouraged the promotion of prevention and follow-up actions in the PHC. Therefore, it is also a problem of nurses practice because overweight is a nursing diagnosis, according to the classification of ICNP® Version 2⁽⁸⁾. It is observed, however, the difficulty of nursing work in this field, since there is little interest in the adolescent to spontaneously attend the Health Unit or receive home visits. Therefore, through the SHP, the Ministry of Health intends to direct the actions of prevention/identification/intervention of overweight to adolescents at school⁽³⁾.

However, specific instruments to guide nurses in conducting ongoing and planned actions are unknown, as suggested by the SHP. In this context, the *screening* method is a good methodological alternative, but for its applicability emerges the need to improve the work process to ensure the quality of provided care. In nursing, the use of protocols is a routine, and many are outdated and to improve them or build new ones, it is necessary to validate instruments. In this context, it is necessary, first to incorporate the technologies developed to the common practice, submit them for evaluation by experts, to determine its validity⁽⁹⁾.

One type of validity is the content, which determines the representation that each item of the measure or data proves the domain of interest, and also the dimension of each item within what the instrument proposes to measure a certainly investigated phenomenon. Although there are several empirical methods to establish this validity, which seems to be more effective is to ask a panel of specialties to compare the test objectives with its contents, and the result is used to define the items to be kept, revised or eliminated⁽¹⁰⁾.

In the face of the preceding considerations, it was aimed to evaluate the content of an instrument developed for nursing use in overweight adolescents *screening* at school.

MATERIAL AND METHOD

This is a methodological development study, conducted between August 2012 and June 2013. The first stage comprehends the construction of the instrument for *screening*, based on literature and professional experience of researchers, identifying the aspects to be measured in the assessment of adolescent's nutritional status.

The built form aimed to meet the general objective of the instrument (to identify the prevalence of overweight in adolescents and health actions directed to obesity) and the following specific objectives: to assess the health conditions and the chart of adolescents for overweight; and identify the perception of adolescents about health actions at school with emphasis on overweight thematic.

Thus, the included variables were grouped into six items: socio-demographic profile and general data (variables: school, gender, age, race, neighborhood of residence, number of residents in the residence and maternal education); physical activity practice, through adapted questionnaire (variables: if practiced physical activity in the last twelve months, which activity and frequency)⁽¹¹⁾; frequency of food consumption, by adopting a validated food questionnaire (variables: eating habits on time of breakfast, school snack, and lunch, number of meals per day, with whom and where does the meals at home; type of mastication, frequency consumption of food classified as risk and cardiovascular protective)⁽¹²⁾; family history of obesity and related diseases (diabetes, hypertension, obesity, heart disease, kidney disease, blood glucose, insulin and altered cholesterol); questions about the actions of prevention/intervention about overweight developed at school; and script for physical adolescent examination (variables: blood pressure, height, body mass index, waist circumference, identification of *Acanthosis nigricans*; self-assessment of nutritional status as underweight, ideal weight, overweight, fat or very fat, bio-impedance assessing weight exam, body water percentage, muscle and fat, and estimating the weight of bone tissue.

This instrument was named “*Screening* form for adolescents with overweight at school.” This instrument construction phase took place from August to November 2012.

The following step was the assessment by experts through an instrument for form content validation in the analysis. It was opted to use the psychometric criteria: organization (items must be organized, that is, one should assess whether the item's position is adequate to prevent contamination with other items)⁽¹³⁾; clarity (the item must be intelligible)⁽¹⁴⁾; simplicity (must express a single idea); ease reading (must provide accessible writing to the subject implementing the Protocol)⁽¹³⁾; adequacy of vocabulary (must be built to avoid words of little application in the work process); objectivity (must search for a specific aspect); precision (must have a defined position in the continuum of the construct and be different from the others); credibility (must be formulated to appears no infantile, suitable for age); and adequacy (must have the potential to verify the behavioral representation of latent attributes of a particular aspect)⁽¹⁴⁾. For each psychometric criterion, a concept was assigned, YES or NO, for each variable.

Experts were selected according to the eligibility criteria: being a doctor or master whose thesis/dissertation would deal about overweight in adolescents, with publications in journals with at least Qualis/CAPES B1 for nursing area. The search was conducted via the Lattes Platform, resulting in an intentional sample of fifteen experts who were contacted via e-mail, and the final sample composed of five who have confirmed the participation in the investigation. The opinions were sent by email and the consent forms signed and sent by postal.

The data were tabulated and analyzed using SPSS 17.0 by the frequency, chi-square, *Fisher and Kappa* tests (accepting as excellent the values >0.75). It was considered as an excellent frequency of positive answers from experts, $\geq 80\%$ values.

The content validation stage occurred from January to February 2013. After evaluating the results, the instrument in question was modified as the expert's opinions, corresponding to the last stage of this study.

The project was approved by the Research Ethics Committee of the Federal University of *Rio Grande do Norte*, CAAE number 10200812.0.0000.5537. Participants had assured the confidentiality, privacy and the right to decline at any time of the investigation, without any onus due to their abandonment.

RESULTS

Table 1 shows the frequency of expert's answers about the "Screening form for adolescents with overweight at school." It is noticed that all the criteria have reached total frequencies greater than 80%. The observed proportions had differences with statistical significance between the experts in all criteria ($p < 0.001$).

Table 1 – Distribution of the total answers of judges' about the psychometric criteria of the items of the "Screening form for adolescents with overweight at school." Natal/RN, Brazil. 2013.

Psychometric criteria	Judg %	Judg %	Judg %	Judg %	Judg %	Total %	p^*
Organization							
Yes	83.3	92.9	85.7	83.3	97.6	88.6	<0.001
No	16.7	7.1	14.3	16.7	2.4	11.4	
Clarity							
Yes	97.6	100.0	97.6	88.1	100.0	96.7	<0.001
No	2.4	0.0	2.4	11.9	0.0	3.3	
Simplicity							
Yes	100.0	100.0	100.0	100.0	100.0	100.0	<0.001
No	0.0	0.0	0.0	0.0	0.0	0.0	
Reading							
Yes	95.2	81.0	100.0	97.6	100.0	94.8	<0.001
No	4.8	19.0	0.0	2.4	0.0	5.2	
Vocabulary							
Yes	100.0	100.0	95.2	100.0	95.2	98.1	<0.001
No	0.0	0.0	4.8	0.0	4.8	1.9	
Objectivity							
Yes	100.0	100.0	100.0	100.0	100.0	100.0	<0.001
No	0.0	0.0	0.0	0.0	0.0	0.0	
Precision							
Yes	100.0	83.3	97.6	97.6	100.0	95.7	<0.001
No	0.0	16.7	2.4	2.4	0.0	4.3	
Credibility							
Yes	100.0	100.0	100.0	100.0	100.0	100.0	<0.001
No	0.0	0.0	0.0	0.0	0.0	0.0	
Adequacy							
Yes	95.2	100.0	100.0	97.6	95.2	97.6	<0.001
No	4.8	0.0	0.0	2.4	4.8	2.4	

Subtitle: *chi-square.

As shown in Table 2, through the Kappa test, it was possible to verify that some of the psychometric criteria for items: socio-demographic profile, physical activity practice, food frequency and prevention of obesity at schools, showed disagreement among experts, with poor agreement ($k=0.20$ to 0.39) or no agreement ($k<0$). The item about physical assessment got 1 Kappa value in all psychometric criteria.

Table 2 – Kappa concordance values of experts about the psychometric criteria of the items contained in the “*Screening form for adolescents with overweight at school.*” Natal/RN, Brazil. 2013.

Items	Psychometric criteria – <i>Kappa</i>								
	A	B	C	D	E	F	G	H	I
Socio-demographic profile and general data	-0,02	1	1	1	-0,05	1	-0,05	1	-0,02
Physical activity practice	0,28	1	1	-0,07	1	1	-0,09	1	1
Food frequency	0,22	-0,03	1	0,22	1	1	1	1	1
Family disease history	1	1	1	1	1	1	1	1	1
Obesity prevention actions at schools	-0,07	1	1	1	-0,04	1	-0,04	1	1
Physical assessment	1	1	1	1	1	1	1	1	1

Subtitle: A=Organization, B=Clarity; C=Simplicity; D=Ease reading; E=Vocabulary adequacy; F=Objectivity; G=Precision; H=Credibility; I=Adequacy.

Given these results, the changes were made in the Form: in the item “Socio-demographic profile and general data” the college term was replaced by school; in the item “Physical activity practice” the sequence of questions was changed to months per year, times a week and hours per day; in the item “Food frequency”, specifically for product frequency table, the following products were grouped (meat and chicken, fish and seafood, biscuit and wafer, candy, chocolate, lollipop and chewing gum, *ketchup*, mustard and mayonnaise); in the item “Obesity prevention actions at schools”, the indefinite pronoun “someone” was added to the question.

In Table 3, it is clear that after the changes of the items with negative evaluation by experts, almost all psychometric criteria achieved high concordance ($k=1$). Only in “socio-demographic profile and general data”, the precision and adequacy criteria remained with a low agreement, since two experts disagreed as to the race variable, justifying that classify themselves as race is a subjective matter, but the variable was maintained.

Table 3 – Kappa concordance values of experts about the psychometric criteria of the items contained in the *Screening* form for adolescents with overweight at school”, after changing the items with a negative assessment. Natal/RN, Brazil. 2013.

Items	Psychometric criteria – <i>Kappa</i>								
	A	B	C	D	E	F	G	H	I
Socio-demographic profile and general data	1	1	1	1	1	1	0.02	1	0.02
Physical activity practice	1	1	1	1	1	1	1	1	1
Food frequency	1	1	1	1	1	1	1	1	1
Family disease history	1	1	1	1	1	1	1	1	1
Obesity prevention actions at schools	1	1	1	1	1	1	1	1	1
Physical assessment	1	1	1	1	1	1	1	1	1

Subtitle: A=Organization, B=Clarity; C=Simplicity; D=Ease reading; E=Vocabulary adequacy; F=Objectivity; G=Precision; H=Credibility; I=Adequacy.

DISCUSSIONS

Currently, the protocol that guides the nurse's activity in the identification of adolescents with overweight was published by the Ministry of Health, which emphasizes the performance of this activity at the Health Unit, through exclusively anthropometric data⁽²⁾. This instrument is not necessary and sufficient indicator for nurses to guide their activity with quality, in view of the need for action in other scenarios, such as the suggested by the SHP by developing activities at school⁽³⁾.

Moreover, when considering the issue of nutritional changes, the activity of the nurse will be based on measures that permeate merely anthropometric questions, such assessment of food frequency, physical activity practice, family disease history and socio-demographic data⁽¹⁵⁾.

Although there are evaluation protocols of health conditions related to nutritional status^(11,12) in the consulted literature, instruments that addressed all of the above aspects were not identified, that affect the outcome of overweight, being necessary to the problem identification and planning nursing care.

Two questionnaires were adapted and included into the Form. The first was selected for addressing issues related to physical activity practice of young people, through questioning about which sports practices and frequency in the last twelve months,

classifying by a number of months per year, times a week and hours per day⁽¹¹⁾. The second was included because addressed questions about the frequency of consumption of various foods, classifying every day, more than twice a week, more than twice a month or rarely, the never option is not covered by this questionnaire⁽¹²⁾.

The consulted experts emphasized the importance of the initiative to systematize and standardize that nurses activities to be held in the PHC, at school or not. Being, possibly, able to assist in this activity with the presentation of an instrument to guide care for adolescents with altered nutritional status.

The evaluation results of the items of the "*Screening* form of adolescents with overweight at school" gives support to the content validity. The procedures used in this study were similar to those used by other authors to establish the validity of follow-up testing of content growth and juvenile development^(16,17).

Concerning the items that showed disagreement, there was a semantic concern by some experts, against the opinion of other experts, to indicate the need for replacement/inclusion of some terms of the items "Socio-demographic profile and general data" and "Obesity prevention actions at schools", being relevant such consideration, when considering the purpose of content validity of the developed instrument. Another discordant factor was the indication of reunification/sequence of the items "Physical activity practice" and "Food frequency", which was not mentioned by some experts. It is believed in the relevance of the above suggestion because it should be a concern to avoid the illusion effect of Müller-Lyer, which occurs when the order of a question influences in the following answers⁽¹³⁾.

When considering that validity is the degree to which an instrument measures what it is designed to measure⁽¹⁷⁾, the developed tool will be only fully valid when being applied by nurses in the Health Units in their practice at school. Therefore, it is believed in the need for future research to continue this validation process.

CONCLUSIONS

It can be affirmed that the proposed instrument was considered valid as the content for the action of nurses in overweight adolescent *screening* at school. The suggestions of the experts involved, in most cases, the clarity and adequacy of nomenclatures of certain variables.

As a contribution to nursing, there is the instrument proposed for the action of nurses in schools, that covers relevant aspects to the *screening* and addresses the rapid measurement, easy to understand, low cost, useful in the identification of the nursing diagnosis excess weight, and may impact the quality of the nursing process for this demand. It is also important to overcome the challenge of validating instruments that guide the activities of nurses because it is the development of technology, through which it is possible to drive more effective practices of nursing, providing a better quality of care.

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Received: 26 February 2015; Accepted: April 25, 2014

ISSN 1695-6141

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