Legnani et al.
Rev Bras Ativ Fís Saúde 2017;22(3):251-260
DOI: 10.12820/rbafs.v.22n3p251-260

RBAFS
Revista Brasileira de Atividade Física & Saúde
Brazilian Journal of Physical Activity and Health
SOCIEDADE BRASILEIRA DE ATIVIDADE FÍSICA & SAÚDE

Original Article

Students' and teachers' understanding of the WebCas questionnaire for assessing health-related behaviors

Compreensão de escolares e professores em relação ao questionário WebCas destinado a avaliar comportamentos relacionados à saúde

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Abstract

The objective of this study was to verify students' and teachers' understanding of the *WebCas* questionnaire, which aims to assess health-related behaviors. This cross-sectional, descriptive and exploratory survey used the qualitative technique of focus groups with 24 students and 6 teachers. The students highlighted the need to include colorful drawings, to display the segmentation of the day on the computer screen, to provide small explanatory texts in the questionnaire, and to replace terms that are unusual for children. Teachers suggested the inclusion of two images, one representing the male sex and the other representing the female one, and the creation of a scale to represent the intensities of activities, such as the sensation of tiredness, represented by sweat on the skin and hair and reddened skin. This study presented important contributions provided by students and teachers that enabled a better understanding of the *WebCas* electronic questionnaire in its application with children and adolescents.

Keywords

Questionnaire; Students; Healthy Behaviors.

Resumo

O objetivo deste estudo foi verificar a compreensão de escolares e professores em relação ao questionário WebCas destinado para avaliar os comportamentos relacionados à saúde. Esta é uma pesquisa descritiva exploratória de delineamento transversal, utilizando-se da técnica qualitativa de grupos focais realizada com 24 escolares e seis professores. Os escolares destacaram a necessidade da inclusão de desenhos coloridos, a segmentação do dia na tela do computador, a inclusão de pequenos textos explicativos e de termos pouco usuais para as crianças. Os professores destacaram a inclusão de duas figuras, uma representando o sexo masculino e outra o feminino e, ainda a criação de uma escala para representar as intensidades das atividades, como: sensação de cansaço, representada pelo suor na pele e no cabelo e pele avermelhada. Este estudo apresentou importantes contribuições dos escolares e professores que permitiram uma melhor compreensão do questionário eletrônico WebCas na sua aplicação com crianças e adolescentes.

Palavras-chave

Questionário; Escolares; Comportamentos saudáveis.

Introduction

Chronic degenerative diseases, mainly cardiovascular diseases, obesity, diabetes and arterial hypertension, are considered the main causes of death across the world and were responsible for 38 million deaths in 2012, or 68% of the 56 million deaths that occurred in the world in that year[1]. In Brazil, 72% of the deaths that occurred in 2007 were attributed to chronic degenerative diseases[2], which have, among their antecedents, Children's and Adolescents' Health-Related Behaviors (CAHRB), such as: insufficient physical activity, sedentary behavior, inadequate eating habits, reduced sleeping hours, and alcohol and tobacco consumption[3,4].

These behaviors, when presented in an individual or aggregated form, contribute to increase the prevalence of chronic non-communicable diseases in adulthood[5] and are considered a major concern in the area of public health[6]. In this context, it is extremely important to collect information about health-relat-

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ed behaviors among schoolchildren, with the purpose of preventing health complications in the short and long run[7].

In epidemiological studies, the administration of questionnaires to assess health-related behavioral aspects is quite common. However, this has proven to be a very complex task, mainly when it involves children and adolescents, due to their difficulty in recalling daily activities and events. This is especially true when they need to recall aspects like the duration, amount and intensity of activities practiced in their daily routine[8,9].

In addition, studies have shown that instruments used to assess CAHRB have been developed to identify only one or two behaviors simultaneously[10,11]. Instruments that assess diverse CAHRB concomitantly are almost non-existent in the literature. The format in which questionnaires are prepared (printed) has hindered the conduction of epidemiological surveys involving many CAHRB. Aspects like high printing costs, respondents' incorrect completion, and high amounts of time spent to answer the questionnaire and to keyboard the data[12] potentially limit the conduction of research involving many CAHRB. Another aspect to consider is the methodological fragility of questionnaires as far as the process of construction and validation is concerned[12].

The *WebCas* questionnaire has a multicomponent characteristic, that is, it assesses countless variables in one single instrument. These variables are specifically targeted at children and adolescents. In addition, the study presents original subsidies, as Brazilian studies that involve a similar methodology are scarce.

One of the strategies that can be adopted in the construction and validation of new research instruments are focus group studies[10]. This is a qualitative research technique characterized by discussion groups that talk about a particular theme, evaluating concepts or identifying problems in the attributes of an instrument. It has been used to increase the instrument's reliability, favoring the obtention of valid measures in questionnaires[15]. Furthermore, this methodological procedure values communication among research participants and generates data that are accurate and adequate to reality[16-18].

Questionnaires in the online or web format have been developed in order to reduce costs and administration time. Moreover, they are more attractive from the respondents' point of view[14]. Some studies have been conducted with this proposal, especially with children and adolescents[12,13,22,27]

The *WebCas* was developed in order to construct an online questionnaire with the aim of assessing children's and adolescents' health-related behaviors, such as: physical activity, sedentary behavior, eating habits, sleeping hours and alcohol and tobacco consumption.

Therefore, as a way of subsidizing the process of construction and validation of the *WebCas* electronic questionnaire, the study aimed to apply the technique of focus groups to check students' and teachers' understanding of the questionnaire.

Methods

Study's characteristics

This study is an exploratory and descriptive cross-sectional survey that uses the qualitative technique of focus groups[18]. This technique was employed with the aim of obtaining information to aid in the construction of the instrument.

Participants

The technique of focus groups uses intentional selection[30]. Thus, one school, stu-

dents and teachers intentionally selected were invited to participate in the study.

The inclusion criterion for children and adolescents was being aged 9 to 15 years. As for teachers, they should teach classes to students belonging to the studied age group. As the *WebCas* has the multicomponent focus, that is, it assesses countless variables, it was important to obtain the opinion of teachers from diverse areas of knowledge. Their suggestions were essential to improve the construction process of the *WebCas*, as these teachers work with children and adolescents and are familiar with their interpretations, actions, and knowledge. Overall, four focus groups were conducted.

Creation of the focus groups

The number of participants in each group was determined according to recommendations found in the literature. Groups between six and 15 people are suggested as ideal[20 30], and each focus group should have a minimum of three to four people[19]. Thus, 48 people were invited so that 12 people would participate in each one of the four groups at the place and time that had been previously scheduled.

A consent document was sent to the students' parents or guardians, so that they could authorize the students' participation in the study. The teachers signed the consent document at the moment of the interview. Overall, 30 people, among students and teachers, participated in the study. The others did not show up, on the scheduled day, for the focus group session.

Data Collection

The interviews were conducted in the months of June and July 2014 and followed a script that had been previously tested in a pilot study. The interviews were conducted by one researcher who was familiarized with the technique of focus groups. The script contained open questions and topics linked to the electronic questionnaire, according to the information presented on Table 1.

TABLE 1 – Semi-structured script for the conduction of focus groups.

Category	Discussion
Knowledge about the *WebCas*	Explain the definitions of the physical activities that are included in the *WebCas* questionnaire and ask for examples. Ask about the intensity (weak, moderate, strong) of the physical activity, explaining the definition and comparing it with the activities that are performed in the students' daily routine. Ask the participants for examples. Ask about their perception of time and compare the activities they perform in their daily routine with the time they take to perform them. Ask about eating habits and consumption of fruits and vegetables. Ask for examples of fruits and vegetables. Ask about risk behaviors (alcohol and tobacco consumption), definition of dose and consumption. Ask about health perception and medicines they take.
WebCas Practice	In the practice, they were requested to answer the online questionnaire. They should recall the previous day, and: - Complete a list of activities (arts, domestic chores, personal care, dance and gymnastics, school activities/work, sports activities, leisure activities, recreational activities). - Recall the time they spent to perform the activity, in fractions of 15 minutes. - Include the intensity of each activity. - Inform about fruit and vegetable consumption, risk behavior, health perception, level of schooling, medicines. While they were answering the questionnaire, they could suggest improvements to facilitate its understanding and interpretation.
Suggestions of Improvements	What pieces of information could be added? What changes could be made to improve the questionnaire?

At the moment of the interview, the group dynamics was divided into three stages: a) Knowledge about the *WebCas*; b) *WebCas* practice; c) Suggestions of improvements. All the stages occurred simultaneously. The questions aimed to elicit aspects related to the interpretation and understanding of the *WebCas* questionnaire, with the purpose of being a point-of-departure to the discussion about the instrument's characteristics. In addition, the questions' purpose was to collect suggestions offered by the participants concerning the improvement of the instrument.

The electronic questionnaire was introduced to the participants, together with the script. The participants could fill in the questionnaire in the computer and suggest improvements. All the focus groups sessions were recorded by means of a voice recorder and filmed with the aid of a tablet. Then, the recordings (voice and video) were reviewed and fully transcribed, composing an electronic spreadsheet.

The recording was started after the participants' authorization and was stopped after the discussion was closed. The average duration of the sessions was 70 minutes. All the discussions were conducted at adequate rooms free from external disturbances, located in the school's premises. The study was approved by the Ethics Committee of Research with Human Beings of *Universidade Federal do Paraná*, under opinion number 684147/2014.

Data analysis

For data analysis, the files were fully transcribed and each participant received an identification code (P1, P2, P3....) to preserve their anonymity. The transcriptions were independently performed by two collaborators and reviewed by one of the researchers. After the transcription was completed, content analysis was performed[10,30]. This procedure consisted of the detailed reading of the transcriptions, so that the researchers could become fully familiarized with the data. The reading and re-reading of the transcriptions allowed to identify themes in order to organize the data, and also to relate each theme to the participants' discourses. This enabled to identify the participants' main ideas, suggestions and perceptions about the theme. In the evaluation of socioeconomic strata, the methodology suggested by ABEP (Brazilian Association of Research Companies)[21] was used. This methodology classifies subjects into seven strata; however, in this study, it was decided to categorize the subjects into three classes: A = strata A = B1; B = strata B2 + C1; C = strata C2 + D + E.

Results

Overall, 24 students and six teachers were interviewed. The focus groups were distributed in the following way: 10 children (9-10 years), eight adolescents (11-14 years), six adolescents (15 years) and six teachers, totaling 30 participants. There were two physical education teachers, two Mathematics teachers, one Biology teacher and one Philosophy teacher. They had been teaching for an average period of 13 years.

The sample's main characteristics were: it was composed predominantly of female students (53%) with a mean age of 11.6 years, height of 1.5 m, body weight of 48.8 kg, and Body Mass Index (BMI) of 21.2 kg/m^2, predominantly belonging to the socioeconomic stratum of class B (91.5%), and attending school in the morning period (56.5%). The characteristics of the focus groups participants are presented on Table 2.

The results are presented in three categories related to the study's objectives: a) Knowledge of the list of activities, duration and intensity; b) Eating habits, risk behavior and health perception; c) Suggestions of improvements for the *WebCas* instrument. The main themes identified by categories of analysis are presented on Table 3.

TABLE 2 – Characteristics of the focus groups participants according to age group (n = 30).

Focus Groups (FG)	Female		Male	
	n	%	n	%
FG 01 - 9 to 10-year-old children	5	50.0	5	50.0
FG 02 - 11 to 14-year-old adolescents	4	50.0	4	50.0
FG 03 - 15-year-old adolescents	5	83.3	1	16.7
FG 04 - Teachers	4	66.6	2	33.4

TABLE 3 – Main suggestions of improvements identified by the focus groups.

Focus Groups	Suggestions of Improvements
Children	Including colorful drawings.
Adolescents	Scale with images to measure the intensity of the activities. Segmentation of the day to facilitate the recall of the performed activities. Including drawings to facilitate the interpretation of the activities. Explaining what a dose is, in the question about risk behaviors. Explaining terms that are not common in the life of children and adolescents.
Teachers	Representation of both sexes for the intensities of activities. Including an illustrative scale to represent the intensity of activities (sensation of tiredness, speed of the movement). Colorful images, graphic increments to call the children's attention and facilitate understanding. Characterizing the definition of intensity (weak, moderate and strong). Including videos to facilitate the understanding of the intensities of physical activities. Characterizing the duration of the activities (time). Creating a procedure for the administration of the ***WebCas*** questionnaire, including definitions of activities, intensity, duration, unusual terms. Characterizing the type of physical activity practiced in the school context and outside this context. Familiarizing students with the ***WebCas*** questionnaire one day before its administration.

List of Activities, Duration and Intensity

When they were asked about the definitions of the activities listed in the *WebCas* (arts, domestic chores, personal care, dance and gymnastics, school activities/work, sports activities, leisure activities, recreational activities), the participants (children, adolescents and teachers) showed that they understood the definitions and listed many activities that are usually developed, especially in the school context. Some examples are: physical education classes, breaks, doing homework and having meals. In the characterization of the listed activities, children and adolescents understood the definitions and were able to cite examples: art activities, drawing and painting were the most cited by the children; playing the guitar was the most cited activity by the adolescents.

As for the children's and adolescents' capacity to remember how much time they spent performing the activities, all the interviewed teachers stated that children in this age group have difficulties in remembering activities and, consequently, the time that is spent. Some discourses pondered this limitation in children and indicated aspects that might facilitate the recall. For example: fractionating the child's day into morning, afternoon, evening and night.

To facilitate the recall, the students were asked to remember what they usually did in each period; thus, we divided the day into sections: evening and night (they would be sleeping), morning or afternoon (they would be studying), and they would have to remember the activities they performed in the rest of the day. Dividing the day into sections made the recall become easier. Or remembering the structured, organized and planned activities that the students perform every week. For example, martial

arts: judo, taekwondo and karate, one hour, twice a week, or arts activities, for example, playing the guitar or the piano, one hour, once a week - these activities seem to be more easily remembered by the children. Teachers reported that children aged nine and 10 would have difficulties regarding perception of time, but this was not observed in the focus group sessions, as it can be seen in the report *"...all we have to do is to remove the times of school and homework."; "we play, we go to church everyday and then we sleep..."*.

Regarding the children, it was noticed that their perception of time seems to depend on their degree of involvement in the activity, on their motivation, and also on whether it is an organized activity or not. Fractionating the students' 24 hours into "night, school and the rest" helped the children to remember the performed activities, as it can be seen in the report: *"...I wake up at 6 a.m. and arrive at school at 7:30 a.m. I stay here until 5:30 p.m..."* (10-year-old child). The adolescents also felt more confident to recall the activities when the day was fractioned. Concerning duration, all the interviewed children knew how to describe their daily activities specifying the activities' duration and scheduled time. This denotes the understanding of time, even among 9-year-old children.

To understand the intensity of each activity, it was necessary to explain the definition and to include illustrative examples. After the sessions, these were included in the questionnaire, as it was one of the most mentioned suggestion of improvement. The teachers reported that it would be necessary to include images or videos to demonstrate the different intensities. The adolescents understood the definitions clearly, but they warned that it would be interesting to include images for children.

The children understood the definition of the intensities after many examples were provided. According to reports: *"...strong refers to jumping rope, playing soccer, riding a bicycle... But jumping rope can also be weak..."* or *"playing games on the computer is weak, but it can be strong if you're standing up and moving your body..."* or *"...strong is when your face reddens, your heart races, sweat trickles down and wets your hair..."*. When images were used, interpretation and understanding occurred instantaneously.

Eating Habits, Risk Behavior, Health Perception

About the characterization of eating habits, children and adolescents were able to cite examples of consumption of fruits, vegetables, candies, and fast food. In addition, they were able to recall their weekly consumption. Foods eaten in the school period, like snacks and lunch, were cited many times and served as the point-of-departure for the discussion. For example, *"...I eat fruits every day, they come in the school's snack...and vegetables, too...5 days, then...I just don't eat them 7 days a week because I don't have them at home..."*

As for risk behaviors (alcohol and tobacco), the children and adolescents were able to cite examples, as it can be seen in the report of a 10-year-old child: *"...yes, I drank once. My uncle gave it to me. I got drunk and fell down in the woods..."* or in the report of a 13-year-old adolescent: *"I've drunk more than one dose. I got dizzy and that's why I know I was drunk...my father gave it to me..."*. However, the difficulty was related to reporting the number of doses. The teachers suggested explaining through images or actual glasses what a dose of each beverage represents. For example: one dose of beer, one dose of wine and one dose of *cachaça*. According to some teachers, children and adolescents would not be able to answer this question. In the second focus group session with children and adolescents, different types of glasses were included to better describe what a dose was.

Thus, one of the most creative and pertinent solutions was the creation of illustrative elements that represented doses of beverages, in order to facilitate the

children's and adolescents' understanding. After the inclusion of glasses as illustration, the children were able to answer the question right away.

As for health perception, children and adolescents stated they have good health and related health perception to: performing physical activity, eating well, not becoming ill and not taking medicines, as it can be seen in the following reports: *"...Yes, I never take medicines, and I play and... I eat fruits and vegetables..."* or *"...I take medicines only when I have a headache and a sore throat, but I eat vegetables..."* In the case of children who take medicines for continuous treatments, they had difficulties in reporting the name of the disease and the name of the doctor. The teachers' suggestion was to send, to the parents or guardians, these questions highlighted in the consent document.

Suggestions of Improvements

Among the suggestions that were provided, the highlight was the need to include illustrations to represent the activities, mainly their intensities (weak, moderate and strong). The characterization of the activities in terms of intensity, duration and frequency was a polemical aspect in all the sessions, and heterogeneous opinions and suggestions emerged.

The inclusion of children from both sexes to represent the images was also mentioned in the discussions. One of the most pertinent solutions was the creation of an illustrative scale with images representing the sensation of tiredness. The observation of this sensation would be the best indicator of intensity, when compared to the speed of the movement in its different intensities. Another theme that was discussed were the advantages and disadvantages of adding not only illustrations, but also videos, to aid in the interpretation of the intensities of physical and sports activities. Fractioning the day into periods with the aim of facilitating students' recall was the suggestion of teachers and adolescents. After the inclusion of the most reported suggestions, the *WebCas* questionnaire was finalized and used in a study on the CAHRB of the city of Curitiba, Southern Brazil[13].

Discussion

The analysis of the results obtained in this cross-sectional study enabled us to perceive some contributions to improve the *WebCas*. According to the information obtained in the focus groups, which were composed of students and teachers, there was a good understanding of the web-based questionnaire. However, some participants suggested that some measures should be taken to facilitate its administration, like the inclusion of graphic illustrations to aid in the understanding of the intensities of physical and sports activities, as well as recreational and leisure activities. The use of images in questionnaires with web-based administration is not recent[26]. It has been enhanced by many authors[12-14], mainly because the electronic format of the questionnaires favors the use of interactive images in their conception and this, in turn, makes the questionnaire become attractive to respondents and facilitates their interpretation.

Results found in focus group studies unanimously corroborate the *WebCas* in relation to the need of including illustrative images, mainly for types of physical activities, especially regarding body positions: standing up, sitting and lying down[11,26,27].

Particularly, the findings of this study are similar to the ones obtained by Lévesque, Cargo and Salsberg[11] and Costa et al.[10]. In both studies, the authors identified the need to improve the graphic quality of the questionnaire and sug-

gested the use of strategies to aid in the recall of aspects like intensity and duration of activities - for example, the segmentation of the students' daily routine.

In addition, some strategies were suggested to help the researchers explain the questionnaire to students. The main example regards the physical activity recall, and the strategy was the segmentation of the parts of the questionnaire, that is, the division of the day into parts to facilitate the recall of the activities performed in the 24 hours of the previous day, with pertinent comments: *when you wake up, what do you usually do first?* For example, personal care (brushing one's teeth, taking a shower, having breakfast...), going to school (on foot, cycling, skateboarding, by van, by bus, by car...), domestic chores (making the bed, washing the dishes, sweeping the floor...), and so on, according to the domains of activities proposed by the *WebCas*.

Another suggestion given by students and teachers in the present study was the inclusion of an image of a boy and a girl to illustrate all the activities that are part of the *WebCas* questionnaire. For example, the image of a boy and a girl cleaning the house to represent domestic chores, playing a musical instrument to represent art activities, playing volleyball or basketball to represent sports activities, and so on. The findings cited above corroborate the studies carried out by Lévesque, Cargo and Salsberg[11] and Costa et al.[10], who have highlighted the importance of the representation of both sexes to illustrate activities that boys and girls can perform, without sex distinctions.

Concerning the identification of the children's and adolescents' perceptions of the intensities (weak, moderate or strong) and how they could be best represented in the *WebCas* questionnaire, both age groups highlighted that the creation of an illustrative scale with images representing the sensation of tiredness, the presence of sweat and reddened skin would be the best intensity indicator, when correlated to the movement's speed in its different intensities. Thus, the scale would represent well the distinction among the three intensities, which confirms the findings of Lévesque, Cargo and Salsberg[11], who showed that the most popular representation of intensity and duration was the accumulation of sweat.

Furthermore, there was the overlap of the somatic indicators of intensity and duration, that is, pain and panting. This suggests that the children perceive many physical symptoms as indicators of both parameters of involvement in physical activity[11,14].

It seems that, up to the present date, there had been no qualitative studies in Brazil with focus groups aiming at the construction of a web-based, multicomponent questionnaire involving children and adolescents. Some studies approaching barriers and facilitators to physical activity were found. However, their aim was not the construction of a questionnaire; therefore, a discussion with studies that have methodological similarities was not possible[28,29].

One of the positive points of the study is the methodology: the technique of focus groups, which enabled to establish the necessary characteristics to improve children's and adolescents' understanding of the *WebCas*. In contrast, it is possible to mention some limitations, inherent in the use of this methodology as, sometimes, the participants in this type of research are not able to provide sufficient information to help construct and improve the instrument. In this case, it is possible to employ other resources, like semantic and content validation, which can be performed by consulting the scientific literature and researchers who have renowned expertise in the area in question. In the case of the *WebCas* questionnaire, these procedures will be conducted at subsequent stages[10,11,14,22,26,27].

The contributions provided by the study's participants (children, adolescents and teachers) confirm the importance of carrying out studies using the focus group methodology. Among the main contributions provided by the students, we highlight the inclusion of colorful drawings in the sections of the *WebCas* questionnaire, the segmentation of the day on the computer screen, the inclusion of small explanatory texts and comments in some questions related to alcohol consumption (dose), and also the replacement of terms that are unfamiliar to children, like "risk behaviors" (replaced by health damages). Among the teachers, the main suggestions were: the inclusion of two images, one representing the male sex and the other, the female sex, and the creation of a scale to represent the intensities of the activities. For example: sensation of tiredness, represented by sweat on the skin and hair, and reddened skin.

Therefore, the study provided important contributions to be incorporated into the electronic questionnaire *WebCas*, which will enable a better understanding of its content and form of administration, when validity and reproducibility procedures are performed.

Authors' contribution

R.S.F. Legnani (orcid.org/0000-0001-7604-3056) participated in the initial conception of the study, literature review, data collection, data analysis and in the writing of the article. E.M. Camargo (orcid.org/0000-0003-2127-2606) participated in literature review, data collection, data analysis and results. E. Legnani (orcid.org/0000-0002-8251-8000) participated in all the stages of the critical review of the article. E.D.A. Bacil (orcid.org/0000-0002-8672-395X) participated in data collection and in all the stages of the writing of the article. N.A. Malta Neto (orcid.org/0000-0003-4385-4287) participated in data transcription and analysis. W. Campos (orcid.org/0000-0003-3979-1017) participated in all the stages of the critical review of the article.

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Received 28/07/2016
Revised 03/12/2016
Approved 15/12/2016