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ADOLESCENTS' NEEDS TOWARDS SCHOOL-BASED NUTRITION INTERVENTIONS

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Abstract

Background and Aims: *This study aimed to identify adolescents' knowledge and attitudes towards healthy eating and their needs and preferences towards school-based nutrition interventions, thus investigating the "must have" components on school-based nutrition interventions than can improve adolescents' dietary patterns.* ***Material and Methods:*** *To reach the proposed aims, we used a qualitative strategy of inquiry, by conducting semi-structured focus groups. We collected data in two urban schools from Cluj-Napoca, Romania. 32 adolescents aged 11 to 14 years old attended focus group discussions. Focus group discussions were audio-taped, transcribed and analyzed using thematic analysis.* ***Results:*** *A viable strategy to deliver effective nutrition interventions for adolescents needs to address adolescents' interests and concerns, use visuals and stories to present nutrition related information, increase adolescents' self-efficacy in choosing healthy foods, train adolescents in having a balanced diet, promote healthy eating as acceptable for peers, and involve parents in nutrition interventions through home-based activities.* ***Conclusions:*** *Improving adolescents' nutrition related knowledge and behavior and creating supportive environments is not sufficient in improving adolescents' dietary patterns. Practitioners should aim at designing school-based nutrition interventions addressing adolescents' specific needs and rely on the needs assessment process as a major component of the design.*

key words: *adolescents, school-based nutrition interventions, healthy food, knowledge, needs and preferences.*

Background and aims

A balanced nutrition during childhood and adolescence is essential to promote good health, to support growth and cognitive development and to reduce the risk of chronic diseases later in life [1,2]. Generally, the dominant diet adopted by adolescents is rich in refined carbohydrates, salt and saturated fats and low in fruits and vegetables [3-5]. These dietary patterns increase the risk of obesity, diabetes and cardiovascular disease in the long run [6,7]. Moreover, studies show that dietary patterns established in adolescence can, to some extent, continue in adulthood [8,9], resulting in negative economic and social consequence [10]. Therefore, it is essential to promote healthy dietary patterns from an early age. However, given the multitude

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of food preferences and choices and the developmental changes characteristic of this age, it is difficult to design effective nutrition interventions for adolescents [11]. The most common methods that are used to achieve this goal are knowledge-based, behavioral or environmental approaches, or a combination of these [12]. Knowledge-based methods rely on transferring information using written materials or presentations [13,14]. Behavioral methods focus on improving adolescents‟ motivation, skills and self-efficacy for healthy eating and healthy food choices [15-17]. Environmental methods generally entail making healthy foods easily available [18], banning unhealthy foods on school grounds through school food policies [19], or changing the home food environment by involving parents [20].

The effectiveness of these three approaches is controversial, some studies reporting no improvements of dietary intake while others registering moderate improvements [21,22]. Nevertheless, the literature is limited and inconclusive regarding the best design of effective interventions for this age bracket [21]. This limit is important as interventions have budgetary constraints most of the time and careful planning is needed to avoid resource misuse [23].

Assessing the needs of a targeted population has been considered an effective strategy to ensure the effectiveness of interventions and services offered to that population [24]. Thus, to increase their effectiveness, nutrition interventions should account for adolescents' suggestions regarding these matters. Although researchers have been addressing adolescents' needs regarding the content and design of nutrition programs [25,26], to our knowledge, no such study has been conducted in South-Eastern Europe. Consequently, we performed a qualitative study aimed to explore Romanian adolescents' knowledge and attitudes towards healthy eating and their needs and preferences towards school based nutrition interventions.

Material and Methods

Sampling and recruitment

In our sample we intended to recruit students of both genders, aged between 11 to 14 years old, having various educational performances and various socio-economic status. Thus, as sampling method, we used maximum variation sampling. This purposive sampling technique relies on researcher's judgment to select participants with diverse characteristics and is used in qualitative research to ensure the presence of maximum variability within data.

To recruit participants, we sent invitation letters with assent forms to students' parents or to their caregivers, by distributing them in two schools from Cluj-Napoca. In each class we distributed the forms three times, to ensure all students brought the forms back with parental approval or disapproval. 40 students aged 11 to 14 years old were enrolled in the study.

Data collection

Measurement instruments

For data collection we developed a focus group guide (see Table 1). The key questions helped us define two areas to be explored. We used two questions to explore adolescents' knowledge and attitudes towards healthy eating and six questions to explore adolescents' knowledge, attitudes and preferences towards nutrition interventions. The semi-structured format provided participants guidance regarding the topics for discussion, allowing them at the same time to elaborate the information important to them that was not considered by the research team.

Table 1. Focus group guide.

Knowledge and needs towards healthy food
Tell me, what pops into your mind when you hear the words "healthy food"?
What do you think your colleagues feel about healthy food?
Attitudes and needs towards nutrition interventions
How would your colleagues react if someone would come in your class to present them information about healthy food?
What would you like to find out if someone would come into your class to talk about healthy food?
Describe how a nutrition intervention should look like.
What would make students pay attention to and be active in a nutrition intervention?
What should happen during a nutrition intervention?
Describe the most appropriate person to present facts about healthy food to students of your age.
Who should and shouldn't attend a nutrition intervention, besides yourselves?
Where and when would you like to attend nutrition intervention activities?

Setting and participants

We enrolled two schools in the study, after receiving approval from the schools' representatives. Both schools were located in the central part of the city and served children with diverse socio-economic status and with diverse educational performances. In one school we organized two focus groups and in one school we organized three focus groups of 6 to 8 students each. Three focus groups addressed 5th and 6th graders and two focus groups 7th and 8th graders. We conducted the focus groups in a class room, during class hours. The school counselor notified students and their teachers about the time and location of the focus group, a day before and, again, ten minutes before the focus groups started. Two interviewers, both psychologists, engaged in introductory discussions for 10 minutes, described the study and its procedures and requested oral consent from participants; only after, the group interview was initiated. Focus group discussions lasted between 30 to 50 minutes.

Out of the 40 students enrolled in the study, 32 students participated in the end. We reached information saturation based on the information collected from 32 participants. Thus, although 8 students were not able to attend focus groups when scheduled, we didn't need to reschedule a focus group with them.

Data analysis

The ensure a similar transcription of the audio recordings, two data operators with a background in social sciences and in public health received training in transcription following the procedure described by Maguire and Delahunt [27]. All audio recordings were double checked and rectified where necessary. Two coders with a background in psychology and public health analyzed the data by following Brown and Clarke guide for thematic analysis [28]. To ensure a common understanding of the codes, each coder read the transcripts and partly developed a coding scheme. A mix of inductive and deductive approaches to generate the codes was employed. Thus, a set of codes were generated based on the research questions of the study while other codes derived from the transcripts. After comparing the codes and reaching an agreement on the final versions of the coding scheme, each coder independently coded the focus group transcripts and categorized the codes in themes and subthemes using NVivo, a software supporting qualitative data analysis [29,30]. The codes and themes were compared again between the coders.

Discrepancies between coders were minor and agreement was reached.

Results

Four major categories emerged from the focus group discussions: definition of healthy diets, adolescents' attitudes towards healthy eating, food choices determinants and school-based nutrition intervention design.

1) Definition of healthy diets

Adolescents had a broad definition of healthy diets. Firstly, they described healthy diets by referring to food categories such as "fruits and vegetables", "salads", "tomatoes and cucumbers", and "fruit juice". Secondly, they referred to macronutrients and micronutrients stating that healthy diets should consist of "fruits, vegetables, cereals, all foods that offer calcium, iron and everything the body needs" and of foods containing "proteins", "vitamins", "…practically the food pyramid", and should exclude "food additives", "preservatives", "calories" and "fat". Thirdly, they extended their definition of healthy diets to the concepts of quantity, timing and lifestyle. They considered that in order to have a healthy diet "Eating one fruit a day is not enough". Thus adolescents considered that to eat healthy, one needs to balance the amount of healthy and unhealthy food, "eat on time" and "have a healthy lifestyle". Finally, adolescents considered food processing and cooking essential in defining a healthy diet. They were aware of how "cooking can change food properties and even turn healthy foods into unhealthy ones."

2) Attitudes towards healthy eating

Asked to describe their peers' attitudes towards healthy eating, adolescents reported their classmates and friends were not interested in eating healthy or in a healthy lifestyle, ate unhealthy and didn't like healthy food. They also reported that their classmates didn't want to understand and accept that healthy food is better, didn't take the negative consequences of unhealthy eating seriously and didn't pay attention to differences between healthy and unhealthy food. A 5th grader girl stated that "They don't like healthy food. They don't eat salads too often. They eat more fast-food. They have knowledge about healthy food, but they don't want to understand that it's better, they don't want to accept although they understand."

3) Determinants of adolescents' food choices

We identified three major themes expressing determinants of adolescents' food choices. The first theme was taste of healthy foods. Adolescents stated that "Healthy food tastes worse than unhealthy food." and considered unhealthy food easier to cook, carry and eat compared to healthy food. Moreover, perceived difficulty and time needed for cooking healthy food influenced adolescents' food choices.

The second theme was peer rejection. Adolescents knew what types of food were healthier, but did not consume them to avoid peer rejection. They perceived that their classmates and popular adolescents ate unhealthy food, so an overt interest in healthy eating meant social exclusion for most: "Some adolescents are not interested in healthy eating to avoid being rejected by others, because most adolescents don't eat healthy…maybe they are afraid of this."

The third theme was eating habits. Adolescents perceived their parents as essential in determining their eating habits, considering any school based intervention ineffective if the family eating habits were unhealthy: "If family eating patterns are unhealthy, school can't change the way we eat". Moreover, food access in schools was perceived as important in determining their eating habits: "It would be

more helpful if school cafeterias wouldn't serve sandwiches, and serve instead something else. Children would adapt and they would try to eat salads not sandwiches". Once adolescents developed unhealthy eating habits they considered impossible giving them up: "It's hard to give up unhealthy food because they got used to it and it's hard to get it out of the system."

4) Design of a school-based nutrition intervention

The thematic analysis revealed five themes addressing the design of a school-based nutrition intervention.

The first theme was delivery method of nutrition related activities. Adolescents disliked nutrition interventions assessing their knowledge by using questionnaires and requiring only their minimal involvement. They preferred attending interactive presentations that involved them as active participants and felt that school based nutrition interventions should use visuals, games about food, competitions, contests, debates and comparisons, cooking and tasting activities, experiments, and have practical demonstration of healthy and unhealthy eating consequences: "I would like if someone would come and explain and play games about food with us. I would really love interactive moments. I mean…not just to give us a piece of paper to answer or to write on it or to read it. To present some stuff in PowerPoint or something like that and to play games on what we learned. That way I think we would remember more and better."

The second theme was the informational content of nutrition related activities. Students were interested in defining unhealthy diets, namely learn what are unhealthy foods, what effects unhealthy eating has on the body, how unhealthy food is cooked: "I'd like to know what food does to our body, to understand what happens when we eat some types of food. I also want to hear what we need to eat on a daily basis to be healthy." For adolescents, unhealthy food was strongly defined by the presence of food chemicals and additives. Thus they were eager to learn how and why additives and chemicals are added in different foods and what other unhealthy ingredients are added: "It would be interesting to watch a documentary of how chemicals, additives, colors are added to food and the effect they have on our body, what they are made of and why they harm us, what are the consequences."

A third theme was the delivery context of nutrition related activities. Some adolescents preferred nutrition interventions delivered in the school environment, suggesting large classrooms or the school yard, whereas others preferred environments outside the school such as a hospital, a nutrition clinic, a fast-food, a restaurant, or an orchard. Although they preferred short activities delivered during the school week and lasting between one and two hours, they suggested that more than one session should be included in an intervention.

"They could organize different activities outside. For example we could walk in an orchard and pick apples or go to a store and be taught how to make food choices and what to consider when choosing food."

"It should last for an hour and take place in a restaurant that serves only healthy food and show us how healthy food is cooked and that even if it's healthy it can be tasty. Then go to a fast-food and see the same things and realize what they actually eat."

The fourth theme was the moderators of nutrition related activities. Adolescents considered that the moderators should be kind, patient, relatable, fun and friendly. The moderator's age and gender did not matter, however the respondents considered he/she should be a good presenter, be articulate and knowledgeable about nutrition, look healthy and

have the ability to capture their attention. Adolescents agreed the presenter should be positive and funny but also serious when needed, in order to keep a balance between a relaxed and a focused atmosphere. Adolescents thought it would be interesting and motivating to listen to people who experienced the negative consequences of unhealthy eating and managed to overcome them: "Someone with a very unhealthy lifestyle that was able to adopt healthy lifestyle. That person was very close to get ill and said "Stop!. From now on I'm going to change my lifestyle."

The fifth theme was participants in nutrition-related activities. Most adolescents preferred to have only their classmates participating in nutrition-related activities and refused to have parents and teachers. However, some of them thought that close friends or relatives interested in healthy diets or in need to change their unhealthy diets should participate. Pupils also agreed their parents' presence is important, as family eating habits were important determinants of their food choices:

"I would recommend these types of activities for anyone and especially for those eating unhealthy, so they learn how to eat healthily. I would like everyone to participate in these activities because everyone needs to know how important it is to eat healthily."

"I think that our parents and relatives would be well-suited to talk about a healthy lifestyle because we listen to everything they say. And if you live with them, after all, your mother cooks the food you eat so if she cooks healthy food you have to eat it."

Discussion

This study aimed to identify adolescents' knowledge, attitudes, preferences and needs towards healthy eating in order to develop a set of recommendations for nutrition interventions delivered in the school context. The adolescents in our study were able to easily name healthy foods, what these should or should not contain and that some methods of preparation can influence the nutritional properties of food. Some of them could also use specialized concepts to define food and most of them acknowledged the importance of healthful eating in relation to disease prevention and to a healthy lifestyle. However, this knowledge was not reflected in attitudes and behaviors, as other studies also point out [10-15]. Adolescents reported a negative attitude towards healthy food, a preference for the unhealthy one and a resistance to the idea of changing their eating habits. These attitudes were justified by the fact that unhealthy foods are more palatable or more convenient and by the longstanding eating habits reinforced by peer norms, family or the environment.

Our study results helped us develop a list of recommendations for school based nutrition intervention using adolescents' needs and preferences.

First, nutrition interventions should address adolescents' passions (e.g. sports) and their concerns (e.g. body image, educational achievement). Healthy eating and healthy lifestyle ranked low on our participants' priority list, a result supporting findings from other studies [31-33]. Consequently, future interventions need to relate nutrition to adolescents' interests.

Second, nutrition interventions should use visuals and stories to present information. Adolescents claimed that images depicting the negative influence of different foods and additives on the body would impact them more compared to verbal communication on these topics. Nutrition interventions should use risk communication through visuals and storytelling as this strategy was proven to improve learning

and risk perception [34,35]. Nonetheless, there is need for more research on the effectiveness of risk communication in improving knowledge and long-term risk perception of nutrition-related behaviors.

Third, nutrition interventions should increase adolescents' self-efficacy in making food choices. Although some adolescents liked healthy foods, they perceived unhealthy foods as much easier and convenient to eat, especially at school. This can point to a lack of skills and self-efficacy. Adolescents expressed the need to be taught new cooking skills, healthy recipes and how to choose foods. Interventions should strengthen their food preparation abilities and enhance their motivation to pack a healthy school lunch. This affirmation is supported by programs which, by adopting this behavior focused strategy, managed to have a long-term positive influence on adolescents' food choices [15,21,36,37].

Fourth, nutrition interventions should teach adolescents how to have a balanced diet. The antagonism between "healthy" and "unhealthy" foods, which was also reported in other studies [38-40], emerged during our group discussions and indicates adolescent's unfamiliarity with the concept of dietary balance. This concept entails that "healthy" and "unhealthy" foods can be seen as complementary rather than mutually exclusive [38] and that a proper diet does not necessarily mean a restrictive diet.

Fifth, nutrition interventions should make healthy eating an acceptable behavior in the group. A very important factor reported by adolescents to cause the consumption of unhealthy food at school was peer pressure and the fear of social exclusion. Adolescent's social integration, sense of belonging and status in a group can be influenced by the foods they eat in the presence of their peers [41]. While food is not a topic in everyday-conversation, as some adolescents in our study confessed, it can, nevertheless, spark rejection of the ones who consume "unacceptable" food and thus, do not conform to group norms. Research shows that adolescents who are interested in health are also perceived as "geeky", "nerdy" and "untrendy", an image which could lead to marginalization [42]. This barrier could be overcome by creating interventions which encourage equal participation in activities, allow pupils to interact with each other through games, increase group integration and foster a feeling of belonging. Also, as previous research shows, educators are active agents who constantly reinterpret frameworks and adapt their strategies to the situation and environment they are presented with, therefore they should be encouraged to assess and mediate relationships between adolescents and act as their role models apart from facilitating new connections with food [43].

Finally, nutrition interventions should involve parents through home-based activities. At home adolescents are still dependent on their parents' food choices. Our participants emphasized that at home they have to eat whatever their mothers cook for them and that parents buy them fast food as a treat, therefore the sense of autonomy and control that could be gained through nutrition activities at school can be either suppressed or supported by parents. Parental participation is considered essential for the success of nutrition interventions [44]. However, evidence shows that while some parents contemplate their involvement in school-based interventions, others believe home-based activities are more convenient because they allow for better planning [44]. As presented in other studies, our participants expressed mixed feelings regarding the involvement of parents in school-based activities [45]. While acknowledging that their eating behaviors can

change easier with the support of their parents, they also expressed embarrassment of discussing personal problems with their parents around.

Conclusions

To our knowledge, this is the first study addressing Romanian adolescents' knowledge and attitudes towards healthy eating and their needs and preferences towards school based nutrition interventions. This study's results are valuable as they highlight variables that both researchers and practitioners should consider when designing and implementing school based nutrition interventions. Our findings suggest practitioners should design nutrition interventions that consider behavioral as well as environmental aspects. Our study shows that a viable strategy would be to incorporate nutrition information in activities that adolescents are interested in or to link it to matters that concern them. Furthermore, practitioners should aim at improving individual self-efficacy regarding food choice, but should also focus on creating supportive social environments by persuading adolescent groups to adopt healthy nutrition habits as a group value. Parents still influence considerably their children's diets at this age, therefore researchers should focus on finding ways to overcome the barriers that could make parents desist from getting involved in nutrition interventions.

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