

## Research

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# Knowledge about Feeding and Practicing Physical Activity as Protective Factors of Overweight and Obesity in Students of Official Schools in the Municipality of Sopó

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### ABSTRACT

**Objective:** To establish the knowledge of students of cycle IV of official schools of the municipality of Sopó in relation to food and adequate physical activity (AF), as protective factors of overweight and obesity.

**Methodology:** A descriptive cross-sectional study (diagnosis) was carried out through three phases, in the first phase, a conceptual reference was built on the competencies that would be expected to strengthen in students through the curriculum, in relation to food and adequate physical activity as prevention of overweight and obesity. In a second phase, the curricula of the areas of Natural Sciences and Physical Education were analyzed in order to establish whether or not they provide sufficient and necessary knowledge to the students in relation to the feeding and practice of physical activity as protective factors of overweight and obesity. Then in the last phase, a survey was applied to 469 students between the ages of 12 and 19 with questions associated with obesity, overweight, physical activity and adequate food.

**Results:** In relation to the practice of physical activity, it was established that only 10% of the students complies with the global recommendation of 60 minutes per day, in relation to physical activity, 88% is not clear which are the components to have into account during the practice of physical activity frequency, intensity and time (Organisation mondiale de la Santé, OMS, WHO 2010). With respect to the knowledge for choosing a healthy diet, it would be essential to conclude that the knowledge is insufficient, since 63% of the students include a sweet dish and other foods that are high in sugar in their diet. Regarding the overweight and obesity prevalence, only 12% are perceived as overweight and 8% come under obese, rest of the 80% are neither of the two categories. The figure that is in contrast with the nutritional status was reported by the Nutritional Surveillance System (SISVAN) of the municipality in the recent years.

**Conclusions:** It was possible to conclude that the curricula of the areas of Natural Sciences and Physical Education Recreation and Sports do not provide students with the necessary and sufficient knowledge when it comes to adequate diet and practice of physical activity as prevention measures of both overweight and obesity, however, they provide some guidance regarding healthy habits and lifestyles.

**KEY WORDS:** Feeding; Overweight; Obesity; Physical activity; Study plans.

**ABBREVIATIONS:** WHO: World Health Organization; BMI: Body Mass Index; NCDs: Non-communicable Diseases.

### INTRODUCTION

Overweight and obesity are the global public health problems that affects both developing and developed countries.<sup>1</sup> Its most frequent causes are associated with genetic factors, inadequate

feeding habits and physical inactivity. Exercise as an activity to benefit the health, care and maintenance of the body, as well as the promotion of healthy lifestyles and food, have been displaced by sedentary work dynamics, low-energy leisure activities such as watching TV, playing video games and surfing on the internet, as well as eating habits of high caloric content and low protein intake.<sup>2</sup> According to the World Health Organization (WHO), in 2012, about 44 million (6.7%) of children under 5 years were overweight or obese, while in 1990 they were only 31 million (5%).<sup>3</sup> In Colombia, according to figures from the National Nutrition Situation Survey in 2010, 17.5% of children and young people aged 5 to 17 years are overweight.<sup>4</sup> The Secretary of Health of the Municipality of Sopó in 2012 performed a nutritional screening survey in school children aged 6 to 11 years, which resulted in 13.9% overweight and 3.9% obesity; between the age of 12 to 17 years: 17.7% overweight and 3.3% obesity. In 2013, the school population aged 5 to 11 years were found to be 27% overweight and obesity, a sharp increase of 9.2% over last year. In the 12 to 17 year old students, 19% were overweight, 1.3% increase compared with the previous year. Studying overweight and childhood obesity in school contexts a strategy for their prevention and is one of the challenge that educational institutions have to incorporate into their curriculum. Researchers, teachers, parents and educational community in general, are bringing new results, new ways to intervene, articulating curricula, joining intra- and inter-institutional efforts, but it is still necessary to explore many more in this field and perceiving that research addresses the problem from various angles. The research that we present, have a purpose to establish the knowledge of students of cycle IV of official schools of the municipality of Sopó in relation to food and adequate physical activity as factors to prevent overweight and the obesity in the young generation.<sup>5</sup>

## MATERIALS AND METHODS

One of the biggest problems of this century that overwhelms the world population without a doubt is overweight and obesity, which are the disorder in metabolism and are largely associated with eating habits and physical inactivity. One of the strategies to eradicate overweight and obesity are the schools through their curricula mainly with pedagogical actions inside and outside the classroom, modifying behaviors and internalizing learning. According to the National Nutrition Situation Survey,<sup>4(p8)</sup> the prevalence of overweight or obesity in the population aged 5 to 17 years has increased 25.9% in the last five years and in this age group it was previously found as 17.5% nationwide. Three percent colombians between 5 and 64 years of age do not consume fruits daily and that 5 out of 7 (71.9%) between the age 5 to 64 years do not consume vegetables daily. "Similarly," approximately 1 in 4 Colombians (24.5%) between the age of 5 to 64 years, 25% ate fast food every week. About 22.1% of 1 in 5 Colombians between 5 and 64 years consume soda or soft drinks on the daily basis. The following was a descriptive cross-sectional study (diagnosis): the population was constituted by 469 students of both genders residing in the municipality of Sopó, Cundina-

marca, belonging to cycle IV and enrolled for the academic year 2015 in the official educational institutions of the municipality. Variables such as overweight, obesity, physical activity, study plans and healthy eating were taken into account. The procedure was developed in several stages. In the first instance, the technical documents proposed by the Ministry of National Education were analyzed through the Basic Standards for the areas of Natural Sciences and Physical Education. The next step allowed to categorize each of the contents observed in these standards. Subsequently, compared to curricula provided by educational institutions, a new matrix was created. With all the information provided, we proceeded for designing the information collection instrument based on the research questions. With knowledge regarding food and adequate physical activity as protective factors of overweight and obesity which are observed in the educational training process at the level of cycle IV in the official schools of the municipality of Sopó. When elaborated the questionnaire, validated with experts, we took into account their recommendations and suggestions and designed a pilot test of 25 questions that was applied in students of the school Delia Zapata Olivella, Suba, Bogota, Colombia with similar characteristics of cycle IV of the official schools of the municipality of Sopó, afterwards adjustments were made to some terminologies, which were not clear for a group of students and five questions were eliminated. Once the survey was consolidated, it was preceded by the application phase (questionnaire of 20 questions) and tabulation of the data obtained.

## Statistical Analysis

A database was built with the results of the survey in the program Microsoft Office Excel 2010, the variables were analyzed using descriptive statistics determining frequency distributions and percentages with the application of the SPSS program as database manager with the information obtained from the curricula of the areas of Natural Sciences and Physical Education, and a matrix was built with the main findings. The matrix for the area of Natural Sciences groups two major categories. In addition, the matrix for the area of Physical Education due to its particular structure (competencies and performances), initially addresses what was found in the curriculum of the different institutions and subsequently presents the matrix of contents suggested by the Ministry of National Education (MEN) for each degree.<sup>6</sup>

## Sociodemographic characteristics

The study population consisted of 469 students between the ages of 12 and 19 years, belonging to the eighth grade 54% and ninth 46% (cycle IV). The gender distribution was taken as 53% female and 47% male. The average age was between 14 and 15 years, out of which, major population was located in the urban areas (60%) while 40% live in rural areas. As for their time in the institution, (24 years) 24% were between 1 and 2 years, 27% were between 3 and 4 years, 9% were between 5 and 6 years, 19% were between 7 and 8 and finally 21% were between 9 and 10 years.

**Knowledge Related to Healthy Eating**

It was possible to determine that 90% of the students (n=424) have knowledge related to healthy eating mainly referred to the consumption of fruits and vegetables. However, knowledge is insufficient when choosing the foods that make up a healthy diet. 63% (n=294) include sweets and sugary foods that are part of their diet. In this same sense, ignorance on the part of the students is observed when identifying a healthy food, since 75% (n=352) identifies through their taste and texture, 18% (n=82) agree that through the food label; while 7% (n=35) conclude that through its price (Figure 1).<sup>7,8</sup>

**Knowledge regarding Overweight and Obesity as an Illness**

Seventy three percent (n=340) have the necessary and sufficient knowledge to relate overweight and obesity to a non-transmissible chronic disease, while 21% (n=100) relate them to a habit. In addition, 80% (n=375) do not perceive in their body any of these chronic non-communicable diseases, such as obesity or obesity, only 8% (n=38) were perceived as overweight and 12% (n=56)

were obese (Figure 2).<sup>9-11</sup>

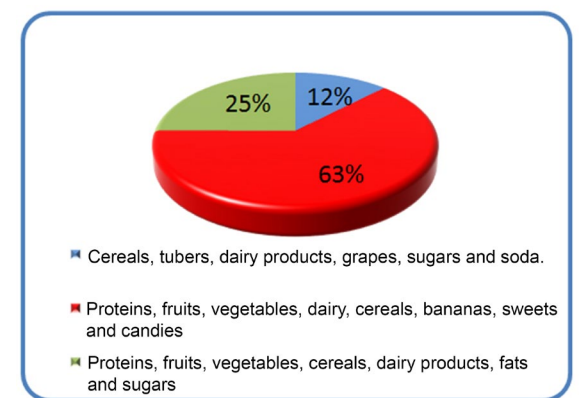
**Physical Activity**

According to the results obtained with respect to physical activity AF, 10% performed AF between five and six days, 36%, one or two days, while 54% walked for three or four days a week, for ten minutes during the last seven days prior to the application of the survey. Regarding knowledge about AF 70% consider that it is a driving quality that improves health and relates to physical condition, 25% refers to exercises to improve breathing and 5% associates it with communicative skills. When asked about the components of physical activity (frequency, intensity and time), 76% considered that strength, endurance and speed are its components. 15% argued that as the stretching, exhaustion and fatigue, 9% agreed with frequency, intensity and time.

**Study Plans**

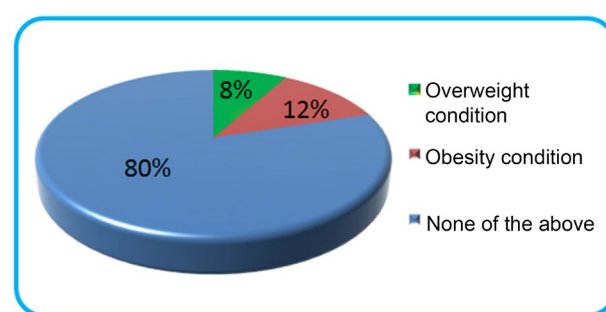
The curricula of the areas of Natural Sciences and Physical Education of the official schools of the municipality of Sopó were

**Figure 1:** Knowledge Regarding Foods that Make up a Healthy Dish.



**Source:** Survey for the evaluation of knowledge regarding overweight, obesity and practice of physical activity in students of Cycle IV of Official Schools of the Municipality of Sopó. 2015.

**Figure 2:** Perception of Overweight and Obesity.



**Source:** Survey for the evaluation of knowledge regarding overweight, obesity and physical activity practice in students of cycle IV of official schools of the municipality of Sopó. 2015.

analyzed through a matrix. In the area of scientific knowledge-related aspects were identified in two areas, firstly, the approach to basic scientific knowledge, the management of knowledge of science through various environments (living environment, physical environment, science, technology and society). In the area of physical education the contents were structured by competences and performances, through which the student demonstrates the level of development of the competition through their performances, in which it manifests the meaning and their ability to perform and in the attitude towards knowledge, in changing situations of application. The performances are the observed and evaluates the manifestation of the state of development of a competition and are constructed as units of learning that enable their formation and evaluation.<sup>12,13</sup> The performances are the observable and evaluable manifestation of the state of development of a competition and are constructed as units of learning that enable their formation and evaluation. They contain a formative intention based on the characteristics of the student's development, the complexity of the contents and the relationship with the context. The performances are expressed as statements that explain the learning actions, the conditions of realization and the meaning. They can generate relationships and interactions that contribute to the development of different competencies. The formulation of specific competences implies their utterance independently, but they integrate the totality and unity of the human being.

## DISCUSSION

Regarding the socio-demographic component, there were no significant differences in relation to gender and location (53% female and 47% male). Most participants (60%) live in the urban part of the municipality. The percentage of students in the institution between 9 and 10 years is 21%, while a student between 1 and 2 years corresponds to 24%, indicating that the curriculum did not have impact on all the students, in the same way, since many of them come from various institutions which are official and unofficial both.<sup>14,15</sup> As for food, a significant percentage (60%) of students surveyed have the knowledge to identify healthy eating in terms of variety and balance; as a result, relating them to eating habits such as fruit and vegetables consumption (90%). However, at the time of identifying the foods that make up a healthy dish, only 25% have the knowledge to establish which food (proteins, fruits, vegetables, cereals, dairy products, fats and sugars), have a very low figure, if taken into account that 63% say that sweets and candies are part of a healthy dish.<sup>16</sup> That is, while students have the knowledge to identify which foods are healthy or not, when given a choice, they choose not to eat healthy. When referring to overweight and obesity as a concept, 88% have enough knowledge to relate it to excess fat that can be harmful. Similarly, for 73%, it is related as a disease that affects the current or future state of your health.<sup>17</sup> The results show that most students are not perceived to be overweight and 80% are considered as obese. Only 12% (n=56) were perceived as overweight and 8% (n=38) with obesity. Figures that contrast with the nutritional status reported by the SISVAN of the municipality in recent years. The population aged 5 to 18, for the year

2012, represents 15.8% of overweight people, for the year 2013, 17.50% and 14% for the year 2014. Powerfully calls attention, which by the year 2014, exceeds the levels of the department and the nation, 12.9% and 13.4% respectively. One of the aspects that could influence, is that a large part of the students 47% does not have the knowledge to identify body mass index (BMI) as an indicator to evaluate their nutritional status. Concerning the practice of physical activity, it is observed that the levels are low, only 10% of the students surveyed performed 60 minutes of daily physical activity through activities such as running, jumping and walking, while 54% performed between 30 and 40 minutes, half of what is recommended. When analyzing the curricula provided by the institutions, it is observed that in some centers (two), none exists for the area of Natural Sciences in grades six and seven, likewise, in one of the institutions, no such plan was provided for the area of Physical Education in primary school. It is established that in general the curricula in both areas integrate important elements that are part of the sciences, but they do not know others and the processes that are articulated in order to generate knowledge. For example, in basic primary content the thematic axes are developed in a disjointed way. In secondary school, they are incomplete and superficially approach some aspects related to habits, healthy lifestyles, overweight and obesity. However, through the area of physical education, a series of recreational and sports activities are promoted that allow the student to develop some skills and abilities.<sup>18</sup>

## CONCLUSION

Through this study, we sought to establish knowledge regarding diet and adequate physical activity as protective factors of overweight and obesity in the process of educational training of students of cycle IV of official schools of the municipality of Sopó. Overweight and obesity were addressed because of the increase in NCDs in the Juvenile population; understanding that education with all its structure should allow eradicating this type of scourge of people's lives. In this study it was possible to establish that during the training process of the students of cycle IV of the official schools of the municipality of Sopó, the curricula of the areas of Physical Education and Natural Sciences do not provide sufficient and necessary knowledge related to adequate diet and practice of physical activity as protective factors of the overweight and obesity. They offer some guidelines in relation to healthy lifestyles, but developed them in a disjointed way taking into account that the thematic axes do not address overweight and obesity including them as important elements. Students do not have enough knowledge to identify a healthy food.<sup>19</sup> The vast majority do it through the taste and texture and not through the label, where all the nutritional information is printed. The levels of physical activity are very low which makes it possible to classify them as inactive, since they are indulged in some leisure activity of slight intensity less than one hour a day.<sup>20</sup> The vast majority of students are not perceived to be overweight or obese; conclusion that contrasts with the results of the nutritional monitoring carried out by the municipality through the secretaries of education and health.

**CONFLICTS OF INTEREST**

The authors declare that they have no conflicts of interest.

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**ANNEXES****ANNEXES 1: Questionnaire for the Assessment of Knowledge on Food And Practice of Physical Activity as Protective Factors of Overweight and Obesity in Students of Cycle IV in Official Schools of Sopó Municipality.**

Below you will find a series of questions that aim to evaluate your knowledge regarding overweight, obesity, practice of physical activity and adequate food according to the curricula of the areas of Natural Sciences and Physical Education Recreation and Sports. The questionnaire consists of 20 questions, with a single correct answer alternative. Please fill in the oval in the answer sheet, with the option that you consider correct.

**BASIC DATA**

Educational institution: \_\_\_\_\_

Grade: \_\_\_\_\_

Age: \_\_\_\_\_

Gender: Female: \_\_\_ Masculine: \_\_\_

From what grade are you in the institution: \_\_\_\_\_

Currently lives in the area: Rural \_\_\_\_\_ Urban \_\_\_\_\_

**1. Which of the following activities are basic forms of movement?**

- a. The force
- b. The resistance
- c. Walking and running

**2. During the last 7 days, on how many days did you walk for at least 10 minutes in a row?**

- a. Two days
- b. Three or more days
- c. not on the way

**3. Do you mean the care and grooming of the body?**

- a. Body hygiene
- b. Mental hygiene
- c. Environmental hygiene

**4. Are they part of healthy lifestyles?**

- a. Eating and practicing physical activity
- b. Positive thinking
- c. Watch television and surf the internet

**5. Is the body mainly hydrated?**

- a. Maintenance of healthy bones
- b. Recover or supplement lost fluids
- c. Reduce hunger and quench thirst

**6. Overweight and obesity refer to?**

- a. An illness
- b. A lifestyle
- c. A habit

**ANNEXES****7. One of the ways to identify a healthy food is through?**

- a. Its taste and texture
- b. The label
- c. Its price

**8. Physical condition refers to?**

- a. A set of capacities or motor qualities that can be improved through the practice of physical activity and that serve to carry out daily activities.
- b. A set of exercises to improve muscular endurance and breathing.
- c. A set of skills and abilities to communicate in society.

**9. Identify a healthy eating habit through the following actions?**

- a. Consume several servings of vegetables and fruits per day
- b. Drinking soft drinks several times a day
- c. Consume products based on flour and sugars several times a day

**10. Does food play an essential role in obtaining energy from humans, which of the following statements do you consider corresponds to the characteristics of healthy eating?**

- a. Must be varied and balanced
- b. Must be rich in carbohydrates and proteins
- c. Must be based on dried fruits and vegetables

**11. Are the main components of physical activity?**

- a. Frequency, intensity and time
- b. Stretching, exhaustion, and fatigue
- c. Strength and endurance and speed

**12. To prevent diseases such as being overweight and obese, is it recommended?**

- a. Prepare food without excess salt, fats and sauces.
- b. Play and engage in physical activity occasionally
- c. Consume foods outweigh the number of calories we can spend on a daily basis.

**13. Is the main objective of warm-up and stretching?**

- a. Prepare the muscles and joints for different physical demands.
- b. Improve physical abilities for two hours.
- c. Improve the technical fundamentals of a given sport.

**14. Are you currently in overweight or obese condition?**

- a. Overweight
- b. Obese
- c. None of the above

**15. Overweight and obesity are defined as?**

- a. A disease of the central nervous system
- b. A health problem affecting children and adolescents who eat fruits and vegetables
- c. An abnormal or excessive accumulation of fat that can be harmful to health.

**16. One of the functions of food sources of protein is reflected?**

- a. In the formation of muscular tissue
- b. In decreasing body weight
- c. In increasing percentage of fat in the body

**17. Does the “healthy dish” strategy contain the following foods?**

- a. Cereals, tubers, dairy products, fats and sugars.
- b. Proteins, fruits vegetables and dairy.
- c. proteins, fruits vegetables, cereals, tubers, dairy products, fats and sugars

**18. Which of the following foods do you consider to be a source of protein?**

- a. Grains such as beans, lentils and chickpeas
- b. Fruits and vegetables apple and orange
- c. Soft drinks

**19. Is vigorous and moderate are one of the most important characteristics of?**

- a. The types of bones that run through our body
- b. The membranes of the digestive system
- c. Physical activity

**20. Is the Body Mass Index (BMI) important for health because it allows?**

- a. Identify sexually transmitted diseases that can impair health
- b. Identify the type of exercises a person should do to improve health.
- c. Identifying chronic noncommunicable diseases such as overweight and obesity