

Research Article

Habits of Healthy Living, Nutrition and Physical Activity in Children Aged 8-12 Years in Tijuana, Mexico

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Abstract

Background: Obesity has increased alarmingly in developed countries and in developing countries such as Mexico, is the main problem of malnutrition in adults and is a disease that is increasing in the child population. In Baja California, according to the National Health and Nutrition Survey (2012), it is reported that in school age there is a prevalence of overweight of 24.9% and obesity of 17.3%.

Aim: The purpose of this study is to identify the habits of healthy living, nutrition and physical activity in school children from 8 to 12 years of age in Tijuana, Mexico.

Design and Setting: Descriptive cross-sectional study.

Methods: In 265 patients in the Family Medicine Unit #27, Tijuana, Mexico; a descriptive cross-sectional study was conducted in patients of school age from 8 to 12 years old. We obtained general data such as height, age, weight, sex and a questionnaire validated in Mexico about healthy life habits, nutrition and physical activity for schoolchildren. For statistical analysis, we applied descriptive statistics; for qualitative variables frequencies and percentages were used and for quantitative variables mean and standard deviation were used.

Results: The majority of the participants were in the category of insufficient habits, 60.4% (n=160); Sufficient habits corresponds to 29.4% (n=78) and healthy habits were only 10.2% (n=27).

Conclusion: The study reveals that the majority of children aged 8 to 12 years do not comply with proper habits of healthy living, nutrition and physical activity, which is related to the high rate of obesity and overweight in Tijuana.

Keywords: Childhood Obesity; Habits of Life; Physical Activity; Eating Habits

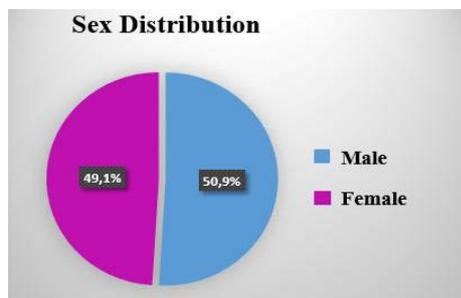
Introduction

Obesity is defined as an abnormal or excessive accumulation of fat that can be harmful to health. The body mass index (BMI) is a simple indicator of the relationship between weight and height that is frequently used to identify overweight and obesity in adults. In the case of children, overweight is the BMI for age with more than one standard deviation above the median established in the WHO child growth patterns, and obesity is greater than two standard deviations [1]. Currently Obesity and Overweight have become "emerging diseases of the 21st century" or "global epidemic of the 21st century"[2]. Worldwide, the number of infants and young children (0-5 years old) who have overweight or obesity increased from 32 million in 1990 to 42 million in 2013. In developing countries with emerging economies (classified by the World Bank as low and middle income countries) the prevalence of childhood overweight and obesity among pre-school children exceeds the 30% [3].

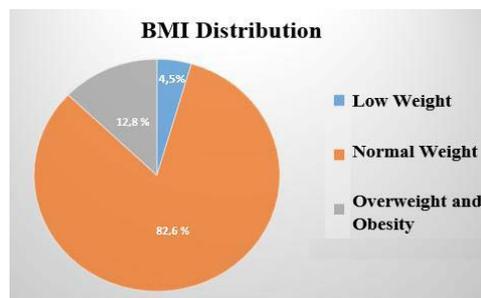
The habits of life, nutrition and physical activity are defined as the set of daily behaviors of a person in a given environment [4]. There are clear environmental, commercial and cultural factors that modify nutrition, physical activity and exercise. These are of great importance, because they have their greatest effect on children of

school age and are potentially modifiable in childhood, since they have been specifically associated with an accelerated rate of weight gain for age, weight for height, weight for BMI and other measures of adiposity at school age [5]. Studies are increasingly showing that food transgressions during the first year of life, mainly during the period of breastfeeding, are associated with the development of overweight or obesity at later ages. In most of the large studies there is an inverse relationship between the duration of breastfeeding and the presence of excess weight (overweight or obesity) in children and young people [6].

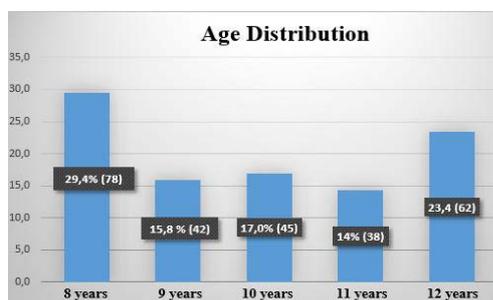
The metabolic disease that occurs with the highest prevalence, both in developed and underdeveloped countries, is obesity. It is estimated that, worldwide, about 22 million children under the age of five are overweight. Of the countries of Latin America, Mexico has the highest prevalence of obesity in children, reaching approximately 20%. The region with the highest affected child population is Mexico City with 38%. Childhood obesity is associated with hyperinsulinemia, lower tolerance to glucose and alterations in the blood lipid profile. The metabolic changes observed in children and adolescents with obesity are also known as metabolic syndrome and may be related to the endocrine disorders observed in obesity, such as growth hormone



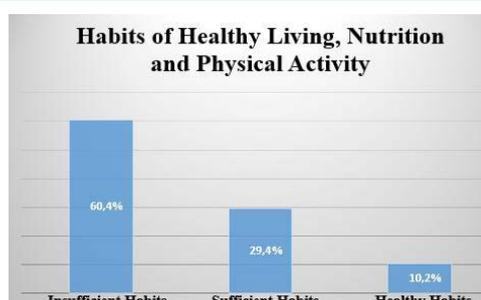
Graphic 1: Descriptive analysis of the distribution by sex.



Graphic 3: Descriptive analysis of the distribution by BMI.



Graphic 2: Descriptive analysis of the distribution by age.



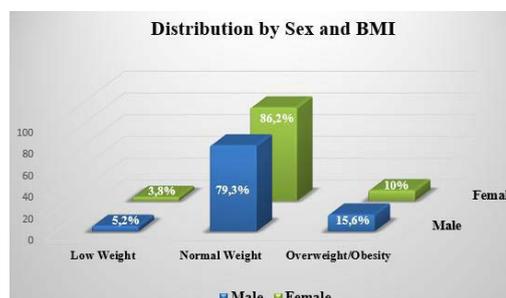
Graphic 4: Descriptive analysis of the distribution by habits of healthy living, nutrition and physical activity.

deficiency or hyperlipidemia. Orthopedic problems have also been described that are accompanied by alterations in physical mobility and inactivity, disorders in the immune response with increased susceptibility to infections, skin alterations that reduce the ability to heal wounds and infections, and nocturnal respiratory problems such as sleep apnea. The psychosocial consequences of the distortion of the physical image for the child with obesity can be important and even more severe than physical ones such as low self-esteem, social isolation, discrimination and abnormal behavior patterns as the most frequent [7].

Clinical practice guidelines propose physical activity, the reduction of television hours and breastfeeding as the method of infant feeding of choice as preventive action for obesity. In the case of treatment, it is proposed the early identification of obesity and overweight and should be treated immediately, it should not be postponed to adolescence or adulthood, the recommended non-pharmacological measures are diet modification, increase of physical activity, decrease in sedentary activity, family participation and behavior modification, psychological support is important; Pharmacological or surgical measures such as the use of metformin, orlistat and bariatric surgery are recommended after adolescence [8]. The main objective of the study is to identify healthy lifestyle habits, nutrition and physical activity that may favor the development of overweight or obesity in children from 8 to 12 years of age in Tijuana, Mexico.

Materials and Methods

A descriptive cross-sectional study was carried out, in the Family Medicine Unite #27, of the Instituto Mexicano del Seguro Social (IMSS), located in Tijuana, Mexico; in patients which were selected by a consecutive sampling techniques; that met the following inclusion criteria: age between 8 to 12 years, that accepted and signed informed assent and informed consent signed by the parents; patients with



Graphic 5: Descriptive analysis of the distribution by BMI and sex.

psychiatric or neurological illness were not included and eliminated those who did not complete the survey or those with incomplete information. The following data were obtained directly from the patients: age, sex, weight, height, BMI and habits of health living, nutrition and physical activity. The procedure for the data collection was as follows: age was calculated in years according to the year of birth, sex was determined by the phenotype characteristics of each individual, weight-height was calculated on a scale with stadiometer (Transcell technology model TI-540-SL), BMI was calculated based on the Quetelet index ($BMI = \text{weight}/\text{height}^2$), school children will be classified with obesity with Z scores higher than +2 standard deviations (SD), and overweight with Z scores higher than +1 and less than +2 SD.

Habits of health living, nutrition and physical activity were measured through a validated questionnaire (0.76 Cronbach alpha) in Mexico in 2014 by the researcher Guerrero et al. [9], this instrument has 27 items with five response options, which are translated into numbers, from 1 to 5. If the opinion is favorable to the attitude, the answer "daily" will be coded with a 5 and "never or less than once a

month" with a 1; if it is unfavorable, "daily" will be coded with a 1 and "never or less than once a month" with a 5, at the end we will add all the answers and the highest score always indicates the healthiest behavior. Therefore, the minimum total score will be 27 points and the maximum score will be 135 points. In this way, those who have 95 points or less will be classified as having poor nutrition and physical activity habits, since the child's lifestyle has many risk factors. Those who present a score within the range of 96 to 109 points, will be considered with sufficient nutrition and physical activity habits, which indicates that the lifestyle has health benefits, but also presents risks. Children who score 110-135 points will be considered as patients with healthy nutrition and physical activity habits.

The recollected data was integrated into data collection sheets and analyzed using the SPSS program version 20 in Spanish, where we applied descriptive statistics; for qualitative variables, frequencies and percentages were used and for quantitative variables, mean and standard deviation were used. The Kolmogorov-Smirnoff test was used to establish the normality of the data. The Protocol was authorized by the Local Committee of Research and Ethics in Health Research.

Results

There were 265 surveys to children from 8 to 12 years of age. The sex of the participants was slightly higher male with 50.9% (n=135) than female with 49.1% (n=130). It can be seen that the population studied has a good distribution by sex (Graphic 1). The average age of the participants was 9.86 ± 1.5 years, the frequency by age was the following: 8 years with 29.4% (n=78), 9 years with 15.8% (n=42), 10 years with 17% (n=45), 11 years with 14.3% (n=38), and 12 years with 23.4% (n=62), a total of 265 patients (Graphic 2). The weight of the participants had an average of 37.68 ± 11 kilograms, with a minimum range of 17 and a maximum of 73 kilograms.

The majority of participants (82.6%) had a normal BMI (n=219). The percentage of obesity and overweight was 12.8% (n=34) and with low weight was 4.5% (Graphic 3). The size had an average of 1.3 ± 0.1 meters, with a minimum range of 1.05 and a maximum of 1.70 meters. In the instrument used to measure habits of life, nutrition and physical activity, an average of 91.58 points was obtained among the 265 participants, the minimum score was 53 and the maximum score was 126 points. The interpretation of the results obtained from the survey reports that the participants were in the following categories (Graphic 4): insufficient habits with 60.4% (n=160), sufficient habits with 29.4% (n=78) and healthy habits with 10.2% (n=27). The relationship between BMI and sex (Graphic 5) reports a higher percentage of obesity and overweight in male sex with 15.6% (n=21) compared to female 10% (n=13). There was a higher percentage of normal weight in the female sex 86.2% (n=112) than in the male 79.3% (n=107).

Discussion and Conclusion

According to Encuesta Nacional de Salud y Nutrición (ENSANUT 2012), in Baja California the prevalence of overweight and obesity in school age of 5 to 11 years were 24.9% and 17.3%, respectively (overweight + obesity = 42.2%). In contrast, in this study an obesity and overweight result of 12.8% was obtained (n=34). Most

of the participants were within a normal BMI with 82.6% (n=219). ENSANUT 2012 took measurements in children aged 5-11 years, while our study was limited to ages of 8-12 years, this could indicate that as the age of the children increases, the BMI decreases. In the results by sex, it is obtained that of the 135 male participants, 5.2% (n=7) has low weight according to percentiles of WHO and 15.6% (n=21) has obesity/overweight, in the female sex the percentages of low weight were 3.8% (n=5) and obesity/overweight 10% (n=13), in contrast to the results of ENSANUT 2012 where both conditions (overweight + obesity) in 2012 was higher for the girls (44.2%) compared to boys (40.0%).

According to results of the survey, the population does not meet the criteria of healthy nutrition habits and physical activity, there is no comparison parameter since no previous research has been done using the same instrument, however, the high degree of insufficient habits (62.6%) could be related to the high rate of obesity and overweight in Baja California (42.2%). The results obtained in this research reveal that most of the children aged 8 to 12 years do not comply with sufficient habits according to the questionnaire of healthy nutrition habits and physical activity, this goes in relation to the high obesity and overweight index in Tijuana, Mexico. All the patients who were identified with insufficient habits were given nutritional and physical activity counseling. It is important to continue with lines of research that provide greater scientific knowledge on this topic, as well as the performance of an intervention in larger samples. An important recommendation of this study is that patients with insufficient habits are candidates for an educational intervention to reduce the risk of obesity and their comorbidities in the future.

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