

Summary

Purpose

The purpose of the article conducted by Mota and colleagues (2008) was to assess the associations between the increased meal frequency, physical activity and that of skipping breakfast on obesity levels among urban adolescents between the ages of 13-17. Furthermore, it was also to describe changes in meal frequency, physical activity and breakfast skipping according to body mass index (BMI) and physical activity. Most of the literature used to support their ideas were based on peer-reviewed and sources. The article aims to illustrate how eating breakfast was associated with lower BMI among athletic individuals compared to non-sport-involved counterparts.

Methods

The study was based on eight urban public secondary schools from Porto, Portugal which included all the 951 students attending the seventh to ninth grades. They were all given a questionnaire in which they completed during physical education classes. The researchers had a high response rate—93.2%. Thus, the sample size that was included in the study was 886 adolescents (461 girls and 425 boys) between the ages of 13-17. Furthermore, informed consent was acquired from the participants and their parents prior to pursuing any further. The participants' height and weight were obtained using **What does this mean???(standard anthropometric methods)** and Body mass index (BMI) was also calculated using the ratio weight/height. **In fact, p-value was used to examine the level of significance, which was $p < 0.05$.**

In order to assess their physical activity the researchers used a questionnaire that was high in reliability. The questionnaire included items such as: outside school do you take part in organized sport?; outside school do you take part in non-organized sport?; outside school, how many times a week do you take part in sport or physical activity for at least 20 minutes?; and outside school hours, how many hours a week do you usually take part in physical activity so much that you get out of breath

or sweat? Subsequently, to determine the number of meals was being consumed by the participants they were simply asked: how many meals per day do you consume? (where they can answer 1-6 meals). Furthermore, “meal” was operationally defined which included terms such as breakfast, lunch, dinner, and small snacks. The researchers did a good job in describing how they obtained information about the participants' weight, height, physical activity and meal frequency. The analyses conducted were done separately for boys and girls. **In addition, the kind of test was used to analyse the difference between the two types of gender within continuous variables is t-test. This study also used the chi-square (χ^2) to know the differences between the three categories.**

According to the results, there were differences in characteristics among the participants in terms of sex wherein boys tended to be heavier and taller than girls. However, there was no significant differences for total meals and meal frequency but boys tended to be significantly more active and showed higher level of obesity when compared to girl participants. **Moreover, In terms of the differences in main characteristics according to gender in the table number 1, the p value was 0.23 which means that there was no difference between genders in skipping breakfast.** Moreover, using bivariate relationships, it was found that meal frequency was significantly correlated with BMI in girls ($r = 0.09$) and boys ($r = 0.15$) **which mean that there was extremely small correlations in extremely large sample.** In other words, higher meal frequency had an advantageous effect on reducing obesity status, and how eating breakfast and physical activity among boys tended to lower their risk of becoming obese. **Table 2 indicated that breakfast skipping between boys and girls was significant $\chi^2 = 6.188$, $p = 0.013$ this means 5-1.9% \approx (12%).** Furthermore, table number 3 showed that all correlations are very small in the three variables. One area of concern relating to the sample is that it is only representative of a certain population which is that of urban adolescents in Portugal. The external validity (i.e. Generalizability) of the study can only be generalized towards a target population that shares similar characteristics as the sample. Also, nothing about socioeconomic status was mentioned in the study; it was not stated whether such factor was controlled for which could have resulted in a

confounding variable, and thus, affecting the results of the study. Secondly, the differences in boys and girls was not explained that well and that using only the BMI as a tool to measure the participants weight/height ratio was one weakness of the study because the BMI is not as efficient in doing so. Also, explaining why boys tended to consume more meals than girls should have been discussed as girls are “expected” to consume fewer calories compared to boys, which might inhibit girls from stating the “truth” about how many meals they actually consume per day. With that in mind, the measurement that was used (i.e. Questionnaire) that simply asked, “how many meals a day do you consume?” was quite weak in that girls might under-report the number of meals they consume while boys might over-report the number of meals they consume per day in order to adhere to the social expectations. In addition to this, the researchers determined that the prevalence of overweight and obesity was 23.6 % for boys and 15.1% for girls, however, this does not quite make sense as the physiology of boys tends to be different than girls and that the BMI as a tool is not effective. In other words, to state that the prevalence of obesity is higher among boys than girls should be said with caution because boys are heavier to begin with as they are built in that way compared to girls. Overall, the results of the study can help establish preventive techniques that are based on the consumption of breakfast and the frequency of meals being consumed per day by boys and girls. This can be an education-based intervention taking place at home and at school.. In addition, **this study is a week study, and it doesn't give real evidence on that skipping breakfast is associated with childhood obesity because the sample size of population they used include a very small obese children so, this sample could be not appropriate to give realistic results.**