Is the backpack safe limit suitable to overweight and obese schoolchildren?

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1. Introduction

Backpack use is associated with musculoskeletal pain among schoolchildren [Trevelyan and Legg, 2006; Moore et al., 2007]. To prevent these disorders safe limits were established as a maximum of 10% of student body weight [Brackley and Stevenson, 2004; Bauer and Freivalds, 2009]. However, this limit does not consider individual characteristics of the students, such as the body mass index [De Paula et al., 2012]. Therefore, the objective of this study was to evaluate the adequacy of the recommended backpack safe limit in eutrophic and overweight/obese schoolchildren.

2. Methods

Two hundred ninety two students (6 to 15 years; 1.08 to 1.80 m; 16.4 to 98.5 kg) of both genders (59% females and 41% males) participated in this study. Personal information was collected through a questionnaire. Students' body weight, height and backpack weight were measured. Students were categorized into two groups according to BMI, age and gender: eutrophic and overweight/obese [Cole et al., 2000]. Phi test was applied to verify the correlation between groups and the backpack limit category (above or below 10% of body mass). Independent t test was used to identify differences between groups for the backpack weight and the significance level was set at 5%.

3. Results

The percentage of schoolchildren above the safe limit is lower for the overweight/obese schoolchildren (15%) compared to the eutrophic group (23%), although overweight schoolchildren carried significantly more load (P=0.01) than the eutrophic group (mean difference = 0.4 kg; IC 95%= 0.1-0.7 kg).

4. Conclusion

Although the overweight/obese schoolchildren carry approximately 0.4 kg more than the eutrophic students, 85% of them are classified as carrying safe backpack weight. So, the usefulness of this limit could be questioned for this population and should not be used as the only parameter to evaluate the backpack risk. According to our data, we can suppose that overweight and obese schoolchildren are exposed to a double risk situation for developing musculoskeletal disorders: the ones associated to the obesity and the ones related to backpack weight.

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References