Preventive Medicine 48 (2009) 279–283

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Perception of eating practices and stages of change among Brazilian adolescents

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ARTICLE INFO

Available online 30 December 2008

Keywords:
Stages of change
Dietary behavior
Food consumption
Adolescents

ABSTRACT

Objective. To evaluate the perception of eating practices and the stages of change among adolescents.

Methods. Cross-sectional study involving a representative sample of 390 adolescents from 11 public schools in the city of Piracicaba, Brazil, in 2004. Food consumption was identified by a food frequency questionnaire and the perception of eating practices evaluation was conducted by comparing food consumption and individual classification of healthy aspects of the diet. The participants were classified within stages of change by means of a specific algorithm. A reclassification within new stages of change was proposed to identify adolescents with similar characteristics regarding food consumption and perception.

Results. Low consumption of fruit and vegetables and high consumption of sweets and fats were identified. More than 44% of the adolescents had a mistaken perception of their diet. A significant relationship between the stages of change and food consumption was observed. The reclassification among stages of change, through including the pseudo-maintenance and non-reflective action stages was necessary, considering the high proportion of adolescents who erroneously classified their diets as healthy.

Conclusion. Classification of the adolescents into stages of change, together with consumption and perception data, enabled identification of groups at risk, in accordance with their inadequate dietary habits and non-recognition of such habits.

Introduction

Today, the Transtheoretical Model stands out as a promising instrument for aiding in the comprehension of health-related behavioral change. According to it, individuals can be classified in five distinct stages of change: *precontemplation*—those who are not considering making a behavioral change in the near future; *contemplation*—those who are considering making a behavioral change, but have not established a timeframe for putting it into practice; *preparation*—those who have established targets for implementing a behavioral change in the near future, but they have not yet reached a criterion for effective action; *action*—those who have recently put into practice their strategies for changing their behavior; and *maintenance*—those who have kept up their behavioral change for more than 6 months (Prochaska et al., 1992, 1996; Prochaska and Velicer, 1997).

Individuals in action and maintenance tend to present healthier consumption than do those in the initial stages (Glanz et al., 1994; de Graaf et al., 1997). However, the possibility that a substantial proportion of the population has a mistaken perception of its diet needs to be considered to obtain a correct classification into stages of change. The fact that individuals have an extremely optimistic perception of their own diet may act as a barrier to dietary change, thus reducing the likelihood that it will occur (Povey et al., 1998).

As a solution, several authors have pointed out the need to reclassify individuals within the stages in terms of their food consumption and perceptions (Steptoe et al., 1996; Lechner et al., 1997, 1998; Ma et al., 2003). However, this is not a solution if the individuals who erroneously believe that they are following an adequate diet are grouped with individuals who recognize that their diet is inadequate and have no desire to change it. It is necessary to differentiate those groups to delineate specific interventions for them.

Two interesting options have to be considered. Ma et al. (2003) suggested a stage called *non-reflective action*, which would be similar to the action stage but including individuals who had not thought about their dietary habits, which were healthy although they did not recognize this. Likewise, Steptoe et al. (1996) proposed to give the name *pseudo-maintenance* for individuals who would be classified as being in the maintenance stage according to their perception of eating practices, but who in reality presented inadequate consumption. Until now, there isn't an evaluation that has considered non-reflective action and pseudo-maintenance stages in the same study.

The present study aims to evaluate the perception of eating practices and the stages of change among Brazilian adolescents in relation to four food groups: fruit, vegetables, sweets and fat content

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doi:10.1016/j.ypmed.2008.12.017

in the diet, and to assess the amount of misclassification that occurs when utilizing the Transtheoretical Model algorithm.

Methods

This was a cross-sectional study conducted in 2004 involving adolescents of both genders, with a minimum age of 10 years-old, who were enrolled at schools within the public educational network in the Brazilian city of Piracicaba. This city, located in the inland of the state of Sao Paulo, had 70 public schools and a population of around 330.000 inhabitants, being almost 20% of them adolescents (Brasil, 2004). Individual interviews with the adolescents took place in the schools during class time.

The sampling procedure was done by a bistage sampling of conglomerates, stratified by school year (grade). On the first stage, the primary sampling units were the public schools and, on the second stages, the secondary sampling units were the school years (grades) in each school. This procedure identified that an estimated sample of 420 students in 11 schools in Piracicaba would be representative. A pilot study was carried out, which enabled adaptations to the final format of the questionnaire.

After registering the participants' gender and age, their usual food consumption was evaluated with a semi-quantitative frequency questionnaire validated for adolescents (Slater et al., 2003). Data relating to the consumption of fruits, vegetables, sweets and fat content in the diet were used. The first three of these food groups were investigated in terms of numbers of servings consumed per day, while the lipid content of the diet was investigated by considering the percentage of the energy intake coming from fats. The energy and macronutrient consumption presented by the sample was also evaluated descriptively.

Adolescents who presented mistaken perceptions regarding their eating practices were investigated by considering two situations. The first included the individuals who presented adequate consumption (minimum consumption of 2 servings of fruit per day, 2 servings of vegetables per day, maximum consumption of 2 servings of sweets per day and from 25 to 35% of energy coming from fats) (US DAHHS, 2005), but who said their diets were inadequate. The second case included the adolescents who presented unhealthy consumption (less than 2 servings of fruit per day, less than 2 servings of vegetables per day, more than 2 servings of sweets per day, and less than 25% or more than 35% of energy coming from fats), but who said their diets were adequate.

Classification within the stages of change was done by means of an algorithm, as shown in Fig. 1. The algorithm was adapted according to the food group studied (fruit, vegetables, sweets and fats), thus allowing four independent classifications in the stages of change to be obtained.

Participants were reclassified in the stages of change, comparing their consumption and perception of eating practices (Fig. 1). Adolescents whose consumption was adequate but who had stated it was inadequate were reclassified in the *non-reflective action* stage. Those who erroneously said their consumption was adequate were classified in *pseudo-maintenance* stage.

The Ethics Committee of the School of Public Health of the University of São Paulo approved the study proposal, and a signed informed consent was obtained from the parents of the adolescents.

Variables with non-normal distribution were transformed into natural logarithm [$z=\ln(x+1)$, where x was the initially determined number of servings of fruits and vegetables consumed]. The means were compared using the Student's t-test, and associations between variables were evaluated using the chi-squared analysis. One-way analysis of variance (ANOVA) was performed to evaluate whether at least one significant difference existed between the stages of change and the food consumption. In this case, a multiple comparison test (HSD-Tukey) was performed to identify the stage related to the food consumption. The statistical significance level was set at 5%. Significant differences between the stages of change and food consumption will be showed as the same letters within columns in table.

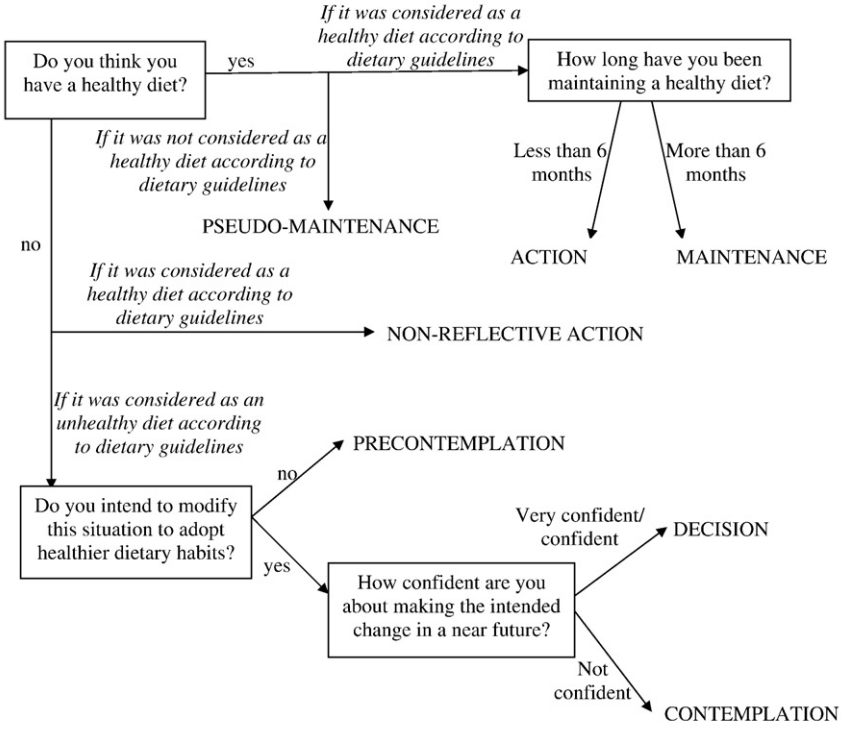

Fig. 1. Reclassification procedures in the stages of change applied on the basis of a comparison between the consumption and the perception of eating practices.