52 - SOCIODEMOGRAPHIC FACTORS AND ADOLESCENTS OVERWEIGHT: A SYSTEMATIC REVIEW

JUCEMAR BENEDET
Federal University of Santa Catarina, Florianópolis, Santa Catarina, Brazil
jucemarb@hotmail.com

INTRODUCTION

Numerous epidemiological studies have been conducted to quantify the role and interaction of factors in the etiology of obesity, and yet they are not well understood. Currently, the factors related to lifestyle are considered preponderant for the increasing prevalence of obesity in childhood and adolescence (Hills et al., 2007). Studies have shown a strong association between levels of physical activity and sedentary activities, especially watching television (TV), and overweight and obesity among children and adolescents (Marshal et al., 2004). In relation to energy consumption, the associations with obesity are still inconclusive, in most studies. The associations are more consistent when analyzed food choices and frequency of meals, for example, failure to complete the breakfast (Rodrigues & Moreno, 2006; Moreno & Rodrigues, 2007).

Regardless of these factors, the prevalence of overweight and obesity has been shown to differ between countries and regions with different socioeconomic levels (McLaren, 2007; Rosengren & Lissner, 2008). The relationship between socioeconomic status (SES) and obesity depends on the stage of economic transition of each population. In a recent studies review conducted in developed countries, there was a predominantly inverse relationship between SES and obesity (Shrewsbury & Wardle, 2008). In developing countries, in the early stages of socioeconomic growth, there is a positive association and in some phase of the transition process there is an inversion of this relationship (Ford & Mokdad, 2008).

In this article a systematic literature review was conducted to identify the behavior of prevalence of overweight and obesity in relation to socioeconomic and demographic factors. Furthermore, it has been sought to group information on relevant methodological issues regarding the collection and treatment of variables.

METHOD

The search strategy aimed to identify original studies, with estimates of the prevalence of overweight and obesity and analysis of association with socio-demographic factors through multivariate analysis. The literature search was conducted in the databases PubMed (U.S National Library of Medicine) and Scielo (Scientific Electronic Library Online). Pub Med was used as a descriptor of outcome the term “adolescent obesity”, and added individually the following keywords: “socioeconomic status”, “demographic factors”, and “risk factors”. Scielo were used the keywords: “overweight and adolescents” and “obesity and risk factors”. The survey was conducted between days 05 and 10 February 2008 and restricted to articles published between January 2005 and December 2007, arriving in PubMed until 01/31/2008. The choice for studies published over the last three years was due to the significant number of publications in this period and there are revisions of previously published studies to 2005.

The others limits are articles that provide summaries; both gender; published in English, Spanish or Portuguese. In the field age were included children and adolescents to identify studies that included individuals aged between ten and 18 years old. In order to identify other articles that met the selection criteria that were not captured by the tools for searching databases, consulted also the related articles of selected studies. Also included were articles that examined other exposure variables, beyond those defined as the selection criteria. Inclusion criteria were original articles on cross-sectional and longitudinal that addressed the age of ten to eighteen years and whose analysis of association with adolescent overweight and obesity included behavioral variables (physical activity, sedentary behavior and food consumption), plus the socioeconomic and demographic characteristics. Articles that investigated a unique socioeconomic extract or a single gender, and whose purpose was not to investigate the factors associated with overweight and/or obesity in adolescence, were excluded. For selection and inclusion of studies, abstracts and articles were read and evaluated by two independent researchers. In order to facilitate understanding, in this study, the term “prevalence of overweight” when not accompanied by the prevalence of obesity (and its corresponding value), with respected to the sum of two values.

RESULTS

The literature search resulted in 1021 articles, 938 of the Medline/PubMed and 83 of the Scielo database. After reading the abstracts by researchers, 1000 articles were excluded. In the end, 19 articles were included from PubMed and four articles from Scielo, two of which were present in the two search enginees, totaling 21 articles eligible for the study. Seventeen articles were available in the portal directly from CAPES and four were asked to the authors via email.

In relation to the venue of the studies, the distribution was the following: six in North America, five in Europe, four in Oceania, three in South America, two in Asia e one in Africa. The period of data collection varied between 1998 to 2004. Information on family income, parental education, occupation of parents, school type, geographic location and/or type of residence, were used to assess socioeconomic status. In the statistical analysis of association, multivariate logistic regression was used in 17 of 21 studies and Poisson regression was used in three and one Cox regression. In relation to stratification by gender, twelve studies did not produce independent analysis.

ARGUMENT

Figure 1 presents the prevalence of overweight and obesity according to the cutoff points of IOFT (Cole et al., 2000), in 19 of the 21 selected studies. The lowest prevalence were reported in Asia (Li et al., 2006; Kuriyan et al., 2006) and Africa (Kruger et al., 2006), and the largest in North America (Moraes et al., 2006) and Australia (Smith et al., 2007). Two studies, conducted in the United States, used the cutoffs from the CDC (Center for Disease Control and Prevention). Among American adolescents, the prevalence of overweight was 24,9% (Delva et al., 2007) and among residents of Mexican descent in the U.S.A., 40,9% of overweight and 22,9% of obesity (Forrest et al., 2007).

Similar prevalence was observed among studies conducted in the same country or region, like the surveys conducted in Brazil (Dutra et al., 2006; Terrez et al., 2006, Suné et al., 2007) and Australia (Burk et al., 2006; O'Dea & Wilson, 2006). On the other hand, regional studies (Veugelers et al., 2005) may have outliers relative to the sample representative of that country

(Janssen et al., 2006), showing the influence of ethnic, socioeconomic and lifestyle of each region. This hypothesis is confirmed in the field of population strata, such as ethnic minorities in American studies (Forrest et al., 2007) and in certain islands of the Pacific, in the Australian continent (Smith et al., 2007). Studies in France (Lioret et al., 2006), Finland (Kautiainem et al., 2005) and Norway (Andersen et al., 2005), showed prevalence rates of overweight and obesity intermediate to other studies.

It was not possible to clearly identify the effect of gender and age variables in overweight and obesity in adolescent. The highest prevalence alternate between girls (Moraes et al., 2006; Smith et al., 2006; Kruger et al., 2006) and boys (Li et al., 2006; Ramos et al., 2007; Kosti et al., 2007, Delva et al., 2007), or even no significant differences in other studies (Dutra et al., 2006; Lioret et al., 2006; Andersen et al., 2005).

A similar effect was observed in relation to age of onset and late adolescence. In the bivariate association analysis this difference was significant in the studies conducted in Brazil (Sune et al., 2007., Terrez et al., 2007; Dutra et al., 2006), showing an inverse association between age and overweight. In the studies conducted in Australia (Uther et al., 2007; Burk et al., 2006) and Africa (Kruger et al., 2006), observed a positive association between age and overweight. After adjusted analysis, only one of the study mentioned above (Suñé et al., 2007), older age (13 vs. 11 and 12 years) was a protective factor for overweight.

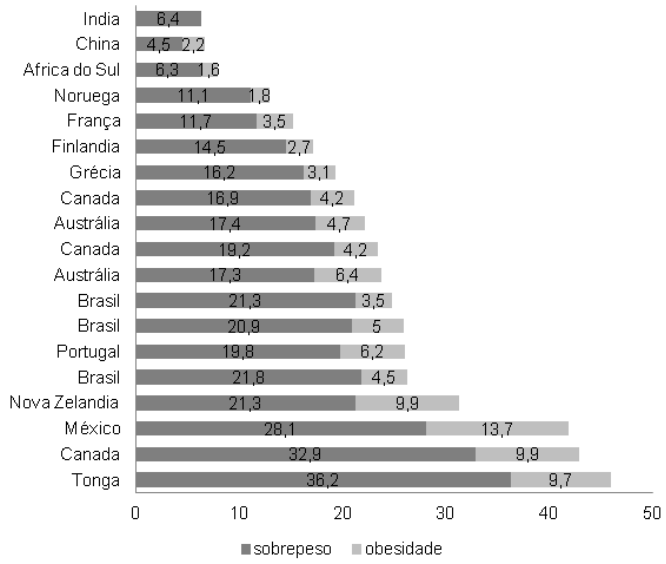


Figure 1: Prevalence of overweight and obesity in 19 of the 21 selected studies, which used the cutoff points proposed by Cole et al, (2000).

Figure 1 presents data on the prevalence of overweight and obesity by socioeconomic status, 11 of the 21 studies analyzed. In other studies in which prevalence by socioeconomic status were not available, or it was not possible to perform the calculation, these same trends were described by the authors. In a study conducted in China, for example, a country with recent high growth rates, families with mediun and higher income and whose mother's educational level was high, had a higher risk of overweight adolescents (Li et al., 2007). Similarly, in South Africa, adolescents who parents had good jobs, had the highest prevalence of overweight and obesity (Kruger et al., 2006).

In contrast, in economically developed regions such as Canada (Janssen et al., 2006; Veugelers et al., 2005) and Norway (Andersen et al., 2005) the highest proportion of overweight adolescents found on the lower social class. In economically developed regions, defined by the Human Development Index (HDI), lifestyle factors related to food choices and sedentary behavior explained, in part, the differences between social groups (Delva et al., 2007). On the other hand, among the developing regions, increasing urbanization has been identified as one of the main factors associated with elevated BMI among adolescents (Kruger et al., 2006).

Regardless of the associations found in bivariate analysis between outcome and exposure variable, after the analysis adjusted low socioeconomic status remained in the final model as a risk factor for overweight among adolescents who has been studied in the U.S. (Forrest et al., 2007), France (Lioret et al., 2006), Norway (Andersen et al., 2005) and Canada (Janssen et al., 2006, Veugelers et al., 2005). LIkewise, belong to higher social classes and study in private schools, made up the list of risk factors for overweight in the studies conducted in Brazil (Dutra et al., 2006; Suné et al., 2007). The studies confirm the hypothesis that the socioeconomic level of a population is a strong indication that certain subgroups may be more exposed to overweight and obesity.

Figure 1: Description of the prevalence among adolescents from low and high socioeconomic level, the Human Development Index and variables used in 11 of the 21 selected studies.

				Prevalence		
Country	HDI	Author/year	Sample	LSS %	HSS %	Variables/Categories
Brazil	0,800	Suné et al 2007	719	23,1	39,2	School: public vs. Private
Brazil	0,800	Terrez et al 2006	960	23,7	29,7	Social Class: CDE vs. AB
Brazil	0,800	Dutra et al 2006	810	16,7	28,3	Social Class: CDE vs. AB
Tonga	0,819	Smith et al 2006	443	41,0	54,4	Parents: good jobs vs. others
Mexico	0,829	Moraes et al 2007	662	34,4	57,1	Income: Tertile 1 vs 2 nd and 3
Portugal	0,897	Ramos et al 2007	2161	27,6*	26,6*	Schooling parents: <10 vs = 10
New Zeland	0,943	Utter et al 2007	3275	42,6	23,2	NZDep**: high vs. low
U.S.A.	0,951	Forrest et al 2007	3538	43,7*	34,9*	Income: high vs. low
U.S.A.	0,951	Delva et al 2007	39.011	28,4*	11,7*	Income: high vs. low
França	0,952	Lioret et al 2006	333	17,3	2,1	Income: high vs. low
Australia	0,962	O'Dea et al 2006	4441	28,0	22,6	Total income: high vs. low

Abbreviations: HDI - human development index; LSS - low socioeconomic status; HSS - high socioeconomic status. * CDC: Centers for Disease Control and Prevention - USA. ** NZDep, New Zealand Deprivation Index

In this revision, only one study in Portugal, found no differences in the prevalence among adolescents from different social strata (Ramos & Barros, 2007). Visualize the socioeconomic criteria as the HDI for each country, the hypothesis is confirmed in this review. It can be seen in Figure 1 the relationship between the prevalence of overweight and obesity in the population strata, with HDI values from the respective country. Inversion in the prevalence, among the extracts, coincides with the rise in HDI values in case, conducted in Portugal, whose HDI is in an intermediate position to the other studies. Overall, the data suggested that in developed countries the prevalence of overweight and obesity is higher in adolescents of lower socioeconomic status, while in less developed countries the opposite tends to occur.

CONCLUSION

Relatively to socioeconomic status, in general, adolescents from lower social classes are more exposed to overweight in developed countries, the opposite occurring in developing countries. The gender was not a significant effect on overweight, as well as the age variable. However, some studies indicated a weak negative association between age and overweigh in late adolescence. Few studies have evaluated age late teens where perhaps it could be better observed. It was observed that as the course transition intensifies, the prevalence of overweight in adolescence tends to change, with strong indications that this process is mediated by the socioeconomic context.

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JUCEMAR BENEDET
Estlilac Leal, 129 -102 D
88080-760 – Florianopolis, SC, Brazil.

SOCIODEMOGRAPHIC FACTORS AND ADOLESCENTS OVERWEIGHT: A SYSTEMATIC REVIEW

ABSTRACT

Numerous epidemiological studies have been conducted around the world, seeking to quantify the role and interaction of factors in the etiology of obesity. The aim of this article is to conduct a systematic review of the literature on the association of sociodemographic factors, overweight and obesity in adolescence. The search for articles was conducted in Pubmed, with the main term “adolescent obesity”, which were added individually to the following descriptors: “socioeconomic status”, “demographic factors”, e “risk factors”; and in Scielo the terms: “overweight and adolescence” and “obesity and risk factors”. 1021 articles were identified of which 21 have contemplated all the inclusion criteria. With regard to socioeconomic status, in general, adolescents from lower social classes are more exposed to overweight in developed countries, the opposite occurring in developing countries. The inversion in the prevalence values among social strata coincides with the rise of the values of Human Development Index – HDI. The gender variable was not a significant effect to overweight, and age. It can be concluded that in adolescence, as well as in adult populations, certain population strata have a higher prevalence of overweight. As the course of transitions intensifies, this pattern tends to change mediated by the socioeconomic context.

KEYWORDS: adolescents, overweight, sociodemographic factors.

FACTEURS SOCIODEMOGRAPHIQUES AVEC LE SURPOIDS ET L'OBESITE PENDANT L'ADOLESCENCE : RÉVISION SYSTÈMATIQUE

RÉSUMÉ

Plusieurs études épidémioloques sont menées actuellement par la communauté scientifique dans le but de quantifier le rôle et l'intéraction de facteurs compris dans l'étiologie de l'obésité. L'objectif de cet article est de proposer une révision systèmatique de la littérature discutant l'association de facteurs sociodémographiques avec le surpoids et l'obésité pendant l'adolescence. La recherche d'articles s'est basée sur le Pubmed, le mot clé qui a guidé notre recherche a été « adolescent obesity », auquel ont été ajoutés individuellement les descripteurs suivantes : « socioeconomic status”, “demographic factors”, et “risk factors” ; et sur la plateforme Scilelo les mots clés « surpoids et adolescence » et « obésité et les facteurs de risque ». Nous avons identifié 1021 articles dont 21 ont rendu compte de tous les critères d'inclusion. En ce qui concerne le niveau socioéconomique, d'une facon générale, on constate que dans les pays développés les adolescents de couches sociales les plus défavorisées se trouvent plus exposés au surpoids, pourtant, dans les pays émergents da situation est inverse. L'inversion des valeurs de prévalence entre les couches sociales coïncide avec l'élévation des valeurs de l'Indice de Développement Humain (IDH). La variable sexe n'a pas indiqué un effet significatif par rapport au surpoids, le même pour la variable âge. L'étude a constaté que, soit chez les adolescents soit chez les adultes, des couches déterminées de la population présentent une prévalence plus expressive de surpoids. Au fur et à mesure que le cours des transitions s'intensifie, ce patron a une tendance à se modifier, influencé par le contexte socioéconomique.

DESCRIPTEURS :adolescents ; surpoids ; facteurs sociodémographiques

FACTORES SOCIODEMOGRÁFICOS Y EL EXCESO DE PESO EN ADOLESCENTES: REVISIÓN SISTEMÁTICA

RESUMEN

Incontables estudios epidemiológicos han sido conducidos en todo el mundo, buscando quantificar el papel y la interacción de factores en la etiologia de la obesidade. El objetivo de este artículo es lo de realizar una revisión sistemática de la literatura sobre la asociación de factores sociodemográficos, con el sobrepeso y la obesidade en la adolescência. La búsqueda de artículos fue realizada en el Pubmed, teniendo como término principal “adolescent obesity”, al cual fueron añadidos individualmente los siguientes descritores: “socioeconomic status”, “demographic factors”, y “risk factors”; y en el Scilelo los términos “sobrepeso y adolescência” y obesidade y factores de riesgo”. Fueron identificados 1021 artículos de los cuales 21 contemplaron todos los criterios de inclusão. Relativamente al nivel socioeconômico, de modo general, los adolescentes de clases sociales más bajas están más expuestos al sobrepeso en países desarrollados, ocurriendo el inverso en países en desarrollo. La inversão en los valores de prevalência entre los estratos sociales coincide con la elevación de los valores de Índice de desarrollo humano – IDH. La variável sexo no mostró un efecto significativo para el sobrepeso, así como la edad. Se concluye que en la adolescência, así como en las poblaciones adultas, determinados estratos poblacionales presentan una mayor prevalência de sobrepeso. A medida que el curso de las transiciones se intensifica, este padrão habed a modificarse mediado por el contexto socioeconômico.

DESCRITORES: adolescentes; sobrepeso, factores sociodemográficos.

FATORES SOCIODEMOGRÁFICOS E O EXCESSO DE PESO EM ADOLESCENTES: REVISÃO SISTEMÁTICA

RESUMO

Inúmeros estudos epidemiológicos têm sido conduzidos em todo mundo, buscando quantificar o papel e a interação de fatores na etiologia da obesidade. O objetivo deste artigo é o de realizar uma revisão sistemática da literatura sobre a associação de fatores sociodemográficos, com o sobrepeso e a obesidade na adolescência. A busca de artigos foi realizada no Pubmed, tendo como termo principal “adolescent obesity”, ao qual foram acrescentados individualmente os seguintes descritores: “socioeconomic status”, “demographic factors”, e “risk factors”; e no Scilelo os termos “sobrepeso e adolescência” e “obesidade e fatores de risco”. Foram identificados 1021 artigos dos quais 21 contemplaram todos os critérios de inclusão. Relativamente ao nível socioeconômico, de modo geral, os adolescentes de classes sociais mais baixas estão mais expostos ao sobrepeso em países desenvolvidos, ocorrendo o inverso em países em desenvolvimento. A inversão nos valores de prevalência entre os estratos sociais coincide com a elevação dos valores de Índice de desenvolvimento humano - IDH. A variável sexo não mostrou um efeito significativo para o sobrepeso, assim como a idade. Conclui-se que na adolescência, assim como nas populações adultas, determinados estratos populacionais apresentam uma maior prevalência de sobrepeso. À medida que o curso das transições se intensifica, este padrão tende a se modificar mediado pelo contexto socioeconômico.

DESCRITORES: adolescentes; sobrepeso, fatores sociodemográficos.