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Regular and negative self-rated health in students from a public university from Northeastern, Brazil: prevalence and associated factors

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ABSTRACT. Self-rated health is a major health indicator and has been widely used in epidemiologic surveys. Current study analyzes the factors associated to regular and negative self-rated health in Brazilian college students. Current investigation is a segment of the 2010 MONISA study carried out in a Brazilian public university with 5,461 students. Estimated sample comprised 1,232 university students and results showed self-rated regular and negative health. Multinomial logistic regression estimated Odds Ratio (OR). The factors associated to regular health self-evaluation negative assessment of relationship with professors (OR: 1.85; CI95%: 1.20-2.87); inactivity in leisure (OR: 2.34; CI95%: 1.73-3.16); insufficient consumption of vegetables; almost daily consumption of soft drinks; assessment of intermediate and negative stress (OR: 3.34; CI95%: 2.11-5.28). Students inactive in leisure (OR: 2.37; 95%CI: 1.09-5.13), students with self-evaluated negative stress (OR: 10.1; 95%CI: 3.23-31.8) and obese students (OR: 4.52; 95%CI: 1.36-15.0) were associated to the negative health self-assessment. It has been verified that health behavior is rather associated to the regular self-assessment of health, whereas perceptive and biological indicators were more associated to negative health self-assessment.

Keywords: health status, health behavior, obesity, students, cross-sectional studies.

Autoavaliação de saúde regular e negativa em estudantes de uma universidade pública do Nordeste do Brasil: prevalência e fatores associados

RESUMO. A autoavaliação da saúde representa um importante indicador de saúde e tem sido amplamente utilizado em inquéritos epidemiológicos. O objetivo deste estudo foi analisar os fatores associados à autoavaliação de saúde regular e negativa em estudantes universitários brasileiros. Este artigo é derivado do Estudo MONISA, realizado em 2010 em uma instituição pública universitária brasileira composta por 5.461 estudantes. A amostra estimada foi de 1.232 estudantes universitários e o desfecho foi a autoavaliação de saúde regular e negativa. A regressão logística multinomial foi empregada para estimar a Razão de Chances (RC). Os fatores associados à autoavaliação regular da saúde foram: avaliação negativa dos relacionamentos com os professores (RC: 1,85; IC95%: 1,20-2,87), inativos no lazer (RC: 2,34; IC95%: 1,73-3,16), consumo insuficiente de hortaliças, consumo de refrigerantes na maioria dos dias, avaliação do estresse negativo (RC: 3,34; IC95%: 2,11-5,28). Foram associados à autoavaliação negativa da saúde os estudantes inativos no lazer (RC: 2,37; IC95%: 1,09-5,13), que autoavaliaram o estresse como negativo (RC: 10,1; IC95%: 3,23-31,8) e que eram obesos (RC: 4,52; IC95%: 1,36-15,0). Verificou-se que as condutas à saúde são mais associadas à autoavaliação regular da saúde, enquanto os indicadores perceptivos e biológicos estiveram mais associados à autoavaliação negativa da saúde.

Palavras-chave: nível de saúde, condutas de saúde, obesidade, estudantes, estudos transversais.

Introduction

Health self-assessment is a measure of easy application, recommended by the World Health Organization (WHO, 1996), and has been used in Brazilians and international epidemiologic surveys (BOPP et al., 2012; DACHS; SANTOS, 2006; HEISTARO et al., 2001; HÖFELMANN; BLANK, 2007; IDLER; ANGEL, 1990; LIMA-COSTA et al., 2012). The measure evaluates epidemiologic relationships between health exposures. In fact, a regular or negative self-assessment of health is a good indicator of morbidities and mortality causes (BOPP et al., 2012) and has a significant predictive power for mortality (LIMA-COSTA et al., 2012).

Females (DACHS; SANTOS, 2006; HÖFELMANN; BLANK, 2007; PERES et al., 2010; SZWARCWALD et al., 2005), people with

low schooling and economic level (BARROS et al., 2009; DACHS; SANTOS, 2006) and those with inadequate life habits and negative psychological self-assessment (BARROS; NAHAS, 2001; FONSECA et al., 2008) may be mentioned among the factors associated to negative self-assessment of health. Additionally, high prevalence of negative self-assessment of health may be observed among adults (BRASIL, 2012) and workers of the North and Northeast regions of Brazil (NAHAS, 2009).

Surveys with Brazilian adults show prevalence of lower than 10% negative self-assessment of health (BARROS et al., 2009; BRASIL, 2012; DACHS; SANTOS, 2006; SZWARCWALD et al., 2005). Other studies show higher prevalence (BARROS; NAHAS, 2001; FONSECA et al., 2008; HÖFELMANN; BLANK, 2007). However, this peculiarity is related to the analysis of the indicator as a dichotomous variable, including the regular option as negative self-assessment of health. Studies on the factors associated to the regular self-assessment of health are scarce in the literature (BOPP et al., 2012) and in surveys on this theme in Brazilian university students.

There has been an increase in the number of Brazilian university students during the last decade (INEP, 2011). After graduation, the negative self-assessment of health, especially for older students (HASSON et al., 2010), has increased, perhaps due to an increase in the prevalence of negative health indicators, such as dyslipidemia, overweight and smoking (BRANDÃO et al., 2011), coupled to increased self-assessment of stress, due to the necessity of entering the labor market (GONDIM, 2002). Taking into consideration the relevance of such an indicator for the health of university students and the scarcity of information on this group, current study analyzes the factors associated to self-rated regular and negative health in Brazilian university students.

Material and methods

This cross-sectional study is a result of the first survey called Monitoring of student's health and life quality indexes (*Monitoramento dos indicadores de saúde e qualidade de vida de acadêmicos*, or MONISA), carried out at a Brazilian public university in the northeastern state of Bahia, Brazil, a region of low socioeconomic status when compared to the southern and southeastern regions of the country (IBGE, 2012). The methodological procedures of the study MONISA had been described elsewhere (SOUSA et al., 2012).

The parameters for the calculation of the sample comprised reference population (n = 5,461); 95% confidence level; prevalence for outcomes in 50%; sampling error of 3 percentile points; addition for losses and refusals at 20 and 15% for the control of possible confusion variable in the adjusted analyses (LUIZ; MAGNANINI, 2000). The final sample consisted of 1,232 university students. The sample in current study estimated odds ratio with an 80% statistic power and 95% confidence level, with the number of students in the category of independent variables for regular self-rated health, above 1.67 and below 0.60; and 6.28 and 0.16 for negative self-rated health, respectively, as risk factors and protection in the unadjusted analysis.

The sample was stratified and proportional to the 30 undergraduate courses of the institution; periods of study (morning and evening); year of entrance in the university (2010, 2009, 2008, and 2007 or previous). The students were then selected randomly in each stratum on the basis of the list of school registration with the names in alphabetical order. In the case of losses, the students were contacted in up to three attempts, at different days and time. The lack of interest was considered as a refusal. There was no replacement in cases of losses and refusals. The collection of data (September to November 2010) was carried out in the university lecture rooms before, during, or at the end of lessons, according to the convenience of the selected students and the consent of the professors in the lecture room. A questionnaire was used to obtain the necessary information (SOUSA et al., 2013a).

The health self-assessment variable was measured by the following question at the end of the questionnaire: 'In general, how do you classify your current health status?' The options for answering were listed in a scale of five alternatives, later classified as positive self-rated health (very good and good), regular self-rated health (regular) and negative self-rated health (bad and very bad). The two last categories make up the outcome of current study. The level of agreement of the variable in the reliability test was 83.9% (Kappa = 0.70) (SOUSA et al., 2013a).

Exploratory variables include socio-demographic indicators, bond with the university, health-related behaviors, self-rated stress and nutritional status. The socio-demographic variables comprise gender; age (17 to 20 years, 21 to 23 years and 24 years or more); marital status (with or without a partner). The variables related to the bond with the university were year of entrance at the university (2010, 2009, 2008, and 2007 and previous); period of study (morning or evening); self-rated of relationship with peers of the course, measured by self-assessment of the following statement: "How do you evaluate your

relationship with other colleagues of this course", later dichotomized in positive self-rated (very good and good) and negative self-rated (bad and very bad); self-rated of relationship with the teachers of the course, obtained by the self-assessment of the affirmation: "How do you evaluate the relationships with the teachers of your course", categorized into positive self-rated (very good and good) and negative self-rated (bad and very bad); study area, categorized into Health and Others (Exact and Earth Sciences and Engineering, Biological, Agrarian, Human, Social Sciences, Linguistics, Languages and Art), according to the classification used by the university.

The health-related behaviors variables are physical activities during leisure time in a normal week, dichotomized into active at leisure (practice at least one day a week) and inactive at leisure (does not practice physical activities in leisure); intake of fruits (≤ 4 days/week and ≥ 5 days/week) and vegetables (≤ 4 days/week and ≥ 5 days/week) per week; fatty red meat intake – beef, pork or lamb (yes or no); consumption of chicken with skin without removing visible fat (yes or no); consumption of snacks, such as chicken croquettes (called "coxinha" in Brazil), pasties, black-eyed pea fried balls (called "acarajé" in Brazil) and other fried foods (yes or no); consumption of soft drinks or artificial juice per week (≥ 5 days/week and ≤ 4 days/week); consumption of alcoholic beverages, or rather, the intake of five or more alcoholic drinks on a single occasion during the previous thirty days. A dose consists of half a bottle or a can of beer, or a glass of wine or a shot of whiskey, brandy, rum, or vodka; and, smoking habit, regardless of quantity and frequency of use, categorized into smokers, ex-smokers and non-smokers.

Self-rated stress was measured by the question: 'How do you classify stress in your life?' Responses were classified into positive self-rated (never and rarely), intermediate self-rated (sometimes) and negative self-rated (almost always and always). Nutritional status was verified by the body mass index, by measurements of body weight and height referred, and categorized into underweight (up to 18.4 kg m^{-2}); normal (18.5 to 24.9 kg m^{-2}); overweight (25.0 to 29.9 kg m^{-2}); and, obesity (30.0 kg m^{-2} and over) (WHO, 1997).

Data analyses were carried out with Statistical Package for Social Sciences (SPSS) 16.0. The statistical analyses included absolute and relative frequencies, average, median, standard deviation (SD), minimum and maximum values and confidence intervals. Odds Ratio (OR) was used as a measure of association, in crude and adjusted analyses, estimated by multinomial logistic regression. For the adjusted analysis, the following hierarchical model was used (VICTORA et al., 1997), considering the hypothetical temporal association of causal association between the variables (Figure 1). The method of backward variable selection was used, and the variables that presented the p-value of the Likelihood Ratio test < 0.20 were adjusted at the same level and followed to a higher level. The level of significance adopted was 5%.

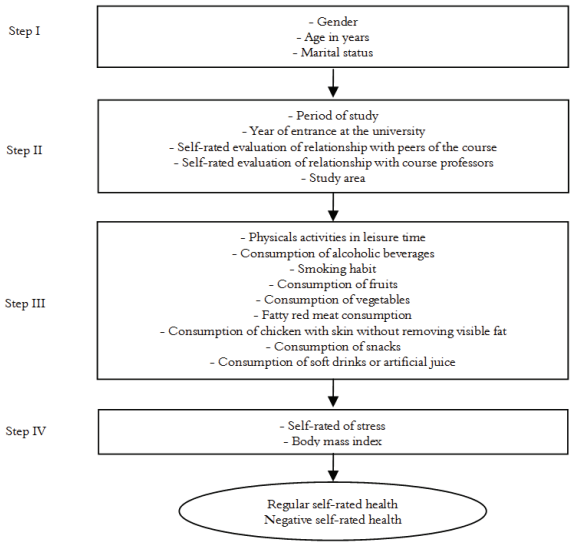

Figure 1. Hierarchical model to determine the adjusted analysis of negative self-rated of health in university students.

Results

The sample under analysis showed that 88% (n = 1,084) of the students participated, a percentage higher than 70% per course. Among the losses/refusals (12%) there were no differences between the characteristics of the sample obtained and the characteristics of the population (data not given). Mean age was 23.5 years (SD = 5.2; 17 to 52 years) and most of the students were females (54.7), without a partner (86.4), maintaining positive relationships with peers and teachers (Table 1). Further, 50.9% reported that they did not practice any physical activities during leisure time. Most participants had negative eating behaviors such as the consumption of fruits and vegetables less than four days per week and the consumption of fatty red meat and snacks (Table 1). The regular and negative self-rated health evaluation was mentioned by 26.8 and 3.4% of the university students, respectively, and the ratio of males and females who reported health as regular was approximately 27%. Table 2 shows the prevalence of regular and negative self-rated health evaluation according to exploratory variables.

Table 1. Socio-demographic descriptions, bond with the university, health behavior, self-rated stress and nutritional status characteristics in Brazilian university students.

Variables	n	%	95%CI
Gender			
Male	491	45.3	42.4-48.3
Female	592	54.7	51.7-57.6
Age (years)			
17 to 20	285	26.7	24.0-29.3
21 to 23	400	37.4	34.5-40.3
24 years or over	384	35.9	32.0-38.8
Marital status			
Without partner	937	86.4	84.4-88.5
With partner	147	13.6	11.5-15.6
Period study			
Morning	735	67.8	65.0-70.6
Evening	349	32.2	29.4-35.0
Year of entrance at the university			
2010	233	21.5	19.0-23.9
2009	267	24.6	22.1-27.2
2008	225	20.8	18.3-23.2
2007 and previous	359	33.1	30.3-35.9
Self-rated of relationship with peers of the course			
Positive	976	90.7	89.0-92.4
Negative	100	9.3	7.5-11.0
Self-rated evaluation of relationship with course professors			
Positive	970	90.4	88.6-92.2
Negative	103	9.6	7.8-11.4
Study area			
Health	126	11.6	9.7-13.5
Others	958	88.4	86.5-90.3
Physical activity in leisure time			
Yes	520	49.1	46.1-52.1
No	539	50.9	47.9-53.9
Consumption of alcoholic beverages			
No	630	58.7	55.8-61.7
Yes	443	41.3	38.3-44.2
Smoking habit			
Non-smokers	1.015	94.0	92.7-95.5
Ex-smokers	31	2.9	1.9-3.9
Smokers	33	3.1	2.0-4.1
Consumption of fruits			
≥5 days /week	200	18.8	16.5-21.2
≤4 days/week	862	81.2	78.8-83.5
Consumption of vegetables			
≥5 days /week	455	43.1	40.1-46.0
≤4 days/week	602	56.9	54.0-59.9
Fatty red meat consumption			
No	98	9.3	7.6-11.1
Yes	950	90.7	88.9-92.4
Consumption of chicken with skin without removing visible fat			
No	562	53.1	50.1-56.1
Yes	496	46.9	43.9-49.9
Consumption of snacks			
No	99	9.4	7.6-11.1
Yes	959	90.6	88.9-92.4
Consumption of soft drinks or artificial juice			
≤4 days/week	843	78.2	75.7-80.7
≥5 days/week	235	21.8	19.3-24.3
Self-rated stress			
Positive	299	27.6	24.9-30.3
Intermediate	567	52.4	49.4-55.3
Negative	217	20.0	17.6-22.4
Body mass index			
Underweight	93	8.8	7.1-10.5
Normal	734	69.3	66.5-72.0
Overweight	183	17.3	15.0-19.5
Obesity	50	4.7	3.4-6.0

%=Prevalence; 95%CI=Confidence Interval.

The characteristics associated with regular health self-rate (crude analysis, Table 3) were those of students who negatively evaluated their relationships with peers and teachers, who did not practice physical activities during their leisure time, those who consumed insufficiently fruits and vegetables, who reported consumption of snacks and artificial juices or soft drinks, coupled to those who noted stress in life as negative. In the adjusted analysis (Table 3), students who negatively assessed the

relationships with the teachers of the undergraduate course (OR: 1.85; 95%CI: 1.20-2.87); who did not practice physical activities during their leisure time (OR: 2.34; 95%CI: 1.73-3.16); who consumed vegetables less than four days a week (OR: 1.37; 95%CI: 1.02-1.85); and who consumed soft drinks on five or more days of the week (OR: 1.58; 95%CI: 1.13-2.22) remained associated with regular self-assessment of health. Students who noted the stress as intermediary were associated with a higher regular self-assessment of health and those who reported stress in life as negative had three times more OR of regular health self-rate (OR: 3.34; 95%CI: 2.11-5.28) than their peers who self-assessed health as positive.

The following factors were associated with higher OR of negative health self-assessment in the crude analysis (Table 3): students who did not practice physical activities during their leisure time; those who noted stress in life as negative; and obese students. Students who reported excessive alcohol consumption were associated with lower OR of negative health self-assessment. After the adjusted analysis (Table 3), students who did not practice physical activities during their leisure time presented approximately an OR which was 2.4 times higher for negative health self-assessment. Moreover, students who self-assessed their stress as negative (OR: 10.1; 95%CI: 3.23-31.8) and the obese ones (OR: 4.52; 95%CI: 1.36-15.0) were associated with higher OR than their peers. It was observed that students who reported excessive alcoholic beverage consumption had lower OR of negative health self-assessment, regardless of other factors.

Table 2. Prevalence of regular and negative self-rated health evaluation according to variables, in Brazilian university students.

Variables	n	Regular	Negative
		% (95%CI)	% (95%CI)
	1.070	26.8 (24.2-29.5)	3.4 (2.3-4.4)
Gender			
Male	487	27.1 (23.1-31.1)	2.7 (1.2-4.1)
Female	582	26.6 (23,0-30,2)	4.0 (2,4-5,5)
Age (years)			
17 to 20	280	26.1 (20.9-31.2)	2.1 (0.4-3.8)
21 to 23	396	30.8 (26.2-35.4)	4.5 (2.5-6.6)
24 years or more	379	23.0 (18.7-27.2)	3.2 (1.4-4.9)
Marital status			
Without partner	925	27.1 (24.3-30.0)	3.1 (2.0-4.3)
With partner	145	24.8 (17.7-31.9)	4.8 (1.3-8.3)
Period study			
Morning	727	26.8 (23.6-30.0)	2.9 (1.7-4.1)
Evening	343	26.8 (22.1-31.5)	4.4 (2.2-6.5)
Year of entrance at the university			
2010	230	28.3 (22.4-34.1)	3.0 (0.8-5.3)
2009	261	29.1 (23.6-34.7)	2.7 (0.7-4.6)
2008	223	27.8 (21.9-33.7)	4.9 (2.1-7.8)
2007 and previous	356	23.6 (19.2-28.0)	3.1 (1.3-4.9)
Self-rated evaluation of relationship with peers of the course			
Positive	971	26.0 (23.2-28.7)	3.3 (2.2-4.4)
Negative	96	35.4 (25.7-45.1)	4.2 (0.1-8.2)
Self-rated of relationship with course professors			
Positive	966	25.6 (22.8-28.3)	3.3 (2.2-4.4)
Negative	99	38.4 (28.6-48.1)	4.0 (0.1-8.0)
Study area			
Health	124	26.6 (18.7-34.5)	2.4 (-0.03-5.1)
Others	946	26.8 (24.0-29.7)	3.5 (2.3-4.6)
Physical activity in leisure time			
Yes	516	19.0 (15.6-22.4)	2.1 (0.9-3.4)
No	533	34.1 (30.1-38.2)	4.7 (2.9-6.5)
Consumption of alcoholic beverages			
No	619	26.7 (23.2-30.1)	4.5 (2.9-6.2)
Yes	441	27.4 (23.2-31.6)	1.8 (0.6-3.0)
Smoking habit			
Non-smokers	1.002	26.5 (23.8-29.3)	3.2 (2.1-4.3)
Ex-smokers	31	29.0 (12.1-45.9)	9.7 (-0.01-20.7)
Smokers	33	36.4 (19.0-53.7)	-
Consumption of fruits			
≥5 days/week	196	25.0 (18.9-31.1)	2.0 (0.04-4.0)
≤4 days/week	852	26.9 (23.9-29.9)	3.5 (2.3-4.8)
Consumption of vegetables			
≥5 days/week	447	23.0 (19.1-27.0)	2.2 (0.8-3.6)
≤4 days/week	596	29.0 (25.4-32.7)	4.0 (2.4-5.6)
Fatty red meat consumption			
No	94	28.7 (19.4-38.0)	5.3 (0.7-9.9)
Yes	940	26.8 (24.0-29.6)	3.2 (2.1-4.3)

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Variables	n	Regular	Negative
		% (95%CI)	% (95%CI)
Consumption of chicken with skin without removing visible fat			
No	551	26.3 (22.6-30.0)	3.4 (1.9-5.0)
Yes	493	27.2 (23.2-31.1)	2.8 (1.4-4.3)
Consumption of snacks			
No	99	17.2 (9.6-24.7)	1.0 (-0.01-3.0)
Yes	945	28.1 (25.3-31.0)	3.4 (2.2-4.5)
Consumption of soft drinks or artificial juices			
≤4 days/week	834	24.6 (21.6-27.5)	3.2 (2.0-4.4)
≥5 days/week	232	35.3 (29.1-41.5)	3.4 (1.1-5.8)
Self-rated stress			
Positive	296	16.6 (12.3-20.8)	1.7 (0.2-3.2)
Intermediated	559	27.2 (23.5-30.9)	1.8 (0.7-28.9)
Negative	214	39.7 (33.1-46.3)	9.8 (5.6-13.8)
Body mass index			
Underweight	91	22.0 (13.3-30.6)	6.6 (1.4-11.8)
Normal	724	26.2 (23.0-29.4)	3.0 (1.8-4.3)
Overweight	182	27.5 (20.9-34.0)	1.6 (-0.2-3.5)
Obesity	50	36.0 (22.2-49.8)	10.0 (1.4-18.6)

%=Prevalence; 95%CI=Confidence Interval.

Table 3. Association between health self-assessment and socio-demographics, link with university, health behavior, self-assessed stress and body mass index in Brazilian university students Brazilians. Crude and adjusted[+] analyzes estimated Multinomial Logistic Regression.

Variables	Regular versus positive self-rated		Negative versus positive self-rated	
	Crude analyses	Adjusted analyses★	Crude analyses	Adjusted analyses★
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Gender[a]				
Male	1.00	1.00	1.00	1.00
Female	0.99 (0.76-1.31)	0.99 (0.76-1.31)	1.50 (0.75-3.00)	1.50 (0.75-3.00)
Age in years[a]				
17 to 20	1.00	1.00	1.00	1.00
21 to 23	1.31 (0.93-1.85)	1.31 (0.93-1.85)	2.36 (0.92-6.04)	2.37 (0.93-6.09)
24 years or more	0.86 (0.60-1.23)	0.86 (0.60-1.23)	1.44 (0.53-3.89)	1.47 (0.54-3.97)
Marital status[a]				
Without partner	1.00	1.00	1.00	1.00
With partner	0.91 (0.60-1.36)	1.03 (0.67-1.59)	1.53 (0.65-3.58)	1.53 (0.61-3.86)
Period study[b]				
Morning	1.00	1.00	1.00	1.00
Evening	1.02 (0.76-1.37)	1.01 (0.75-1.35)	1.55 (0.78-3.05)	1.54 (0.78-3.05)
Year of entrance at the university[b]				
2010	1.00	1.00	1.00	1.00
2009	1.04 (0.70-1.54)	1.04 (0.70-1.54)	0.89 (0.31-2.59)	0.88 (0.30-2.57)
2008	1.01 (0.66-1.52)	0.98 (0.65-1.49)	1.66 (0.63-4.38)	1.65 (0.62-4.37)
2007 and previous	0.78 (0.54-1.14)	0.77 (0.53-1.13)	0.95 (0.36-2.50)	0.94 (0.36-2.47)
Self-assessment of relationship with peers of the course[b]				
Positive	1.00	1.00	1.00	1.00
Negative	1.60 (1.02-2.50)	1.27 (0.76-2.12)	1.48 (0.51-4.33)	1.32 (0.38-4.53)
Self-assessment of relationship with the teachers of the course[b]				
Positive	1.00	1.00	1.00	1.00
Negative	1.85 (1.20-2.87)	1.85 (1.20-2.87)	1.51 (0.52-4.41)	1.51 (0.52-4.41)
Study area[b]				
Health	1.00	1.00	1.00	1.00
Others	1.03 (0.67-1.57)	1.02 (0.66-1.59)	1.47 (0.44-4.89)	1.28 (0.37-4.44)
Physical activity in leisure time[c]				
Yes	1.00	1.00	1.00	1.00
No	2.32 (1.74-3.09)	2.34 (1.73-3.16)	2.84 (1.38-5.85)	2.37 (1.09-5.13)
Consumption of alcoholic beverages[c]				
No	1.00	1.00	1.00	1.00
Yes	1.00 (0.76-1.32)	1.02 (0.75-1.39)	0.39 (0.18-0.87)	0.27 (0.10-0.73)
Smoking habit[c]				
Non-smokers	1.00	1.00	1.00	1.00
Ex-smokers	1.25 (0.56-2.81)	1.48 (0.59-3.68)	3.47 (0.98-12.3)	4.14 (0.85-20.2)
Smokers	1.51 (0.73-3.12)	2.01 (0.90-4.49)	-	-
Consumption of fruits[c]				
≥5 days /week	1.00	1.00	1.00	1.00
≤4 days/week	1.13 (0.79-1.61)	0.91 (0.61-1.36)	1.81 (0.63-5.22)	1.27 (0.41-3.92)
Consumption of vegetables[c]				
≥5 days /week	1.00	1.00	1.00	1.00
≤4 days/week	1.41 (1.06-1.87)	1.37 (1.02-1.85)	2.01 (0.95-4.27)	1.95 (0.90-4.24)
Fatty red meat consumption[c]				
No	1.00	1.00	1.00	1.00
Yes	0.88 (0.55-1.41)	0.83 (0.50-1.38)	0.57 (0.21-1.51)	0.73 (0.24-2.22)

Continue...

continuation…

Variables	Regular versus positive self-rated		Negative versus positive self-rated	
	Crude analyses	Adjusted analyses★	Crude analyses	Adjusted analyses★
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR (95%CI)
Consumption of chicken with skin without removing visible fat[c]				
No	1.00	1.00	1.00	1.00
Yes	1.04 (0.79-1.37)	1.09 (0.80-1.48)	0.83 (0.41-1.67)	0.94 (0.44-2.02)
Consumption of snacks[c]				
No	1.00	1.00	1.00	1.00
Yes	1.96 (1.14-3.37)	1.78 (1.00-3.16)	4.01 (0.54-29.7)	3.77 (0.50-28.3)
Consumption of soft drinks or artificial juices[c]				
≤4 days/week	1.00	1.00	1.00	1.00
≥5 days/week	1.70 (1.24-2.32)	1.58 (1.13-2.22)	1.26 (0.56-2.82)	1.13 (0.47-2.70)
Self-rated stress[d]				
Positive	1.00	1.00	1.00	1.00
Intermediated	1.89 (1.32-2.71)	1.85 (1.25-2.74)	1.22 (0.41-3.61)	1.54 (0.47-5.09)
Negative	3.89 (2.56-5.91)	3.34 (2.11-5.28)	9.41 (3.46-25.6)	10.1 (3.23-31.8)
Body mass index[d]				
Underweight	0.83 (0.49-1.41)	0.66 (0.37-1.19)	2.15 (0.84-5.49)	2.28 (0.82-6.30)
Normal	1.00	1.00	1.00	1.00
Overweight	1.04 (0.72-1.51)	1.03 (0.69-1.56)	0.54 (0.16-1.84)	0.47 (0.11-2.12)
Obesity	1.80 (0.97-3.34)	1.91 (0.95-3.82)	4.31 (1.52-12.3)	5.53 (1.70-18.0)

OR = Odds Ratio; 95%CI = Confidence Interval; a = Step I, b = Step II, c = Step III and d = Step IV; [+]Adjusted for variables of same level and higher level with p-value of Likelihood Ratio test < 0.20. ★Variables included in final model: self-assessment of relationship with the teachers of the course, physicals activities in leisure time, consumption of alcoholic beverages, smoking habit, consumption of vegetables, consumption of snacks, consumption of soft drinks or artificial juices, body mass index and self-rated stress. Odds Ratio and Confidence Intervals in bold present statistical association by p-value of Likelihood Ratio test < 0.05.

Discussion

Factors related to regular self-assessment of health in university students in current analysis were those related to negative relationships with professors, lack of physical activities during leisure time, consumption of vegetables up to four days a week and consumption of soft drinks on five or more days of the week. Regular self-assessment was also perceived by students who considered stress in life as intermediate and negative. Self-assessment of health was considered negative by students who did not practice physical activities in their leisure time, who self-assessed stress as negative and who were above the recommended levels of nutritional state. On the other hand, students who reported excessive alcoholic beverage consumption were related to lower OR levels of negative health self-assessment than students who did not consume excessively alcoholic beverages.

Studies on Brazilian population have shown prevalence of negative health self-assessment between 4.3 and 9.2% (BARROS et al., 2009; DACHS; SANTOS, 2006; SZWARCWALD et al., 2005). The prevalence for adults in Salvador Bahia State, Brazil, was 4.9%, in 2011 (BRASIL, 2012). These proportions are higher than those reported in current study on negative health self-assessment by the same outcome classification criterion. The lower prevalence of negative health self-assessment in current study, when compared to that in other Brazilian researches, may be the result of the population' s characteristics, with lower age brackets and higher schooling level, both associated to a lower prevalence of negative health self-assessment (BARROS et al., 2009; DACHS; SANTOS, 2006; SZWARCWALD et al., 2005).

Researches on university students in the United Arab Emirates and Egypt revealed a prevalence of negative health self-assessment respectively of 6.3 and 22.8%, using the same classification as current study (ABOLFOTOUH et al., 2007; MATHEW et al., 2012). On the other hand, the highest prevalence in researches on Brazilian university students and studies with adults (BARROS; NAHAS, 2001; FONSECA et al., 2008; PERES et al., 2010; SOUSA, 2010), when compared to this study, occurred with the inclusion of the option regular as a negative evaluation. The relevance of analyzing the categories of self-rated health separately as regular and negative is due to the difference of the discriminatory power of each for mortality and highest for negative health evaluation (LIMA-COSTA et al., 2012).

Current investigation showed that students who self-assessed stress in life as negative presented higher OR of regular and negative health self-assessment. Other studies carried out with university students (SOUSA, 2010), adolescents (SOUSA et al., 2010) and industry workers (BARROS; NAHAS, 2001; FONSECA et al., 2008) have shown association with the negative health self-assessment for people with high stress levels. The association between these two indicators in university students is limited. However, regardless of the population, higher levels of negative stress tend to associate with bad assessment of health (BARROS; NAHAS, 2001; FONSECA et al., 2008; SOUSA, 2010; SOUSA et al., 2010). It is interesting to note that the psychological evaluation, such as

stress, is associated to cases of mortality by cardiovascular illnesses (YUSUF et al., 2004).

Obese students also presented an OR five times higher for negative health self-assessment. A similar association was also observed in obese students of Physical Education (body mass index ≥ 25.0 kg m^{-2}) (SOUSA, 2010). Other researches also demonstrate the positive association between obesity and negative health self-assessment (BARROS et al., 2009; FONSECA et al., 2008). Obesity is an important health problem. Since it is associated to other health outcomes, it contributes to higher possibilities of mortality (YUSUF et al., 2004). One of the potential factors that contribute to higher prevalence of negative health self-assessment in overweight and obesity are psychological aspects related to the body image, especially in view of the emphasis on aesthetic standards, which determine the profile body as lean and strong, causing higher levels of dissatisfaction in people with body mass excess (SILVA et al., 2011).

It has been observed that, among the investigated behaviors, university students who did not practice physical activities in leisure were associated to the regular and negative health self-assessment. Moreover, students who reported insufficient consumption of vegetables and the consumption of soft drinks or artificial juices on most days were associated to the health assessment as regular. Health risk behavior was associated to negative health self-assessment for Brazilian industry workers (BARROS et al., 2009; FONSECA et al., 2008). However, this association was not observed for university students (SOUSA, 2010). It is worth noting that the low level of physical activities and inadequate eating habits represented prevalent negative behaviors in university students (PETRIBÚ et al., 2009; SOUSA, 2011), associated with morbidity and mortality (YUSUF et al., 2004; PINO et al., 2009). In view of the awareness of the protective effects of quality eating habits and practice of physical activities during leisure time, university students who failed to adopt such habits were more inclined to the evaluation of health as regular and negative.

It is interesting to note that university students who reported excessive alcoholic beverage consumption were associated with a lower OR rate of negative health self-assessment. This association was not observed in researches with university students and in other studies with adolescents and workers (BARROS; NAHAS, 2001; FONSECA et al., 2008; HÖFELMANN; BLANK, 2007; SOUSA, 2010; SOUSA et al., 2010). The above is possibly related to the association between alcoholic beverages consumption and advertisements of the drink, which emphasizes the relationship between alcoholic beverage consumption and satisfaction with life, higher status social and life condition (PEDROSA et al., 2011). It has also been observed that university students who evaluated their relationships with course professors as negative, presented almost the double of OR of health assessment as regular. Despite the gap existing in the literature on the association between these indicators, possible explanations are grounded on the perception of a higher psychological stress due to the academic period, and which may have been directed to the professor´s role and the link to professional formation.

The impossibility of causal determination for the outcome of this study – except for the variable gender – and the use of the questionnaire for obtaining information on health, may be mentioned among the limitations. Further, there is a low statistical power of association between exploratory variables and negative health self-assessment in view the number of subjects. The satisfactory level of reproducibility of the variable outcome of current study (SOUSA et al., 2013a) and the forward thinking related to the sampling process – which considered different courses, years of entrance at the university and period of study – may be taken as strong points. The possible response bias of the dependent variable as a result of the localization of the question in the questionnaire was also not evidenced (SOUSA et al., 2013b).

Conclusion

Results show that the factors associated to the regular health self-assessment came from students who negatively assessed their relationships with professors; students who were inactive during their leisure time; students with insufficient consumption of vegetables and with consumption of soft drinks or artificial juices in most week days; and students who self-assessed stress in life as intermediate and negative. Inactive students during leisure, those who had evaluated stress in life as negative and the obese ones were associated to the negative health self-assessment; students who reported excessive consumption of alcoholic beverages were associated to lower OR of negative health self-assessment.

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