
PREVALENCE OF NEGATIVE SELF-RATED HEALTH IN UNIVERSITY STUDENTS AND ITS RELATIONSHIP WITH THE CO-OCCURRENCE OF RISK BEHAVIORS

PREVALÊNCIA DA AUTOAVALIAÇÃO DE SAÚDE NEGATIVA EM UNIVERSITÁRIOS E SUA RELAÇÃO COM A COCORRÊNCIA DE COMPORTAMENTOS DE RISCO

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ABSTRACT

The present study estimate the prevalence of negative self-rated health and to analyze its association with simultaneous risk behaviors (insufficient levels of physical activity, greater exposure to sedentary time and inappropriate sleep time) in students at a public university in the state from Minas Gerais, Brazil. It consists of cross-sectional study, with data collected through a questionnaire. The outcome variable was negative self-rated health. The independent variables were estimated by the questions related to the time spent on physical activity, sitting and sleep time, and these three behaviors were considered according to the risk criteria (none, one, two and three risk behaviors). The association was estimated by the Prevalence Ratios (PR), via Poisson regression. 1,110 students participated in the study. The prevalence of negative self-rated health among university students was 47.3%, and the prevalence of two risk behaviors and three risk behaviors were 41.3% and 11.3%, respectively. The simultaneous occurrence of three risk behaviors was associated with negative self-rated health in university students. The information in this study makes it possible to characterize the need for actions to promote health in the university environment.

Keywords: Health status. Life style. Risk Factors. Students. Universities.

RESUMO

O presente estudo estimou a prevalência da autoavaliação de saúde negativa e analisou a sua associação com comportamentos de risco simultâneos (níveis insuficientes de atividade física, maior exposição ao tempo sedentário e tempo de sono não apropriado) em estudantes de uma universidade pública do ensino superior do estado de Minas Gerais, Brasil. Consiste de um estudo transversal, com informações mensuradas via questionário e a variável desfecho foi a autoavaliação de saúde negativa. As variáveis independentes foram estimadas pelas perguntas referentes ao tempo despendido em: atividade física, tempo sentado e tempo de sono, e esses três comportamentos foram somados conforme os critérios de risco (nenhum, um, dois e três fatores de risco). A associação foi estimada pelas Razões de Prevalências (RP), via regressão de Poisson. Participaram do estudo 1.110 estudantes. A prevalência da autoavaliação de saúde negativa entre os universitários foi de 47,3%, e as prevalências de dois fatores de risco e de três fatores de risco foram de 41,3% e 11,3%, respectivamente. A ocorrência de forma simultânea de três fatores de risco mostrou-se associada com a autoavaliação de saúde negativa em universitários. As informações deste estudo possibilitam caracterizar a necessidade de ações na promoção de saúde no ambiente universitário.

Palavra-chave: Nível de saúde, Estilo de vida, Fatores de risco, Estudantes, Universidades.

Introduction

Self-rated health (SRH) is a measure that aims to assess the health level of the population. It consists of the subjective perception that the person has of their health status¹. The World Health Organization² recommends the use of this construct in assessing the health of the population, as it is possible to evaluate it through a measure that is easy, quick, effective to apply and have a low cost. Studies have shown that negative SRH has a high possibility for association with the occurrence of mortality³ and morbidities⁴. Sociodemographic (gender, age and educational level)⁵ and behavioral characteristics⁶ can determine the occurrence of negative health levels in different population groups.

It is noteworthy that insufficient physical activity, high sedentary behavior and inadequate sleep have an impact on population SRH and, as a result, have been the focus of investigations^{7,8}. It is important to observe that these inadequate behaviors is noticed in college students⁹⁻¹¹ and the literature has shown that isolated behaviors such as low levels of physical

activity and low sleep duration were associated with negative SRH of this audience¹²⁻¹⁴. However, there is a scarcity of studies in the indexed databases that investigate the association of sedentary behavior to the negative SRH of the university public.

Considering that studies have shown that the prevalence of negative SRHS in Brazilian college students was 3.4%¹⁵ and 38.2%¹⁶, and in surveys conducted with university students from other countries, the prevalence was of 44.4% in Ireland¹³, 10.8% in seven UK institutions¹⁷ and 13.3% in students from Germany¹⁸, it is essential to know the role of physical activity, sleep and sedentary behavior on this construct. It is worth mentioning the importance of understanding the impact of the simultaneous occurrence of these behaviors, as it is estimated to be greater than the negative effect of an isolated behaviour¹⁹. There is a limited amount of information in the literature on the co-occurrence of risk behaviors and SRH in university students, and, in fact, only one Brazilian study addressed this relationship, with the health perceived as an exploratory characteristic²⁰.

Considering that the number of university students increases every year in Brazil, and between 2008 and 2018 the enrollment in higher education increased by 44.6%²¹, there has been evidence that there is an impact of health-related behaviors on the SRH, and considering, that there is a gap in the literature about the co-occurrence of risk behaviors and SRH in this audience, it is extremely important to investigate the magnitude of the associations between these characteristics. With the knowledge of the simultaneous health risk behaviors that are associated with the negative SRH of university students, institutions will be able to implement interventions and projects that can assist in changing the lifestyle of college students. Therefore, the aim of this study was to estimate the prevalence of negative SRH and to analyze its association with simultaneous risk behaviors (insufficient levels of physical activity, greater exposure to sedentary time and inappropriate sleep time) in students from a public university in the state. higher education in the state of Minas Gerais, MG, Brazil.

Methods

Study characterization

This is a cross-sectional study, with data from the first survey conducted in 2018, “Profile of the lifestyle and quality of life of students at the Federal University of Triângulo Mineiro”. The research was approved by the Research Ethics Committee (CEP) of the Federal University of Triângulo Mineiro (UFTM), under number CAAE 77869617.1.0000.5154. For participation in the study, a free and informed consent form (TCLE) was previously signed.

Participants

The target population was university students in the first academic semester of 2018 of the under-graduation courses of UFTM in the city of Uberaba (N = 5.952). To determine the sample size, the equation proposed by Luiz and Magnanini²² was used considering a confidence level of 95%, 50% prevalence due to the survey of different outcomes, acceptable sampling error of 3 percentage points, with the addition of 20% for losses and another 10% for the control of confounding factors in adjusted analyzes. At the end, a sample of 1.195 university students was calculated. The sample of this study, calculated a posteriori in the Gpower software (version 3.1.9.7), showed a power of 97.4%, with a confidence level of 95%, in the adjusted analysis regarding the co-occurrence of three risk behaviors and negative SRH. In relation to categories one and two risk behaviors, the observed power levels were 64.2% and 77.1%, respectively.

The sample was stratified proportionally to the distribution of university students in the 25 courses of the institution and the selection occurred through convenience according to the number of students per course. The refusals were replaced (students that were not interested in

participating). The inclusion criteria were university students aged 18 years or older, from on-campus courses on the city of Uberaba, who signed the TCLE, regardless of gender and physical conditions. After tabulation of the data, students who did not meet these criteria were excluded, as well as those who reported belonging to distance learning courses, those with a college diploma, technical courses and courses not belonging to the campi in Uberaba, MG.

Procedures

The training of the collection team took place in March 2018, which included 11 university and post-graduation students in Physical Education at UFTM. The data collection was carried out from April to July of 2018. The instrument was applied in classrooms, individually or in groups of up to 30 university students, depending on the availability of the volunteers, with the presence and assistance of an applicator (the time to complete the instrument was, on average, 15 minutes).

Information was obtained through a questionnaire, consisting of questions from the Academic Health and Quality of Life Indicators (ISAQ-A) instrument, which was previously tested for face and content validity, clarity and pre-testing and reproducibility with an interval of one week, showing satisfactory indicators for its application in university students²³ and by the International Physical Activity Questionnaire (IPAQ), short version, to estimate physical activity and sitting time, also validated for use in young adults²⁴.

The dependent variable of this study was the SRH, measured by the following question: in general, how do you consider your current health? The response options were very good, good, regular, bad and very bad. For the outcome of this study, the responses were considered regular, bad and very bad. In this study, due to the mortality risk associated with the regular option³, as well as the association of health risk behaviors associated with this category¹⁵, the inclusion of this option was also adopted as a negative assessment. The kappa reproducibility level of this measure is 0.70²³.

The independent variables were estimated by the questions regarding the time spent on physical activity, sitting and sleeping. Physical activity was calculated by adding the practice time spent in physical activities in a typical week. The hours were transformed into minutes, with the practice time of physical activities in vigorous intensity multiplied by two²⁵. University students were classified as active (150 minutes or more at moderate to vigorous intensity activities) and insufficiently active (<150 minutes at moderate to vigorous intensity) according to the World Health Organization²⁶.

The sitting time variable was estimated by the questions related to the time spent sitting on a weekday and a weekend day of the IPAQ questionnaire. The sitting time minutes were transformed into hours and the sitting time per day during the week was calculated as a weighted average, by multiplying the time of the week by five and the time of the weekend by two, divided by seven days. The cutoff point considered as excessive sedentary behavior was 6 hours or more and moderate/low <6 hours per day, parameters previously used in other studies²⁷.

The sleep time variable was measured considering the self-reported hours and minutes spent sleeping during one day of the week and one day of the weekend using the ISAQ-A^{23,28} questionnaire. The minutes were transformed into hours and the sleep time per day during the week was calculated as a weighted average, by multiplying the time of the week by five and the time of the weekend by two, divided by seven days. It was adopted as a classification the recommendations for the amount of sleep established by the National Sleep Foundation's²⁹, which recommends a minimum sleep of 7 hours and a maximum of 9 hours a day as appropriate and the hours below 7 and above 9 as inappropriate. The cutoff point >6.86 hours of sleep per day for this measure showed a predictive power of aggregated risk behaviors (physical inactivity and long sedentary time, both measured by an accelerometer) with a sensitivity level of 78.6% and specificity of 80,0%²⁸.

These three behaviors were the independent variables in this study, which were added according to the risk criteria. With the sum they were classified as: no risk factor, one risk factor, two risk factors and three risk factors. The analysis of simultaneity represents a method of grouping behaviors capable of clarifying how the occurrence of accumulated behaviors has effects on health³⁰.

The adjustment variables were considered through of informations of systematic review with university students¹⁴, used in the association analysis were: gender (male and female); age in complete years (classified as 18 to 24 years and 25 years or more); marital status (with partner and without partner); area of study classified in Health and Other (Exact and Earth Sciences, Biological Sciences, Engineering, Agrarian Sciences, Social and Applied Sciences, Human Sciences, Letters and Arts); study period (day and night); years of enrollment at the university (up to 2 years and 3 years or more); fruit consumption, irregular up to 4 days a week and regular 5 or more days a week³¹; vegetable consumption, irregular up to 4 days a week and regular 5 or more days a week³¹; habit of smoking cigarettes, considered as smoker (smoking 1 or more cigarettes per day), ex-smoker (quit smoking) and non-smoker (never smoked)³², stress level, through the report of positive self-assessment of stress (never and rarely) and negative self-assessment of stress (sometimes, almost always and always)³³; reported high blood pressure (yes and no)³⁴; reported high cholesterol (yes and no)³⁵, reported diabetes (yes and no)³⁶ and body mass index (BMI), classified as overweight, $BMI \geq 25 \text{ kg/m}^2$ and without overweight, $BMI \leq 24.9 \text{ kg/m}^2$ ³⁷.

Statistical analysis

The information was typed in the Excel program, version 2013, and the data analysis performed in the SPSS program for Windows, version 24. Analyzes of absolute and relative frequencies were used of variables, together with estimates of the mean (standard deviation = SD), minimum and maximum values of variable age in complete years. The estimates of association between the co-occurrence of risk behaviors (none to three risk behaviors) and SRH in relation to the adjustment variables and types of health-related behaviors were performed using the Chi-square test for linear trend and Chi-square for the heterogeneity, respectively. The adjustment variables that represented p value < 0.20 in Chi-square test for linear trend and Chi-square for the heterogeneity in association with independent and dependent variables were investigated in relation the collinearity, by tetrachoric test and correlation values < 0.70 with p value < 0.05 of Spearman's test were considered satisfactory in the analysis performed exclusively in the STATA software version 17.0.

The estimates of association between the co-occurrence of risk behaviors (none to three risk behaviors) in relation to negative SRH were performed by the Prevalence Ratios (PR) and complemented by the 95% confidence intervals (95% CI), via regression of Poisson, in the crude and adjusted analyzes, with adjustment for the robust variance. In the adjusted analysis, all adjustment variables that did not show collinearity were included as adjustment variables and removed by the backward method if they did not presented p value < 0.20 of the Wald test. The association was determined by the Wald test for linear trend, with a level of 5% significance.

Results

Participated 1,156 students in the study. Three participants were excluded for being under the age of 18 years and forty-three for having a college degree, totaling a final sample of 1,110 university students. There were no sample losses during data collection. The number of university students in the sample in each course did not differ from the target population of this study. The average age of the participants was 21.48 years (SD = 4.17; minimum = 18;

maximum = 56). Most university students were active (n: 791; 72.3%), with high sitting time (n: 834; 75.9%) and who did not comply with sleep recommendations (n: 548; 50.6%).

The sample description is detailed in Table 1. There was a predominance of university students with co-occurrence of two risk behaviors (41.3%), of women (61.8%), without a partner (96.1%), from other study areas not related to health (68.6%) and studying during the day (73.8%). Regarding eating habits, the prevalence was higher for those who irregularly consumed fruits (75.1%) and vegetables (53.3%). The majority negatively self-assessed stress (84.9%). The increase of prevalence between the co-occurrence of risk behaviors categories were observed in male and university students with negative self-rated stress.

Table 1- Description of the adjustments variables and association with co-occurrence of risk behaviors of the university students. Uberaba, MG. 2018

Variables	Adjustments variables		Co-occurrence				p*
	n	%	None n(%)	1 RB n(%)	2 RB n(%)	3 RB n(%)	
			101(9.5)	404(38.0)	439(41.3)	120(11.3)	
Gender							0.002
Female	683	61.8	54(53.5)	240(59.6)	279(64.0)	85(71.4)	
Male	422	38.2	47(46.5)	163(40.4)	157(36.0)	34(28.6)	
Age							0.62
18 to 24 years	978	88.1	89(88.1)	355(87.9)	394(89.7)	106(88.3)	
25 years or more	132	11.9	12(11.9)	49(12.1)	45(10.3)	14(11.7)	
Marital status							0.96
With companion	43	3.9	3(3.0)	18(4.5)	15(3.4)	5(4.2)	
Without companion	1.067	96.1	98(97.0)	386(95.5)	424(96.6)	115(95.8)	
Years of University							0.64
Up to 2 years	566	51.1	50(49.5)	211(52.2)	217(49.7)	67(56.3)	
3 years or more	541	48.9	51(50.5)	193(47.8)	220(50.3)	52(43.7)	
Study area							0.67
Health sciences	349	31.4	28(27.7)	123(30.4)	160(36.4)	29(24.2)	
Other areas	761	68.6	73(72.3)	281(69.6)	279(63.6)	91(75.8)	
Study period							0.71
Day	818	73.8	71(70.3)	295(73.0)	341(77.9)	81(67.5)	
Night	291	26.2	30(29.7)	109(27.0)	97(22.1)	39(32.5)	
Fruit consumption							0.95
≤4 days a week	830	75.1	77(76.2)	305(75.7)	320(73.4)	95(79.2)	
≥5 days a week	275	24.9	24(23.8)	98(24.3)	116(26.6)	25(20.8)	
Vegetable's consumption							0.07
≤4 days a week	589	53.3	51(50.5)	206(51.2)	228(52.2)	76(63.3)	
≥5 days a week	516	46.7	50(49.5)	196(48.8)	209(47.8)	44(36.7)	
Smoking							0.81
Never smoked	929	83.9	82(82.0)	338(83.7)	369(84.2)	102(85.0)	
Ex-smoker	64	5.8	6(6.0)	27(6.7)	25(5.7)	3(2.5)	
Smoker	114	10.3	12(12.0)	39(9.7)	44(10.0)	15(12.5)	
Stress							0.001
Positive	166	15.1	28(27.7)	56(13.9)	60(13.7)	10(8.3)	
Negative	936	84.9	73(72.3)	346(86.1)	377(86.3)	110(91.7)	
High cholesterol							0.18
Yes	139	13.4	7(7.4)	50(13.1)	59(14.4)	15(13.5)	
No	895	86.6	88(92.6)	331(86.9)	350(85.6)	96(86.5)	
High blood pressure							0.67
Yes	59	5.6	4(4.2)	26(6.8)	19(4.5)	6(5.6)	
No	988	94.4	92(95.8)	35,6(93.2)	401(95.5)	101(94.4)	
Diabetes							0.76
Yes	10	0.9	-	3(0.8)	5(1.2)	-	
No	1.056	99.1	97(100,0)	391(99.2)	415(98.8)	115(100.0)	
Body mass index							0.30
Overweight	305	27.8	23(23.0)	106(26.3)	126(28.9)	32(27.4)	
Without overweight	794	72.2	77(77.0)	297(73.7)	310(71.1)	85(72.6)	

Note:%: frequency; *Chi-squared linear for trend; RB: Risk behaviors.

Source: The authors.

Table 2 shows the prevalence and characteristics associated the negative SRH. The prevalence of negative SRH was 47.3%. Higher prevalence of SRH was observed in women, university students with irregular consumption of fruits and vegetables, negative life stress, self-reported high cholesterol, diabetes, and overweight. Observed higher prevalence of negative

SRH in university students with insufficiently physical activity (54.8%) and inappropriate sleep time (52%).

Table 2 - Description of the characteristics associated of the negative SRH in university students. Uberaba, MG. 2018

Variables	Negative Self-Rated Health		
	n	%	p
	1,100	47.3	
Gender			<0.001
Female	351	51.7	
Male	164	39.4	
Age			0.40
18 to 24 years	464	47.7	
25 years or more	56	43.8	
Marital status			0.25
With companion	24	55.8	
Without companion	496	46.9	
Years of University			0.42
Up to 2 years	271	48.3	
3 years or more	246	45.9	
Study area			0.09
Health sciences	178	51.0	
Other areas	342	45.5	
Study period			0.09
Day	372	45.7	
Night	147	51.6	
Fruit consumption			0.001
≤4 days a week	412	50.1	
≥5 days a week	104	38.1	
Vegetable's consumption			0.001
≤4 days a week	304	52.1	
≥5 days a week	213	41.5	
Smoking			0.17
Never smoked	425	46.0	
Ex-smoker	34	53.1	
Smoker	60	54.1	
Stress			<0.001
Positive	44	26.5	
Negative	476	51.0	
High cholesterol			0.003
Yes	80	57.6	
No	393	44.3	
High blood pressure			0.13
Yes	32	56.1	
No	450	45.8	
Diabetes			<0.001
Yes	5	50.0	
No	487	46.5	
Body mass index			<0.001
Overweight	174	57.8	
Without overweight	339	43.0	
Physical activity			0.002
Active	350	44.5	
Insufficiently active	165	54.8	
Sitting time			0.42
Excessive	396	47.7	
Moderate/low	118	44.9	
Sleeping time			0.001
Appropriate	224	41.9	
Inappropriate	282	52.0	

Note: % frequency

Source: The authors

The variables that met the criteria for adjustment in the adjusted between co-occurrence risk behaviors and SRH in analyzes were: gender, vegetable's consumption, perceived stress and self-reported high cholesterol. Table 3 shows the estimates of collinearity between these variables. The highest correlation value (0.4135) observed was between gender and perceived stress.

Table 3 - Description of collinearity between the variables that met the criteria for adjustment. Uberaba, MG. 2018. Data represent by tetrachoric test

Variables	Gender	Vegetable's consumption	Stress	High cholesterol
Gender	1	-	-	-
Vegetable's consumption	0.1936 (p:0.0001)	1	-	-
Stress	0.4135 (p:<0.0001)	-0.0010 (p:1.0000)	1	-
High cholesterol	-0.2087 (p:0.0013)	0.0080 (p:0.9274)	-0.1229 (p:0.1599)	1

Source: The authors

Table 4 shows a prevalence of negative SRH of 31.7% for university students who did not have any risk behaviors, 45.1% for those with one risk behaviors, 47.9% for two risk behaviors and 62.1% for three risk behaviors. In the crude analysis, it was observed that university students who had at least one risk factor were associated with negative SRH. In the adjusted analysis, university students with two risk behaviors (PR: 1.39; 95%CI = 1.01 - 1.90), with three risk behaviors (PR: 1.70; 95%CI = 1.22 - 2.38) were associated with negative SRH, when compared to university students without any risk behaviors .

Table 4 - Crude and adjusted analysis of the association between the co-occurrence of risk behaviors and the negative self-rated health of university students. Uberaba, MG. 2018

Variables	(n)%	Negative self-rated health			
		Crude		Adjusted	
		PR (95%CI)	p*	PR (95%CI)	p*
Co-occurrence of risk factors			<0.01		<0.01
None	(32)31.7	1.00		1.00	
One risk behavior	(181)45.1	1.42 (1.04-1.93)		1.32 (0.96-1.81)	
2 risk behaviors	(209)47.9	1.51 (1.11-2.04)		1.39 (1.01-1.90)	
3 risk behaviors	(75)62.1	1.97 (1.43-2.71)		1.70 (1.22-2.38)	

Note: %: Prevalence; PR: Prevalence Ratios; 95%CI: 95% Confidence Interval; Poisson regression adjusted to: gender (p: 0.02), consumption of vegetables (p: 0.01), stress (p: <0.01) and reported cholesterol (p: 0.02). All adjustment variables represent p value < 0.20 of the Wald test. * Wald test p-value for linear trend

Source: The authors.

Discussion

The results of this study showed high prevalence of negative SRH for three behavioral risk behaviors among university students. The prevalence of negative SRH was high. Furthermore, the presence of two or more risk behaviors was prevalent.

This study found a prevalence of negative SRH (47.3%) higher than other studies with university students^{14,16,17,38}. Divergences between studies may have been observed due to the characteristics of the question, answer options and categorization of variables that did not follow a standardization and also since the samples were taken with students from specific courses. In a recent systematic review study, the results showed that there is a variation in the

prevalence of negative SRH among studies with university students, requiring the validation of a question and a standardized scale to estimate SRH, considering a balance point between the negative and positive pole¹⁴.

The higher prevalence in this study may have occurred due to the inclusion of the “regular” response option as negative health, however, this decision was made because in other studies this response category was associated with mortality³ and health behavior¹⁵. Adding the regular option as a negative health option is a viable alternative, as this way the SRH is sensitive to characterize different components of life (environmental, cultural, social, psychosocial, lifestyle and quality of life), and considering that university students they are exposed to constant changes in their daily lives, they can become adults with greater chances of harm to their health. As a result, including SRH in the development of health promotion and prevention strategies is essential, via institutional projects and programs in the monitoring routines.

The present study showed that college students with three aggregated risk behaviors had 1.70 times more prevalence of negative SRH when compared to those without a risk behavior, regardless of characteristics such as gender, consumption of vegetables, level of stress in life and high cholesterol. It is known that, in isolation, the low level of physical activity and short sleep duration are associated with negative SRH in university students^{12,13,38}, as was also shown in this study. The unhealthy lifestyle becomes a vicious circle, as a inappropriate habit is able to reinforce another risk behavior, and for the daily lives of university students, increase in health education actions within educational institutions for better time management in physical activity, reduced sitting time and compliance with sleep recommendations, as these are interconnected pillars, would be a method capable of minimizing health risks.

In a study conducted with university students from the Federal University of Rio Grande (FURG), SRH was analyzed as an exploratory variable and among four risk behaviors (physical inactivity, high fat consumption, alcohol abuse and smoking) it was observed that those who noticed their health as poor or regular was associated with a greater number of risk behaviors (two to four risk behaviors)²⁰. Similarly, in the present study it is observed that a lower level of physical activity, higher sitting time and inappropriate sleep time, regardless of other factors, are behaviors that interact with each other and their combination favored the occurrence of a negative SRH in university students. One explanation for this result may be related to the duration of sleep, which has the potential to associate to other risk behaviors, such as lower levels of physical activity and increased sedentary time²⁸.

It was observed in this study that two risk behaviors were associated with negative SRH among college students. However, the analysis of the sample power of this study demonstrates that between the categories of one and two risk behaviors there is an inadequately sample size to confirm such an association. Although this study did not find associations between one and two risk behaviors, in other studies these risk behaviors isolated^{2,15} or combined into two variables^{20,39,40} were described as health risk characteristics, which influence a negative SRH. Thus, it is suggested that the co-occurrence of two risk behaviors in health promotion at the university should not be disregarded, with a view to improving SRH.

The prevalence of negative SRH were higher in relation female, university students with irregular consumption of fruits and vegetables, negative self-rated stress, positive reported high cholesterol, diabetes, and overweight, insufficiently active and inappropriate sleeping time. These characteristics were observed as determinants of SRH in a systematic review study¹⁴. The involvement of university students in negative behaviors or situations that favor health risks, whether due to the absence of institutional, social and family support, as well as public policies aimed at promoting health, are examples of the need for macro and micro-contextual actions with long-term planning. Another highlight, refers to women, that have been the group that most negatively SRH among university students¹⁴, and the possibilities of stress due to academic requirements, which makes it essential that the institution and its actors, as professors,

can seek new ways to transmit knowledge and understand the reality of university students, in order to interrelate with the health of this public.

Some limitations of this study need to be highlighted. The sampling by convenience, for example, may favor selection bias. However, to minimize the occurrence of student participation in only a few courses, the sample stratification procedure was carried out according to all courses at the institution. In addition, as they represent a sample from a public institution, the extrapolation of results to university students from private institutions should be done carefully. Also, all risk behaviors were measured using a questionnaire, which can result in information bias regarding the presence of the risk behaviors assessed. However, the results of validity and reproducibility of the measures used in this study are satisfactory^{23,24,28}.

On the other hand, the study has positive points, such as sample size due to the representativeness of different courses, which expands the scope of information from the perspective of university students from public institutions. The sample in this study showed a power greater to estimate PR in the association between three risk behaviors of co-occurrence and SRH.

Conclusions

It was concluded that there was a high prevalence of negative SRH among university students and that more than half of them presented co-occurrence of two or more simultaneous risk behaviors. The co-occurrence of three risk behaviors was associated with negative SRH in university students. The information in this study makes it possible to characterize the need for actions to promote health in the university environment, in which students are encouraged to follow the recommendations of physical activity, sedentary and sleep behaviors in order to achieve better health. In this context, this study recommends the combined investigation of these health-related behaviors, seeking to understand the interactions of the behaviors and with that made it is possible to identify ways that allow interventions that cause positive impacts on the health of this public.

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