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Original articles

Factors associated with a fantastic lifestyle in Brazilian college students – a multilevel analysis

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ABSTRACT

Purpose: to analyze possible associations between a Fantastic lifestyle and self-perception of oral health, binge drinking, and socio-demographic variables among public college students.

Methods: questionnaires validated for use in Brazil were applied to 672 students in randomly selected courses. It was the first questionnaire to assess a Fantastic lifestyle, the second to measure oral health-related quality of life (OHIP-14), and the third to include socio-demographic information. Multilevel linear regression was used for the analyses.

Results: among the participants, 64.21% were full-time students, 52.82% were females, 50.85% had a family income between 4 and 8 minimum wages, 16.75% were binge drinkers, and 22.22% used to drive after drinking. Socio-demographic variables such as income ($p = 0.001$), religion ($p = 0.02$), marital status ($p = 0.021$), binge drinking ($p < 0.001$), and OHIP-14 ($p < 0.001$) were associated with a Fantastic lifestyle.

Conclusions: fantastic lifestyle of the Brazilian college students was associated with income, oral health-related quality of life, marital status, religion, and alcohol consumption (binge drinking).

Keywords: Oral Health; Lifestyle; Binge Drinking

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INTRODUCTION

The Lalonde report (1974) in Canada recognized lifestyle (LS) as one of the main factors for social determination of health[1], which can lead to a great loss of years of life and high expenses with health services[2]. Health promotion is seen as the main strategy for the reduction of morbidity and mortality, reinforcing actions on people's LS, since many diseases (e.g., hypertension, diabetes, cancer) are consequences of harmful behaviors, such as stress, inadequate feeding, and consumption of psychoactive substances[3], and a significant percentage of non-communicable diseases could thus be avoided[4]. Nevertheless, LS has no particular definition, it is related to habits, and it can be influenced by or developed during daily work or study activities[5].

Studies have demonstrated the benefits of healthy LS as a protective factor for the physical and mental health of university students[6,7]. The university way of life represents a complex stage in which habits and behaviors play a decisive role for the rest of life. In addition to constant psychological changes at this stage, one takes on responsibility for one's own health[5] and there is greater access to alcoholic beverages[8]. This leads to bingedrinking – episodic excessive use of alcohol [9-12]. According to the U.S. National Institute on Alcohol Abuse and Alcoholism (NIAAA), the amount that defines binge drinkingis the consumption of five or more doses of alcoholic beverages on a single occasion, but[13] dosesgive a serious cause for concern-[14]because of the practice of unsafe sex, greater susceptibility to physical violence, and mainly because 1.8 to 2.2% of individuals usually drive after bingedrinking[15].

In the alignment of the investigations about the influences of LS on the health-disease process, the FANTASTICLifestyle questionnaire (FLS)[16] has been used in a promising way, given the multiple issues it addresses.

Bearing in mind the scope of the current concept of health, oral health should be inserted in the context of LS, since it is also influenced by socioeconomic and behavioral factors. For the comprehension of the health-disease process and considering the perspective that oral health is related to social determinants of health, it is necessary to further explore this issue in specific populations, such as university students, as such approaches can influence general health[17] and the capacity for work[18] and can be measured using an instrument validated for use in Brazil – the short-form Oral Health Impact Profile (OHIP-14)[19].

Thus, when we consider Brazil as a country with continental dimensions, characterized by remarkable social inequalities, it is necessary that SUS (Unified Health System), represented here by student assistance services provided by public educational institutions, meet heterogeneous demands[20]. This need is heightened when, nowadays, access to college education is available to people from different social strata, made possible by inclusive policies established by the federal government. These different social strata imply greater heterogeneity among university students – a recent fact in the academic community[20].

Through the use of the FLS questionnaire, based on the specific information provided, this study is expected to support the actions of multi-professional health teams (composed of nurses, dentists, physicians, physical therapists, speech therapists, among others).To adopt a trans-disciplinary approach in a specific community, favoring the development of more effective therapeutic projects[21], Latin American studies[22] have been investigatingFANTASTIC Lifestyle (FLS) of university students. This was the first study carried out to verify the possible associations between FLS, OHRQoL, binge drinking, and socio-demographic characteristics of Brazilian students from a public university. The hypothesis of the study to be tested is that FANTASTIC lifestyle is associated with OHRQoL, binge drinking, and socio-demographic characteristics of university students.

METHODS

This is a cross-sectional, observational study with students (n = 672) from a public universityconducted from August 2015 to August 2016.

Inclusion criteria

For the selection of the courses, their proportional sizes were accounted for, pre-selecting them from the areas of physical, human, and biological/health sciences with more vacancies made available for the night and day shifts by the Unified Selection System (SISU). The courses not included in the pre-selection were randomly selected through a draw.

Exclusion criteria

Technical courses and those with less than usual training time, such as those with 3 years' training, were excluded.

Pilot study and sample size calculation

A pilot study was undertaken with 15 students from each area (physical, human, and biological sciences), totaling 45 students, who did not participate in the research itself, in order to know the FLS score among the students for the study design (minimization of possible biases) and sample size calculation.

Significant differences were found between first- and last-year students, allowing for important adjustments in the sample selection. In order to minimize possible bias, we divided the students to match the distribution by grouping each course into three categories (1st- and 2nd-semester students, 2nd- and 3rd-year students (3rd to 6th semesters), and students in the 4th and 5th grades (7th to 10th semesters), using the same proportion of students among the respective categories in order to estimate the FLS average score. For each course, there was the same number of students in the three categories defined previously, which were representative of all phases and categories.

The sample size was then calculated by the t-test, with a power of 90% and alpha of 5%. The calculation took into account the FLS average scores and the standard deviation and was performed in the Stata v.14 software (College Corp, TX, USA), corresponding to the initial participation of 530 students in the research. After considering 10% of losses and 15% of study design effects, the final sample eventuallyincluded 672 students.

Application of the questionnaires

Before the beginning of the research and after obtaining authorization from the professors, two researchers explained the research objectives to the participants for approximately 5 min. After that, the students were randomlyselected according to the list available from the Siscad / UFMS management system printed by the professor. After agreeing to their participation, students, individually and independently answered the questionnaires validated for use in Brazil and the socio-demographic questionnaire as well.

The questionnaires consisted of close-ended questions: one containing socio-demographic variables, another one in which self-perception of oral health was evaluated, and the Oral health impact profile - OHIP-14, which evaluates OHRQoL in seven domains, ranging from 0 (best oral health status) to 56 points (worst oral health status), validated for use in Brazil by Oliveira and Nadanovsky[19].

FANTASTIC lifestyle, validated by Anez et al.16, originates from the acronym FANTASTIC, i.e., initial letters of the nine domains into which the items are distributed: F = Family and friends; A = Activity (physical activity); N = Nutrition; T = Tobacco & toxic substances (cigarettes and drugs); A = Alcohol; S = Sleep, seatbelts, stress, safe sex; T = Type of behavior; behavioral pattern A or B; I = Insight; and C = Career (satisfaction with the profession). This questionnaire contained 25 questions – 23 had five possible answers and two were dichotomous questions. The sum of all points allowed classifying individuals into five categories, namely: excellent (85 to 100 points),very good (70 to 84 points),good (55 to 69 points),regular (35 to 54 points), and in need ofimprovement (0 to 34 points).

Dependent and independent variables

The dependent variable was the FLS score, which was represented by the gross value of the questionnaires.

The independent variables were dichotomized or categorized in order to assess whether the coefficients were statistically significant in relation to the dependent variable. The independent variables were the following: course area (physical, human,or biological sciences), study shift (morning, afternoon, and full shift), gender (female or male), housing (living alone / with partner, parents, in a dorm),race (white and non-white), family income (up to 3, between 4 and 8, and above 9 minimum wages), religion (Catholic and other), religion practitioner (yes/no), athletic association participation (yes/no), marital status (single, single but in a stable relationship, or married), bingedrinking (yes/no), OHIP-14 (questionnaire score), and age group (up to 21 years and above 21 years).

Statistical analysis

The obtained data were inserted into anExcel® spreadsheet and analyzed by STATA® v.14. The means, proportions, and confidence intervals were calculated, as well as multilevel linear regressions with mixed effects for the analysis of the dependent variable (FANTASTIC Lifestyle score), considering that the levels of the courses (17 participating courses) were considered as a second-level variable and the individual variables as a first-level variable, since both course load and the proposed activities can influence students' responses at the individual level. The regression

analysis used a blockwise selection, with the analysis of all independent variables, i.e., it was adjusted by all the independent variables present in the model.

Ethical aspects

The research project was approved by the Research Ethics Committee of the Federal University of Mato Grosso do Sul (UFMS), process number CAAE 124416 / 2015-2.

RESULTS

A total of 672 (355 female and 317 male) students participated in the study. Reliability was satisfactory for both questionnaires, with Cronbach's alpha values[23] of 0.72 for the FLS score and 0.87 for OHIP-14, respectively. The mean age was 22.5 years with a standard deviation of 5 years. The average FLS and OHIP-14 scores were 68.47 and 9.29, respectively, considering the participants with a good lifestyle and a satisfactory oral health status. Note that the standard deviation was 10.97 for FLS and 7.86 for OHIP-14 and that the confidence interval (CI) comprises the estimated interval on which the average of a parameter has a given probability of occurring.

There was a higher prevalence of female (52.86%) and Catholic (47.44%) students, and 59% of them said they were religion practitioners. In addition, there was a predominance of students living with their parents (64.49%), with an average income of 4 to 8 minimum wages (50%),and parents with afull university degree (43.87%). Most students attended a partial or full shift (62.79%) and 60.77% reported not participating in athletic associations or in university games. Among the participants, 22.22% reported driving after drinking (Table 1).

According to the FLS classification of the studied population, 42.49% had a goodLS and 42.19% had a very good LS, and 9.06% considered their lifestyle asregularand 0.44% reported they needed to improve it.

Table 2 presents the multilevel linear regression analysis with mixed effects, where the dependent variable was the FLS score. The independent variables such as income ($p = 0.001$), religion ($p < 0.02$), marital status (single but in a stable relationship ($p < 0.021$) or married ($p < 0.001$)), and the OHIP-14 score ($p < 0.001$) were significantly associated with the FLS score, that is, the better the participant's perception of oral health, the better the positive association.

The data in Table 3 show most courses had an average score for similar FANTASTIC lifestyle; however, civil engineering was the course with the highest average (73.5), whereasmedicine had the lowest score (64,07). The analysis of variance showed statistically significant differences between courses ($p = 0.01$), as well as prevalence of bingedrinking. Note that the medical course had the highest prevalence (35.71%).

DISCUSSION

FLS evaluation among Brazilian undergraduate students is still scarce and, therefore, the present study makes a major contribution by evaluating FLS and self-perception of oral health in 17 undergraduate courses of a federal university, despite the fact that some studies[5,7,8]demonstrated persistently low quality of life among medical students compared to students in other courses. This can be explained by extremely stressful training, study time requirements, in addition to contact with patients and with deaths, which can cause depressive symptoms among students and may interfere in the quality of life of thesefuture professionals[24,25]. These studies on the quality of life of university students corroborate the findings of the present research, given that medical undergraduates had the lowest FLS average when compared with students in other courses. Rodrigues-Añez et al. (2008) [16] found similar results when they evaluated 62 undergraduate and graduate students (mean age of 21.3 years), among whom 21% scored between 55 and 69 points (good) and 61.3% scored between 70 and 84 points (very good), corroborating the findings of the present research. Compared with students from other countries, the study conducted with Colombian university students[21] showed significant differences in the FLS score between men and women, which was not verified in our study.

Alcohol consumption deserves special attention as it has a potential influence on FLS. As for undesirable events (accidents, violence, personal injury) associated with alcohol consumption, our study revealed 16.75% of college students have already indulged in binge-drinking, that is, consumed five or more alcoholic drinks at the same time. Our findings are in agreement with those of Cardoso et al.[8], since those authors report that 15.3% of students in health sciences yield to

Table 1. Distribution of independent variables (n=672)

Variables	n (%)	95%CI	
Area			
Human	233(34.72)	31.14	38.49
Physical	177(26.35)	23.09	29.9
Biological	262(38.93)	35.21	42.74
Shift			
Morning	107(15.96)	13.33	19.01
Evening	1(0.15)	0.08	0.28
Night	132(19.68)	16.79	22.94
Full	432(64.21)	58.98	66.44
Gender			
Female	355(52.86)	48.99	56.7
Male	317(47.14)	42.98	50.69
Housing			
Living alone/with partner	203(30.23)	26.8	33.89
Living with parents	433(64.49)	60.73	79.08
Living in a dorm	36(5.28)	3.65	7.11
Parent's schooling			
Full secondary education or higher	563(83.80)	80.81	86.40
Incomplete secondary education	109(16.20)	13.59	19.18
Race			
White	400(59.53)	55.68	63.26
Non-white	272(40.47)	36.73	44.31
Income			
Up to 3 minimum wages	188(28.06)	24.71	31.66
4 to 8 minimum wages	342(50.85)	46.98	54.7
9 or more minimum wages	142(21.09)	18.01	24.41
Religion			
Catholic	319(47.44)	43.6	51.31
Other	353(52.56)	48.7	54.18
Religion practitioner			
No	274(40.77)	37.03	44.62
Yes	398(59.23)	55.23	63.91
Athletic association participation			
No	409(60.77)	56.93	64.48
Yes	263(39.23)	35.38	44
Marital status			
Single	387(57.67)	53.81	61.44
Married/living with partner	68(10.07)	79.75	12.65
Stable relationship	217(32.26)	28.74	35.96
Binge drinking			
Yes	112(16.75)	14.05	19.83

Table 2. Multilevel linear regression analysis of FANTASTIC lifestyle and other independent variables (n=672)

Variables	β	95%CI β		p
Age group	0.21	-1,19	1.61	0.77
Areas	0.44	-0.50	1.39	0.36
Shift	0.92	-1.09	2.94	0.36
Gender	0.98	-0.63	2.6	0.234
Housing	-1.42	-4.98	2.13	0.433
Parent's schooling	0.08	-2.03	2.20	0.93
Race	0.69	-0.91	2.31	0.39
Income	1.29	0.49	2.08	0.001
Religion	0.005	-0.56	0.57	0.98
Religious practitioner	1.85	0.22	3.47	0.02
Athletic association participation	0.64	-1.00	2.29	0.44
Marital status	0.99	0.14	1.83	0.021
OHIP-14	-0.39	-0.49	-0.29	<0.001
Binge drinking	-9.33	-11.46	-7.19	<0.001
Null model	Variation among courses			95%CI
Courses	2.14%			0.4%-9.51%

Multilevel linear regression with mixed effects
Log-likelihood= -2402.96
Prob>Xi^2<0.0000

Table 3. Mean and standard deviation of FANTASTIC lifestyle and prevalence ofbinge drinking (n=672)

Courses	n	Prevalence(%)	FLS	SD
Business administration	87	18.39	68.87	10.19
Architecture	30	13.33	64.46	10.17
Law	85	17.64	69.42	13.27
Nursing	29	13.79	68.06	7.75
Computer engineering	28	14.28	71.46	9.81
Environmental engineering	30	23.33	67.9	10.11
Civil engineering	31	13.33	73.5	9.9
Electrical engineering	28	19.35	68.54	9.37
Production engineering	29	21.42	68.89	9.71
Physics	30	3.44	69.89	10.05
Physical therapy	30	13.33	67.23	10.41
Languages	28	14.28	65.6	8.96
Mathematics	28	14.28	64.85	9.7
Medicine	42	35.71	64.07	13.67
Dentistry	30	23.33	68.76	7.99
Pedagogy	49	12.24	67.95	13.3
Chemistry	57	7.91	71.5	10.62
Total	672	16.75	68.47	10.96

ANOVA for the FLS score p=0.01
Tukey's testfor differences among the courses

bingedrinking, also corroborating the findings of Paul et al. (2011)[26], who estimated a prevalence of 15% for bingedrinking in the U.S. population. Therefore, alcohol consumption in this population has been a causefor concern and for the search of effective interventions for reducing consumption, as well as the problems and consequences associated with lifestyle[27].

From this perspective, alcohol abuse has been found to be responsible for adverse consequences, such as heart and cerebrovascular diseases, fatal events, psychiatric disorders, as well as greater involvement in fights, especially among young people in the academic setting[8]. Another negative aspect of bingedrinking among undergraduates is that, because of such practice, they are more likely to perform poorly and neglect university activities, demonstrating that alcohol consumption may interfere with academic commitment and achievement[8,24-28].

On the other hand, studies show that, despite the knowledge about the existing risks of bingedrinking, these young people continue to use alcohol for alleviation of stressful situations[8,29-32], rapid changesin the routine, and anxiety, and for the establishment of new friendships, as alcohol allows them to enter this new academic social environment, making them more susceptible to binge drinking[27,31,33].

In the state of Rio Grande do Sul, Brazil, studies have revealed high alcohol consumption is more common among poorly educated and low-income individuals[34], unlike the study conducted with individuals residing in Salvador, in the state of Bahia,which revealed that individuals who have a higherpurchasing power consume more alcoholic beverages[35], corroborating the findings of our research.

Regarding the marital status of the participants in this study, those who were in a formal relationship (married, living with a partner) showed a better FLS than singles ($p < 0.02$), as singles are more often associated with fun involving alcoholic beverages and parties. Thus, it is clear that marital status can alter LS and impact the FLS score, considering that a stable marital status acts as a protective factor for lifestyle / inappropriate behavior[5], also interfering with the risk of mortality, which can be as high as 25% in single individuals when compared with those living with their partners, as pointed out by an Italian cohort study[26].

Religiousness also influences people's way of living because, through doctrines, faithful individuals are guided to behave in a healthy way, considering that by following religious precepts (practicing some religious orientation), individuals will presumably adopt healthy habits. Studies with adults have shown the importance given to religion is positively associated with quality of life in different contexts and can influence values, emotions, behaviors, and LS[3]. Having religious beliefs and a healthy behavior has been shown to be an individual empowerment factor[3]. Although this was not within the scope of our study, our findings are in agreement with other authors, since being a religious person interferes positively in the FANATASTIC lifestyle of university students ($p < 0.001$).

Income has also been reported to interfere with lifestyle, because of its influence on diet, housing, understanding, and healthcare, leading to direct exposure to the risk factors of various diseases[26,36]. In this study, income had a significant result, that is, the higher the purchasing power, the better the lifestyle of university students.

In 2003, studies by the World Health Organization (WHO) showed sociocultural and environmental factors influence oral health and quality of life[4]. Some studies have also shown poor oral health can limit daily activities[37], impact OHQoL[38], and influence ability to work[18]. Our study demonstrated that the FLS score was positively associated with the OHRQoL score as measured by the OHIP-14 questionnaire. Thus, the idea that OHRQoL can influence FLS is reinforced, since those university students participating in this research had extensive course load and workload, prompting them to eat quickly and not regularly, thus impairing tooth brushing and flossing and eventually worsening their OHIP-14 scores.

Although there is positive evidence of well-being and physical activity, mostpeople do not follow an adequate routine[26]. As physical activity and eating habits play a significant role in health promotion and disease prevention, the data obtained by this study reinforce the idea that oral health status is directly related to quality of life.

The insertion of intervention and prevention actions targeted at improving the lifestyle of university students by reducing the percentage of alcohol consumption and, consequently, the practice of binge drinking, is then suggested. To do that, it is extremely important to implement health promotion activities in order to at least provide some reflection on LS and OHRQoL. These actions should be aimed at the recovery of university students with poor academic performance, based on the structuring of intrasectorial and intersectorial measures that give them support and urge them

to take on commitmentto their academic performance and health.

Some limitations of the present study were evident. Because it is a cross-sectional study, factors associated with FLS cannot be interpreted as causal factors, but as factors associated with FLS. As the study was conducted in a single university, the results cannot be generalized to other university / population groups. Studies in private universities are thereforeneeded. In addition, considering self-administered questionnaires, a possible memory bias may have existed on the part of students. Also,whethera student was repeating a discipline or semester was not evaluated and this could invalidate the three categories used in sample selection. As the data were adjusted for age, this possible bias was minimized. However, the limitations do not compromise the results of the study, as multilevel analysis, which takes into account the context of the courses and adjusts the other individual independent variables,was used. In our pilot study, there was a different FLS pattern in academic semesters, which could be adjustedduring the research. This procedure validated our methodology and allowed us to compare courses more coherently. The reliability of the questionnaires was measured by Cronbach's alpha, whose values, to be satisfactory, should be above 0.7[23].We obtained 0.72 and 0.87 for FLS and OHIP14 scores, respectively, demonstrating the reliability of the data.

Another limitation was the lack of quantification of the ingested alcohol doses, since bingedrinking was considered as the ingestion of five or more doses of alcoholic beverage without qualification of the type of drink and quantification of ingested alcohol amounts,which would also affect quality of life differently, with greater or lesser degrees of severity.

As future research perspectives, the association of alcoholic drinks and the amounts of alcohol ingested with FLS and quality of life should be investigated. In addition, longitudinal studies need to be performed with this target population to define causal directions between the analyzed variables, as well as to measure the impact of intervention measures and guidance for students on the outcomes of traffic accidents.

CONCLUSIONS

In conclusion,the FLS of Brazilian students from the public university assessed herein was associated with income, OHRQoL, marital status, religious practice, and binge drinking.

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