Mental Health Profiles of University Students and Associated Life Habits

Sabrina Martins Barroso[1,*] ⓘ, Heloísa Gonçalves Ferreira[2] ⓘ,
& Janaína Thais Barbosa Pacheco[3] ⓘ

[1]*Universidade Federal do Triângulo Mineiro, Uberaba, MG, Brasil*
[2]*Universidade Estadual do Rio de Janeiro, Rio de Janeiro, RJ, Brasil*
[3]*Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, RS, Brasil*

ABSTRACT – We sought to investigate the mental health profile of university students and possible individual aspects, life habits and associated academic experiences. 844 students were included, predominantly female with a mean age of 22.57 years, who answered a socioeconomic and life habits questionnaire and the *Depression, Anxiety and Stress Scale*. Cluster and multinomial logistic regression analyses were performed. Three profiles were identified: students with good, moderate and poor mental health. Married or single students, from exact sciences, who studied in a public university and did not work, with low alcohol consumption were more likely to have a good mental health. Understanding the association of life habits and academic experiences with different profiles is relevant to develop interventional strategies with this public.

KEYWORDS: mental health, lifestyle, clustering, college students, university student

Perfis de Saúde Mental de Estudantes Universitários e Hábitos de Vida Associados

RESUMO – Buscou-se investigar os perfis de saúde mental de universitários e possíveis aspectos individuais, hábitos de vida e vivências acadêmicas associados. Participaram 844 estudantes, com predominância feminina e idade média de 22,57 anos, que responderam a *Depression, Anxiety and Stress Scale* e questionário socioeconômico e de hábitos de vida. Foram feitas análises de cluster e de regressão logística multinomial. Foram identificados 3 perfis: universitários com saúde mental prejudicada, mediana e boa. Estudantes solteiros ou casados, que não trabalhavam e cursavam universidade pública, curso de exatas e bebiam menos tiveram maiores chances de integrar o perfil com boa saúde mental. Compreender os hábitos de vida e vivências acadêmicas associados aos diferentes perfis é relevante para desenvolver estratégias interventivas com este público.

PALAVRAS-CHAVE: saúde mental, estilo de vida, conglomerados, estudantes universitários

The number of studies on the emotional conditions of university students has increased in the last few years and show the existence of frequent symptoms of depression, anxiety, stress, burden and loneliness (Barroso et al., 2019; Oliveira & Barroso, 2020; van Winkel et al., 2017). This reality is worrisome, as it can affect the permanence of these students at the university, their perception of professional competence and their job satisfaction in the future (National Forum of Deans for Community and Student Affairs [*Fórum Nacional de Pró-reitores de Assuntos Comunitários e Estudantis* – FONAPRACE], 2018; Thomas et al., 2020). Despite this, little is known about the profile of students who fall ill and their differences in relation to the profile of students who manage to maintain mental health throughout graduation (Bennasar-Veny et al., 2020).

Mental health is influenced by multiple factors, and research about university students' mental health has identified some factors associated with a higher prevalence

of psychiatric disorders or symptoms. Studies often associate the greater presence of psychiatric symptoms to being female, having lower income and being in a Humanities or Health Sciences course (Bayram & Bilgel, 2008; Costa et al., 2021; Ribeiro et al., 2018). Contextual factors of the university environment can negatively impact students' mental health, since the demand for an active behavior in relation to their own learning and the perceived distancing in relationships with professors are perceived as threatening by many university students (Arino & Bardagi, 2018; McIntyre et al., 2018; Pinho et al., 2016; Soares et al., 2014; Thomas et al., 2020).

In addition, worse mental health has been related to changes in the routine of students' lives, especially the need to move away from parents' house to study, the distance from friends and the need to manage their own domestic life (food, paying bills, among others (Bührer et al., 2019). These aspects, perceived as important life transitions of early adulthood, require a high level of emotional regulation, sometimes beyond the students' momentary capacity (Soares et al., 2014). And these conditions were already present before the Covid-19 pandemic and may have intensified with social distancing and the need for remote teaching for an extended period.

Individual aspects, mainly age and sex, were also investigated (Coelho et al., 2021). In the literature review carried out by Graner and Cerqueira (2019), being female, being older and having lower income was associated with worse mental health in university students. And Pereira and Cardoso (2015) identify association between the feminine gender and suicidal ideation. But associations between mental health and these factors are not found in all studies. In addition, the greater presence of perfectionism traits (Rocha, 2021) and the impact of students' different lifestyles might impact their mental health. And some studies also associated the term with worse mental health and indicated that health students are at greater risk. However, there is no consensus as to whether first or last term students are at greater risk (Ariño & Bardagi, 2018).

Some studies have investigated distinct profiles of university students based on their living habits and mental health conditions. Di Benedetto et al. (2020) identified four profiles regarding lifestyle habits and mental health indicators in Australian university students. The mental health profile with best outcomes was the one with lower presence of symptoms of depression, stress and anxiety, higher levels of sleep quality, higher fruit consumption, lower alcohol consumption and higher frequency in physical activities, compared to the other profiles. The study conducted by Bennasar-Veny et al. (2020) found three lifestyle profiles regarding alcohol and cigarette consumption, physical activity, and diet quality in Spanish university students. The researchers found associations between unhealthy lifestyles and moderate to higher risk of developing emotional disorders. On the other hand, university students with healthier lifestyles had a lower risk of stress and a better quality of life. The group of healthier students had better diet habits, less alcohol consumption, higher levels of physical activity and lower cigarette consumption. In Brazil, Barros et al. (2017) found that worse students' mental health was associated with sedentary lifestyle, higher alcohol consumption, being a smoker and having worse eating habits. Identifying different student profiles can help determine priority subpopulations for intervention. But student profile studies tend to be carried out only in one city or university. Thus, there is a lack of investigations that demonstrate whether the factors and profiles identified are general and which are influenced by the local context.

Identifying the negative emotional aspects of university students' mental health is indeed very important for the development of interventions focused on treating students. However, if the focus is on health promotion, it is very relevant to understand the profile of students who stay healthy. The identification of students' mental health profile can support preventive mental health policies, helping to promote the health of this population. It can also identify barriers to seeking psychological help, showing key points for health services (Broglia et al., 2021).

Thus, although we recognize the importance of identifying risk factors, this study is based on health psychology, seeking aspects associated with the maintenance of students' mental health in their habits and academic experiences that can be developed by them and by universities. This study aimed to investigate distinct mental health profiles of university students and possible individual aspects, life habits, and academic experiences associated with such profiles. The specific objectives were: (1) to investigate mental health profiles of university students based on symptoms of depression, anxiety and stress; and (2) to investigate if sociodemographic aspects (sex and age, job), academic experiences (type of university, course area and term) and life habits (physical activity, alcohol and cigarette consumption, psychological/psychiatric treatment, hours of sleep and diet) predict the identified profiles.

METHOD

Participants

A total of 844 undergraduate students from the states of Amazonas, Bahia, Ceará, Espírito Santo, Goiás, Minas Gerais, Pernambuco, Paraná, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina and São Paulo participated. The sample was composed mostly by women (77.70%), single people (73.60%), and with a mean age

of 22.57 (SD + 4.18). Most participants studied in public institutions (93.10%), did not work concomitantly with their undergraduate studies (75.90%) and had family incomes higher than R$ 1,500.00 (75.20%).

The students were attending courses in the Humanities and Social Sciences (44.20%), Biological and Health Sciences (32%), and Exact Sciences (23.70%). Most were studying from the 4th term onwards in their courses (69.10%).

Instruments

Sociodemographic and life habits questionnaire. It gathered information about sex, age, course, term, state of residence, sleep and eating habits, cigarette and alcohol consumption, physical activity and leisure.

Mental health was assessed for symptoms of depression, anxiety, and stress. The Depression, Anxiety and Stress Scale (DASS-21). Developed by Lovibond and Lovibond (1995) and validated for Brazil by Vignola and Tucci (2014), the scale has 21 items, divided into three subscales that assess symptoms of depression, anxiety and stress. The answers are presented on a 4-point Likert scale (from 0 "did not apply to me at all" to 3 "applied to me very much, most of the time"). Scores are obtained by multiplying the subscale scores by two and using the DASS-42 cut-off scores (Vignola & Tuci, 2014). The cut-off scores for stress are as follows: 0-7 (normal level of stress); 8-9 (mild level of stress); 10-12 (moderate level of stress); 13-16 (severe level of stress) and scores of 17 or higher indicate extremely severe level of stress. For anxiety: 0-3 (normal level of anxiety); 4-5 (mild level of anxiety); 6-7 (moderate level of anxiety); 8-9 (severe level of anxiety) and scores of 10 or more indicate extremely severe level of anxiety. For depression: 0-4 (normal level of depression); 5-6 (mild level of depression); 7-10 (moderate level of depression); 11-13 (severe level of depression) and scores of 14 or more indicate extremely severe level of depression. The Cronbach's alpha for this sample was 0.94.

Data Collection and Analysis

The research was approved by the Research Ethics Committee (Opinion 5.039.042) and data collection took place in 2019. The instrument items were organized in Google Forms containing the link to the research protocol was posted on social media (email, WhatsApp, Facebook, Instagram, etc.). Individuals aged 18 years and over who volunteered to participate in the study accessed the link to answer the instruments after reading the informed consent form and choosing the option "I understand the nature of this study and agree to participate". To characterize the sample and the students' emotional symptoms, measures of central tendency, dispersion and proportion were calculated.

Shapiro-Wilk tests showed that data distribution was non-normal ($SW < 0.001$).

To identify the students' mental health profiles based on the DASS-21 scores, a cluster analysis was performed considering the scores on the subscales for depression, anxiety, and stress. A combination of hierarchical and non-hierarchical methods for cluster analysis was used (Hair et al., 1998). The hierarchical method is used for an exploratory purpose and assumes that there are as many clusters as there are individuals in the database. At each subsequent step, the most similar clusters are combined into another cluster until all individuals are grouped into a single cluster. The measure of similarity used in this process was the square of the Euclidean distance (Hair et al., 1998). Ward's method was used as the linkage method, because it allows a better distribution of individuals among the clusters. By applying the hierarchical method, the number of clusters that would be the best solution needs to be defined. For this purpose and considering the sample size, the calculation of R^2 (amount of variability retained for each cluster solution) was performed. The significant increase in R^2 for the two-cluster solution (53%), to a three-cluster (67%) and four-cluster (72%) solution, drops off after the five-cluster solution, where the increase for the five-cluster solution was residual (76%). The centroid values of the cluster solution from the hierarchical method were used to adjust and refine the results by applying the non-hierarchical method (K-means). For this method, it is necessary to define a priori the number of clusters to be analyzed. This procedure creates distinct group profiles by maximizing the differences between clusters and minimizing the variance in each cluster. The most parsimonious solution that presents better conceptual clarity is chosen.

To identify the sociodemographic variables and life habits that predict mental health profiles, multinomial logistic regression was performed. Before performing this analysis, the assumption of absence of collinearity among the variables was verified by the analysis of tolerance (> 0.1) and VIF value (< 10). The independent variables (age, sex, type of university, term, marital status, working outside, family income, psychological treatment, course area and healthy routine) showed tolerance values between 0.46 and 0.98 and VIF between 1.02 and 2.14, indicating absence of collinearity and enabling multinomial logistic analysis. Thus, the main effects model and Wald Statistic Analysis were adopted to verify the influence of the variables in the model. Odds ratios (*OR*) were calculated separately for each mental health profile and the model adjustment was verified using the likelihood-ratio test for the final model ($p < 0.05$), chi-square test for model adjustment ($p > 0.05$) and Nagelkerke's Pseudo R^2 (values between 0 and 1). Analyses were performed using IBM SPSS software, versions 20 and 23, considering 5% of significance.

RESULTS

Profiles of university students' mental health

According to the analysis using the hierarchical method, solutions of three to four clusters could be considered. Therefore, analyses were performed with the K-means method for the three- and four-cluster solution. The three-cluster solution was chosen because it allowed a better characterization of the mental health profiles, showed a good increase in the amount of explained variance (67%) and allowed a better distribution of individuals among the clusters.

Overall, the three-profile model (Table 1) identifies a group of students with higher rates of depression, anxiety and stress, a second group with moderate levels of depression, anxiety and stress, and a third group with lower levels of such disorders. The first profile was named as "university students with poor mental health" ($n = 119$) because it presented the worst averages for depression, anxiety and stress. The second group showed moderate levels of anxiety, depression and stress and was named as "university students with moderate mental health" ($n = 250$). Finally, the third group presented lower averages on the three subscales of DASS-21 and was considered as the "university students with good mental health," comprising the majority of the participants of the sample ($n = 475$). The means for stress,

anxiety and depression differed significantly among the three groups. Stress was the disorder that best distinguishes the clusters (presenting the highest F value).

Sociodemographic characteristics and lifestyle habits of university students

Table 2 presents the students' profile and habits. The students reported sleeping between 6 to 8 hours a night, in most cases (62.10%), and having 3 or more meals a day (89.30%). Most of them reported practicing physical activity (51.50%), smoking (74.30%), and drinking alcoholic beverages at least once a month (69.00%). When these variables were considered together, it was observed that most students did not maintain a healthy life routine (88.30%). Most students also reported not receiving psychological or psychiatric treatment (74.60%).

When considering the emotional symptoms, most students showed normal symptoms of depression (58.30%), that is, these students could even present some symptoms, but not in sufficient frequency and intensity for a positive screening for depression. Most of them showed normal to mild anxiety symptoms (64.20%) and normal to moderate stress (62%).

Table 1

Final means for depression, anxiety and stress in the three university students' profiles (N=844), 2019.

DASS-21 subscale	Poor Mental Health ($n = 119$)	Moderate Mental Health ($n = 250$)	Good Mental Health ($n = 475$)	$F*$
Stress	17.13_a	12.32_b	5.24_c	1054.35
Anxiety	14.13_a	6.48_b	2.12_c	1002.85
Depression	15.77_a	9.64_b	3.53_c	858.43

Notes. Means with different subscript letters per row differ significantly ($p < 0.05$). * For all values of F, $p < 0.001$

Table 2

Characterization of participants and emotional symptoms (N = 844), 2019.

		n	%
Course area	Humanities and social sciences	373	44.20
	Biological and health sciences	270	32.00
	Exact sciences	200	23.70
Type of university	Public	756	93.10
	Private	58	5.90
Course term	1st to 3rd terms	252	31.00
	4th to 7th terms	367	45.10
	8th term onwards	195	24.00
Sex	Female	656	77.70
	Male	188	22.30

Table 2
Cont.

		n	**%**
Marital status	Single	621	73.60
	Separated/divorced	187	22.20
	Married	36	4.30
Age	17 to 20 years old	263	31.20
	21 to 24 years old	411	48.70
	25 to 28 years old	105	12.40
	29 to 32 years old	31	3.70
	33 years old or more	34	4.00
Employed	Yes	133	24.10
	No	419	75.90
Family income	Did not know how to answer	51	9.20
	Up to R$ 1,500.00	86	15.60
	From R$ 1,500.00 to 2,500.00	150	27.20
	From R$ 2,500.00 to 3.500,00	105	19.00
	Above R$ 3,500.00	160	29.00
Hours of sleep	Less than 4 hours/night	08	1.40
	4 to 6 hours/night	139	25.20
	6 to 8 hours/night	343	62.10
	More than 8 hours/night	62	11.20
Frequency of meals/day	1 to 2 meals	59	10.70
	3 or more meals	493	89.30
Practice of physical activity	No	409	48.5
	Yes	435	51.5
Smokes	No	206	25.70
	Yes	596	74.30
Frequency of alcohol consumption	Does not consume	261	31.00
	1 time per month or less	261	31.00
	2 to 4 times per month	270	32.00
	2 to 3 times per week	45	5.30
	4 or more times per week	06	0.70
Psychological/psychiatric treatment	No	412	74.60
	Yes	140	25.30
Depression	Normal	492	58.30
	Low	83	9.80
	Moderate	105	12.40
	Severe	99	11.70
	Extremely severe	65	7.70
Anxiety	Normal	407	48.20
	Low	135	16.00
	Moderate	87	10.30
	Severe	61	7.20
	Extremely severe	154	18.20
Stress	Normal	196	23.20
	Low	109	12.90
	Moderate	219	25.90
	Severe	141	16.70
	Extremely severe	179	21.20

Students' characteristics and life habits as predictors of mental health profiles

To identify the sociodemographic and lifestyle variables that predict the different profiles of university students, those with poor mental health was taken as a baseline (Table 3). The models correctly predicted the odds of being in the poor mental health group for 44.80% of the cases. The percentage of correct predictions to integrate the moderate mental health profile was 53.90% and 64,90% to integrate the group with good mental health. The total correct prediction of the model was 56.50%. The adjustments of this model were considered adequate because they showed p-value < 0.001 in the likelihood-ratio test (χ^2 = 818.98), non-significant adjustment adequacy (Pearson χ^2 = 809.27; p = 0.296) and Nagelkerke's Pseudo R^2 = 0.38. The association between age and term was tested, but no significant result was found.

The analyses showed that single (OR = 31.91) and married (OR = 51.22) students had much higher odds of being in the group of university students with good mental health when compared to those who were divorced. Students who had to combine university with a paid job,

Table 3

Multinomial logistic analysis of sociodemographic characteristics and life habits of students according to their mental health profile (N = 844), 2019.

	B	Wald	p	OR	IC95%
Students with moderate mental health					
Age	- 0.11	7.82	0.005	0.89	0.82 – 0.96
Male[1]	0.25	0.44	0.508	1.29	0.61 – 2.71
Family income	0.004	0.00	0.973	1.00	0.78 – 1.30
Marital status – single[2]	1.75	27.74	<0.001	5.74	3.00 – 11.00
Marital status – married[2]	2.70	8.42	0.004	14.92	2.40 – 92.55
Employed[3]	- 071	4.27	0.039	0.49	0.25 – 0.96
Public university[4]	- 0.01	0.00	0.977	0.99	0.44 – 2.22
Course area – Human and Social Sciences[5]	0.26	0.63	0.426	1.30	0.68 – 2.47
Course area – Exact Sciences[5]	0.55	1.66	0.197	1.74	0.75 – 4.02
Term	0.17	7.97	0.005	1.19	1.05 – 1.33
Sleeps 6+ hours per night[6]	0.20	0.36	0.548	1.22	0.64 – 2.32
Eats 3+ meals/day[7]	0.14	0.10	0.757	1.15	0.463 – 2.88
Drinks alcohol – up to 1 time/week[8]	- 1.00	6.11	0.013	0.37	0.17 – 0.81
Drinks alcohol – 2+ times/week[8]	- 0.44	0.55	0.459	0.64	0.20 – 2.08
Psychological/psychiatric treatment[9]	- 0.11	0.12	0.733	0.89	0.47 – 1.70
Students with good mental health					
Age	- 0.05	1.30	0.254	0.95	0.87 – 1.04
Male[1]	0.73	3.25	0.071	2.08	0.94 – 4.60
Family income	0.003	0.00	0.982	1.00	0.75 – 1.35
Marital status – single[2]	3.46	63.79	<0.001	31.91	13.64 – 74.64
Marital status – married[2]	3.94	15.77	<0.001	51.22	7.34 – 357.48
Employed[3]	- 0.81	3.93	0.047	0.45	0.20 – 0.99
Public university[4]	1.65	3.95	0.047	5.24	1.02 – 26.85
Course area – Human and Social Sciences[5]	0.08	0.05	0.826	1.08	0.53 – 2.22
Course area – Exact Sciences[5]	1.00	4.68	0.030	2.71	1.10 – 6.68
Term	0.15	5.65	0.017	1.17	1.03 – 1.33
Sleeps 6+ hours per night[6]	0.03	0.01	0.925	1.03	0.50 – 2.13
Eats 3+ meals/day[7]	0.21	0.16	0.684	1.23	0.45 – 3.40
Drinks alcohol – up to 1 time/week[8]	- 1.00	5.44	0.020	0.37	0.16 – 0.85
Drinks alcohol – 2+ times/week[8]	- 1.20	3.21	0.073	0.30	0.08 – 1.12
Psychological/psychiatric treatment[9]	- 0.12	0.11	0.745	0.88	0.42 – 1.86

1= Male sex compared to female sex; 2 = Described marital status compared to separated marital status; 3 = Work outside compared to not working; 4 = Public university compared to private university; 5 = Described course area compared to Biological and Health Sciences; 6 = Sleeping 6 or more hours per night compared with sleeping less than 6 hours per night; 7 = Eating 3 or more meals per day compared with eating 2 meals or less per day; 8 = Frequency of alcohol consumption described compared with not drinking alcohol; 9 = Undergoing psychological/psychiatric treatment compared with no treatment

on the other hand, were less likely to be in the group with better mental health (OR = 0.45). Students from public universities were 5 times more likely to be in the group with good mental health than those who attended a private university (OR = 5.24). Students from the exact sciences were almost 3 times more likely to be in the group with good mental health (OR = 2.71) compared to those in the biological and health sciences. The term also proved to have an influence on the students' mental health profile: as the student advances one term, the odds of being in the good mental health group increased 17% (OR = 1.17). Regarding life habits, those who consumed alcoholic beverages up to 1 time per week had a lower chance of being in the better mental health group when compared to students who did not consume alcohol (OR = 0.37).

The factors that impacted the odds of belonging to the moderate mental health group were age, marital status, job, course term and alcohol consumption. Single (OR = 5.74) and married (OR = 14.92) students were more likely than divorced ones to be in the group with moderate mental health. Students in later terms were also more likely to be in this group (OR = 1.19). Older age decreased the chances of students being in the moderate mental health group. For each year lived, the chance of being in this group decreased by 11% (OR = 0.89). Students who worked also reduced their chances of being in this group (OR = 0.49), and those who consumed alcohol up to once a week reduced their chances by 63% when compared to those who did not consume alcohol (OR = 0.37). For each term attended, the odds increased by 19%.

DISCUSSION

The present study allowed to identify three distinct profiles of mental health among university students and personal aspects, academics aspects and life habits that differentiate them. Most students remained in the good or moderate mental health profiles. The percentage of emotional symptoms identified in students was higher than that observed in the general Brazilian population (Barros et al., 2017). But it is similar to the results observed in other studies with university students (Ariño & Bardagi, 2018; Barroso et al., 2019; Carvalho et al., 2015; Coelho et al., 2021). Such studies used symptom screening instruments, which tends to increase the identification of cases. For this reason, we cannot say that students have more emotional disorders than the general population.

Single and married university students, those who studied at public universities and did not work, those who were enrolled in Exact Science undergraduate programs, in later course terms and those who consumed less alcohol showed more odds to have good mental health. These characteristics were close to the profile with regular mental health. But for these students, being younger was shown to increase the chances of belonging to the profile and the type of university had no influence. Considering that the predictors to integrate the moderate and good mental health profiles are almost the same, we demonstrate the importance of considering such aspects to seek health promotion alternatives for this public. The results showed a connection with the best mental health profiles and marital status. It was observed that single and married students presented higher odds of being in the good or moderate health profile. At any stage of life, divorce can be considered a transitional event, which demands a whole personal and family readjustment, can cause difficulties for emotional regulation and higher chances of depression (Garrido-Rojas et al., 2020). In students, this characteristic gains the addition of young age amplify the negative effect of being divorced on mental health.

The results also showed that gender and income were not associated with good and moderate health profiles. Graner and Cerqueira (2019) had already observed contradictory results on the mental health of university women. One of the hypotheses for the influence of sex is that it would be an indirect variable of the influence of the double shift to which many women are subjected. As most of the women in the present sample were single, this factor would have no impact.

Other academic factors showed be relevant, corroborating with this interpretation and with previous studies (Barroso et al., 2019; McIntyre et al., 2018; Thomas et al., 2020). Results showing a better health profile for those who did not need to work during college support this hypothesis. Again, it would be the excess of activities and not a personal factor that would harm the mental health of the students. Entering university represents a change of routine and the need to perform different competencies and skills from those required in high school. At undergraduate level, students are expected to be proactive and critical in their search for knowledge, and this requires a high involvement with the studies, good performance and routine management strategies (Arino & Bardagi, 2018). Thus, having demands only from the university can facilitate this regulation, reducing stress and other negative emotional aspects.

The type of university, the area of the course and the term influenced the chances of belonging to the profile with better mental health. Students from public universities had higher chances of being in the profile with good mental health. Admission to a public university makes it possible to study for free, reducing the economic burden on students and their possible need to reconcile their studies with a job, which contributes to maintaining good mental health. This explanation is corroborated by the results of the study by Soares et al. (2009) on social skills and academic experiences in Psychology students from public and private universities.

The authors observed that students in private education had higher perceived personal autonomy, but also higher anxiety. Students at private institutions tend to study mostly on the night shift and work to pay for their tuition, which can contribute to their sense of autonomy as well as their stress. Again, this interpretation indicates that the observed associations between type of university and health profiles may be permeated by broader social aspects.

The area of the course in which the student is also usually related to health indicators. Most studies evaluated students from courses in the health area and showed a higher prevalence of mental illness in these students than the values identified in university students from other areas (Alves et al., 2021; Borine et al., 2015; Carvalho et al., 2015). But many studies focus only on students from the health sciences, which can generate a misperception about the mental health of students from other areas (Barroso et al., 2019).

The results of the present study showed that students in the Exact Sciences area were more likely to belong to the profile with good mental health. These findings support Bayram and Bilgel's (2008) observations that students in the Basic Science and Engineering fields showed lower scores for anxiety, depression and stress when compared to students in the Medical and Political and Social Sciences fields. But Bayram and Bilgel (2008) do not provide an explanation for this outcome. Our possible explanation is that the type of reasoning prioritized in these courses is problem solving. Thus, students can learn more practical coping strategies to resolve their emotional conflicts. As there are no studies relating the type of learning to the health profile of university students, this explanation will need to be further investigated in future research.

Another academic factor that showed association with the mental health profile was the course term. In the sample of this study, the advancement along the course terms increased the chances of students belonging to the moderate and good mental health profiles. These results suggest that throughout the academic experience, university students might adjust to a routine of activities, develop study habits and skills to cope with demands, which reduces their psychological distress (Artigas et al., 2017). Similar results were observed in other national and international studies (Barroso et al., 2019; Bayram & Bilgel, 2008; Oliveira & Barroso, 2020) that showed that the first year of undergraduate studies represents an especially sensitive time for students and should be the focus of interventions aimed to promote the well-being of university students.

Pickard et al. (2020) discuss that, from a university's perspective, student retention and satisfaction are important to its scientific reputation and financial situation. So, it should be important to draw attention to the development of early intervention programs focused on motivating students and develop their skills and competencies. According to the authors, to help students in this transition and to better integrate them, interventions should focus more on relational aspects and not only academic performance, as is usually the case. An intervention proposal with a relational focus can be found in Alves and Teixeira (2020). In this work, the authors present the development and evaluation of a group intervention focused on career planning with university students showing impact on positive orientation towards the future (hope and optimism) and on aspects related to career adaptability (concern, control, curiosity and confidence). Gaioto et al. (2021) presents other interventions proposals. The authors indicate 11 key-messages for thinking about mental health interventions for university students, going through subjects and moments to develop them.

Regarding associations between life habits and mental health in university students, there is already plenty of literature available exploring the topic (Barros et al., 2017; Barroso et al., 2019; Bennasar-Veny et al., 2020; Di Benedetto et al., 2020). This study adds to the literature findings that have already identified that absence and the low alcohol consumption is linked to better mental health outcomes what corroborate previous studies (Bennasar-Veny et al., 2020; Pelicioli et al., 2017). But alcohol consumption must be considered carefully in the university population, given its integration into Brazil's socialization culture (Soares et al., 2018). Pelicioli et al. (2017) also addressed the topic of alcohol consumption in university students and risk factors related to problem drinking, such as shared behavioral group patterns, living far from family and exposure to frequent alcohol supply. The authors observed that 85% of the students in their sample, all from the Health Sciences, reported drinking alcohol with a frequency ranging from two to four times a month (46.9%) to monthly (40%) and that 51.6% could be considered heavy episodic drinking. The other lifestyle habits investigated have no influence on university mental health profiles.

The results confirm that maintaining mental health involves multiple factors. They also indicate that academic and social factors have a greater impact than personal characteristics. This understanding allows thinking about changes in the way universities organize their routine and academic demands, promoting an improvement in the mental health of students (Broglia et al., 2021; Gaiotto et al., 2021). Getting to university is still an achievement for few in Brazil (FONAPRACE, 2018), which increases the importance of taking care of such students. Improving the conditions for them to complete their graduation and remain healthy is a measure of social development.

It is worth mentioning that the study shows some limitations, such use of non-validated questionnaire in data collection, not included other variables that could help to explain the mental health profiles, such as personality aspects, general health conditions and more detail on academic experiences (e.g., the course was the first option for graduation, number of disciplines). Future investigations that fill gaps may investigate the mental health of university students, helping to better understand how to promote the

health of this population. Another limitation of the present investigation is that the data were collected before the Covid-19 pandemic. This made it impossible to identify the impact that changes in the way of teaching and the pandemic itself had on students' health. Future studies can explore these aspects, filling this gap.

CONCLUSIONS

The aim of this study was to investigate mental health profiles of university students and predictor factors, such as individual aspects, life habits and academic experiences. The results identified three profiles: students with good, moderate and poor mental health. The findings showed that the factors for maintaining moderate to good levels of mental health are similar among university students and should be considered when developing ways to promote health in this population. In addition, the impact of combining work and graduation and experiencing non-normative events during this period such as divorce, and the impact of academic aspects and life habits was discussed in their relations with maintaining good mental health.

REFERENCES

Alves, C. F., & Teixeira, M. A. P. (2021). Construção e Avaliação de uma Intervenção de Planejamento de Carreira para Estudantes Universitários. *Psico-USF, 25*, 697-709. https://doi.org/10.1590/1413/82712020250409

Alves, J. V. S., Paula, W., Rezendo Netto, P. R., Godman, B., Nascimento, R. C. R. M., & Coura-Vital, W. (2021). Prevalence and factors associated with anxiety among university students of health sciences in Brazil: findings and implications. J*ornal Brasileiro de Psiquiatria, 70*(2), 99-107. https://doi.org/10.1590/0047-2085000000322

Ariño, D. O., & Bardagi, M. P. (2018). Relação entre fatores acadêmicos e a saúde mental de estudantes universitários. *Revista Psicologia em Pesquisa, 12*(3), 44-52. https://doi.org/10.24879/2018001200300544

Artigas, J. S., Moreira, N. B., & Campos, W. (2017). Percepção da qualidade de vida em universitários: comparação entre períodos de graduação. *Arquivos de Ciências da Saúde da UNIPAR, 21*(2), 85-91. https://doi.org/10.25110/arqsaude.v21i2.2017.5525

Barros, M. B. A., Lima, M. G., Azevedo, R. C. S., Medina, L. B. P., Lopes, C. S., Menezes, P. R., & Malta, D. C. (2017). Depressão e comportamentos de saúde em adultos brasileiros – PNS 2013. *Revista de Saúde Pública, 51*, 1s-10s. https://doi.org/10.1590/S1518-8787.2017051000084

Barroso, S. M., Oliveira, N. R., & Andrade, V. S. (2019). Solidão e Depressão: relações com características pessoais e hábitos de vida em universitários. *Psicologia: Teoria e Pesquisa, 35*, e35427. https://dx.doi.org/10.1590/0102.3772e35427

Bayram, N., & Bilgel, N. (2008). The prevalence and socio-demographic correlations of depression, anxiety and stress among a group of university students. *Social psychiatry and psychiatric epidemiology*, *43*(8), 667 – 672. https://doi.org/10.1007/s00127-008-0345-x

Bennasar-Veny, M., Yañez, A. M., Pericas, J., Ballester, L., Fernandez-Dominguez, J. C., Tauler, P., & Aguilo, A. (2020). Cluster Analysis of Health-Related Lifestyles in University Students. *International journal of environmental research and public health, 17*(5), 1776, 1 – 15. https://doi.org/10.3390/ijerph17051776

Borine, R. D. C. C., Wanderley, K. D. S., & Bassitt, D. P. (2015). Relación entre la calidad de vida y el estrés en academicos del área de salud. *Estudos Interdisciplinares em Psicologia*, *6*(1), 100-118. https://doi.org/10.5433/2236-6407.2015v6n1p100

Broglia, E., Millings, A., & Barkham, M. (2021). Student mental health profiles and barriers to help seeking: When and why students seek help for a mental health concern. *Counselling and Psychotherapy Research, 21*, 816 – 826. http://dx.doi.org/10.1002/capr.12462

Bührer, B. E., Tomiyoshi, A. C., Furtado, M. D., & Nishida, F. S. (2019). Análise da qualidade e estilo de vida entre acadêmicos de medicina de uma instituição do norte do Paraná. *Revista Brasileira de Educação Médica, 43*(1), 39-46. http://dx.doi.org/10.1590/1981-52712015v43n1rb20170143

Carvalho, E. A., Bertolini, S. M. M. G., Milani, R. G., & Martins, M. C. (2015). Índice de ansiedade em universitários ingressantes e concluintes de uma instituição de Ensino Superior. *Ciência, Cuidado e Saúde, 14*(3), 1290-1298. https://doi.org/10.4025/cienccuidsaude.v14i3.23594

Coelho, L. S., Tony, A. C. C., Laguardia, G. C. A., Santos, K. B., Friedrich, D. B. C., Cavalcante, R. B., & Carbogim, F. C. (2021). Are symptoms of depression and anxiety in nursing students associated with their sociodemographic characteristics? *Revista Brasileira de Enfermagem, 74* (suppl 3), e20200503. https://doi.org/10.1590/0034-7167-2020-0503

Di Benedetto, M., Towt, C.J., Jackson, M.L. (2020). A Cluster Analysis of Sleep Quality, Self-Care Behaviors, and Mental Health Risk in Australian University Students. *Behavioral Sleep Medicine*, *18*(3), 309-320. https://doi.org/10.1080/15402002.2019.1580194.

Fórum Nacional de Pró-reitores de Assuntos Comunitários e Estudantis [FONAPRACE] (2018). V pesquisa do perfil socioeconômico e cultural dos estudantes de graduação. Disponível em: http://www.andifes.org.br/v-pesquisa-nacional-de-perfil-socioeconomico-e-cultural-dos-as-graduandos-as-das-ifes-2018/.

Gaiotto, E. M. G., Trapé, C. A., Campos, C. M. S., Fujimori, E., Carrer, F. C. A., Nichiata, L. Y. I., Cordeiro, L., Bortoli, M. C., Yonekura, T., Toma, T. S., & Soares, C. B. (2021). Resposta a necessidades em saúde mental de estudantes universitários: uma revisão rápida. *Revista de Saúde Pública, 55(114)*, 1 – 18. https://doi.org/10.11606/s1518-8787.2021055003363

Garrido-Rojas, L., Guzmán-González, M., Santelices, M. P., & Rivera Hattenberger, D. (2020). Regulación emocional y depresión en divorciados: ¿Para quiénes es más importante esta relación?. *Terapia Psicológica (En* línea), 38(3), 363-382. https://doi.org/10.4067/S0718-48082020000300363

Graner, K. M., & Cerqueira, A. T. A. (2019). Integrative review: psychological distress among university students and correlated factors. *Ciência e Saúde Coletiva, 24(4)*, 1327 – 1346. https://doi.org/10.1590/1413-81232018244.09692017

Hair, J. F., Black, W., Anderson, R.E. & Tatham, R. L. (1998). *Multivariate Data Analysis*. (5ed.). New Jersey, NJ: Prentice-Hall.

McIntyre, J. C., Worsley, J., Corcoran, R., Woods, P. H., & Bentall, R. P. (2018). Academic and non-academic predictors of student psychological distress: the role of social identity and loneliness. *Journal of Mental Health, 27*(3), 230-239. https://doi.org/10.1080/09638237.2018.1437608

Oliveira, N. R., & Barroso, S. M. (2020). Solidão, depressão e suporte social em estudantes de psicologia. *Revista Trabalho En(Cena)*, 5(1), 146-162. https://doi.org/10.20873/25261487V5N1P146

Pelicioli, M., Barelli, C., Gonçalves, C. B. C., Hahn, S. R., & Scherer, J. I. (2017). Perfil do consumo de álcool e prática do beber pesado episódico entre universitários brasileiros da área da saúde. *Jornal Brasileiro de Psiquiatria*, 66, 150-156. https://doi.org/10.1590/0047-2085000000164

Pereira, A. G., & Cardoso, F. S. (2015). Suicidal Ideation in University Students: Prevalence and Association with School and Gender. *Paidéia, 25*(62), 299-306 https://doi.org/10.1590/1982-43272562201503

Pinho, A. P. M., Tupinambá, A. C. R., & Bastos, A. V. B. (2016). O desenvolvimento de uma escala de transição e adaptação acadêmica. *Revista de Psicologia (Fortaleza)*, 7(1), 51-64.

Pickard, L., Brunton, J., McKenna, J., & Utley, A. (2020). Aiding Transition to University Through an Outdoor Orientation Program: Accelerated Friendships. *Journal of College Orientation, Transition, and Retention*, 27(2), 1 – 29. https://doi.org/10.24926/jcotr.v27i2.2433

Ribeiro, I. J. S., Pereira, R., Freire, I. V., Oliveira, B. G., Casotti, C. A., & Boery, E. N. (2018). Stress and Quality of Life Among University Students: A Systematic Literature Review. *Health Professions Education, 4,* 70–77. https://doi.org/10.1016/j.hpe.2017.03.002

Rocha, A. S. (2021). Perfectionism and the relationship with psychopathologies: Integrative study. *Research, Society and Development, 10*(2), S*l*, e59410213033, 2021. https://doi.org/10.33448/rsd-v10i2.13033.

Soares, A. B., Poubel, L. N., & dos Santos Mello, T. V. (2009). Habilidades sociais e adaptação acadêmica: um estudo comparativo em instituições de ensino público e privado. *Aletheia*, (29), 27-42.

Soares, A. B., Francischetto, V., Dutra, B. M., Miranda, J. M., Nogueira, C. C. C., Leme, V. R., Araújo, A. M., & Almeida, L. S. (2014). O impacto das expectativas na adaptação acadêmica dos estudantes no Ensino Superior. *Psico-USF, 19*(1), 49-60. https://doi.org/10.1590/S1413-82712014000100006

Soares, W. D., Paz, C. J. R., Fagundes, L. C., Freitas, D. A. F., Kimberly, M. J., & Barbosa, H. A. (2018). A utilização do álcool como mediador social entre universitários. *SMAD. Revista eletrônica saúde mental álcool e drogas*, *14*(4), 257-266. ttps://dx.doi.org/10.11606/issn.1806-6976.smad.2018.000416

Thomas, L., Orme, E., & Kerrigan, F. (2020). Student Loneliness: The Role of Social Media Through Life Transitions. *Computers & Education*, 146, e103754. https://doi.org/10.1016/j.compedu.2019.1037544

van Winkel, M., Wichers, M., Collip, D., Jacobs, N., Derom, C., Thiery, E., Myin-Germeys, I., & Peeters, F. (2017). Unraveiling the role of loneliness in depression: The relationship between daily life experience and behavior. *Psychiatry*, 80(2), 104-117. https://doi.org/10.1080/00332747.2016.1256143

Vignola, R.C.B. & Tucci, A.M. (2014). Adaptation and validation of the depression, anxiety and stress scale (DASS) to Brazilian Portuguese. *Journal of Affective Disorders, 155,* 104–109. http://dx.doi.org/10.1016/j.jad.2013.10.031