Risk factors affecting the mental health of first-year university students on a health sciences campus and related factors

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Abstract

Purpose – *The purpose of this study is to determine the mental health status and risk factors for the mental health of first-year university students on a health sciences campus.*

Design/methodology/approach – *This is a descriptive study. The research was conducted with first-year students in the health sciences, dentistry and medical faculties of a state university (n = 770). The data were collected with a sociodemographic questionnaire, the Risk Behavior of Young Adults Survey, the Bergen Insomnia Scale, General Health Questionnaire-28 and the Mental Health Improvement Scale. Body mass ındex was calculated.*

Findings – *Among the students, 53.7% experienced feelings of hopelessness in the last year and 1% had attempted suicide. The percentage of students found to be at risk in terms of mental health was 41.9%; 39.4% reported that they suffered from insomnia. It was found that those who had been subjected to bullying, felt hopelessness, had suicidal thoughts, planned to commit suicide and students who experienced sleeping problems were more at risk in terms of psychological issues ($p < 0.01$). Insomnia (β: 3.341) and smoking (β: 2.226) were identified as the strongest risk factors for mental health in first-year health sciences students ($p < 0.005$).*

Practical implications – *The results of the research offer an opportunity to get to know the characteristics of first-year university students who are at risk for mental health. It offers the opportunity to closely monitor and protect the mental health of students starting from the first grade.*

Originality/value – *In this study, it was determined that approximately half of the first-year university students were in the risk group in terms of mental health. Female gender, having a chronic illness, smoking a day or more in the past 30 days, not doing any physical activity, having a weak BMI, being bullied in the past 12 months, being cyberbullied in the past 12 months and having insomnia have been identified as risk factors that negatively affect mental health.*

Keywords *University first-year student, Mental health, Insomnia, Risk behavior, General health*

Paper type *Research paper*

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Introduction

Starting out at a university is usually an important turning point for most young people and also a stress factor (Hicks and Heastie, 2008). First-year students can experience psychological strain because of factors that include leaving home for the first time, being away from the safety their parents provide, adapting to a new lifestyle, academic work, planning a career, coping with a competitive atmosphere and changing living conditions (Sarokhani *et al.*, 2013; Al-Nakeeb *et al.*, 2015). In this time of transition, those who can manage their anxieties, form successful relationships, display self-confidence, take on responsibility, have goals and plans for the future, spare time for social activities, create a balance between themselves and their surroundings and live in harmony are able to adapt easily (Seven, 2018). Those, however, who have difficulty fulfilling their duties, roles and

responsibilities and are not good at adapting to new and challenging situations can exhibit a variety of psychological problems (Jackson *et al.*, 2007). Among these are interpersonal communications and adaptation issues, anxiety, hostility, eating and sleeping disorders, panic attacks, phobic disorders, obsessions, academic failure, depression and suicidal tendencies (Demirel *et al.*, 2011; Koç *et al.*, 2013; Maddah *et al.*, 2020). Psychological problems experienced in the university years may cause disruptions in young people's performance. To ensure that students become the successful individuals who will be an asset to society in the future, it is important that their mental health issues be diagnosed early and addressed promptly (Pedrelli *et al.*, 2015).

Health sciences students are the health experts of the future who will work to protect and improve human health. At the same time, they will be providing individuals with counseling on general health behaviors. More importantly, they can become a role model to help students in adopting a healthy lifestyle. It is for this reason that it is important that health sciences students develop healthy behaviors that reflect their professional status and that they are also healthy from a mental health perspective.

The best time to start intervention programs targeting health improvement among university students is the first year that they arrive on campus, a period in which changes and needs are at their most intense. To ensure the success of such interventions, it is important to understand risky health behavior. In planning health improvement programs and guidance services at the universities, it is of value not only to identify students' health behavior and mental health status but also to understand the relationship between their health behavior and their mental health. Identifying and treating these issues, eliminating the problems that exist in this age group and increasing individual functionality while preventing the recurrence of the same problems in later years are important in terms of taking protective measures.

This study aimed to determine the risk factors related to the mental health and related issues of first-year students at the health sciences faculties as part of the project, "Starting Off on a Healthy Life on the Health Sciences Campus" planned by the Marmara Family Medicine Education Application and Research Center (MAR-FM-EAR Center).

Methods

Type of research

This is a study of descriptive design.

Study population and sample

The study population comprised first-year student students (n = 881) newly enrolled in the Faculties of Health Sciences, Dentistry and Medicine located on the Health Sciences Campus of a state university in Istanbul. The study was conducted over the period October 2019–December 2020. The entire study population was targeted, and the research was completed with 770 individuals (87.4% of the study population) matching the inclusion criteria.

Inclusion and exclusion criteria

Students who had newly enrolled in the Faculty of Health Sciences (Nursing = 191, Midwifery = 78, Nutrition and Dietetics = 76, Health Management = 70, Physical Therapy and Rehabilitation = 100; Total = 537), Faculty of Medicine (n = 119) and Faculty of Dentistry (n = 114), who were present at school during the conduct of the study and who volunteered to participate were included.

Those who failed to complete the data collection forms and those who had registered prior to 2019 were excluded from the study.

Ethics committee approval and consent for participation

Following the approval of the Marmara University Faculty of Health Sciences Non-interventional Clinical Practices Ethics Committee (Approval No. 29.08.2019/90) and of school unit administrators, all of the students who had newly registered were informed about the study and the verbal and written consent of those volunteering to participate was obtained.

Data collection and materials

The data were collected online under the supervision of the authors by means of sending a link to the questionnaire to the students' cell phones. The data collection tools were a sociodemographic questionnaire, the Risk Behavior of Young Adults Survey, the Bergen Insomnia Scale (BIS), General Health Questionnaire-28 (GHQ-28) and the Mental Health Improvement Scale (MHIS). Additionally, the body mass index (BMI) was evaluated.

Sociodemographic questionnaire

The sociodemographic questionnaire consisted of nine closed-ended questions on the students' age, gender, number of siblings, the health institution they made use of the most, any chronic diseases they had and other similar information. At the same time, some questions on the Risk Behavior of Young Adults Survey were used. These questions were translated into Turkish and combined with some of the options to facilitate statistical assessment by the researchers. The questions referred to the young adults' habits of smoking and drinking, their physical activity behavior and whether they were exposed to bullying. This survey is a questionnaire of 89 items developed by the US Centers for Disease Control and Prevention (CDC) in 1990 for the purpose of identifying social issues, health-related and risky behavior contributing to the death or disability of youth and adults. The change over time in the risky health behavior of individuals and their tendencies are also assessed by school-based studies (CDC, 2019).

Bergen Insomnia Scale

The scale was developed by Pallesen *et al.* (2008). It consists of six questions designed to measure the different symptoms of insomnia. Participants rate the various sleep problems they experienced in the past month on the basis of a score of 8 with 0–7 representing the days of the week. The lowest possible score on the scale is 0, and the highest is 42. Bay and Ergun (2018) tested the Turkish version of the scale for validity and reliability, finding it to be valid and reliable for adolescents (Cronbach's alpha 0.72). Based on the The Diagnostic and Statistical Manual of Mental Disorders-5 diagnostic criteria, receiving a score of 3 or over on at least one of the first three items on the scale and additionally receiving a score of 3 or above on at least one of the last two items is defined as insomnia. In this study, participants who received a score of 3 or more in at least one of the first three items were accepted as having sleep problems/insomnia (Bay and Ergun, 2018).

General Health Questionnaire-28

The GHQ was developed by Goldberg and Williams (1988) to identify acute mental illnesses that are frequently encountered in the community (Goldberg and Williams, 1988). The validity and reliability study of the Turkish version was conducted by Kilic (1996) (Cronbach's alpha: 0.84). The aim of the questionnaire is to make a general determination of mental disorder risk. Each question refers to symptoms experienced in the past few weeks

and offers four options: “I have none” (0 points); “As much as usual” (0 points); “More often than before” (1 point); and “Very often” (1 point). Individuals who score five or above are assessed as “at risk of psychological issues.” The scale comprises four subscales of seven items each. The distribution of the scales is as follows: A1–A7: Hypochondria, B1–B7: Anxiety and insomnia, C1–C7: Social functional disorder and D1–D7: Severe depression, which can be described as B2 (Stress), D1 (Unworthiness), D3 (Unworthy of living), D4 (Suicide) or D6 (Death wish).

Mental Health Improvement Scale

The MHIS was developed by Kadioglu *et al.* (2019) to identify mental health improvement skills in adults. It is a five-point Likert-type scale (Never, Rarely, Sometimes, Often, Always). Consisting of 47 items, the scale has 12 sub-factors (Cronbach’s alpha: 0.93). High scores in the subscales indicate that the individual possesses high-level skills in self-recognition, making friends, anger control, communications and other behaviors that enhance psychological health. The scale has no cut-off point, and an increase in the score shows that the individual makes an effort and engages in the appropriate behavior to improve their own mental health (Kadioglu *et al.*, 2019).

Body mass index evaluation

For the BMI evaluation, height was measured using a stadiometer with the student’s feet together and their head on the Frankfurt plane (where the lower margins of the eyes and the upper margins of the ear canals all lie on the same horizontal plane and parallel to the floor). After the researchers took the students’ weight and height measurements according to the standards, BMI was calculated by dividing body weight (kg) by height in centimeters squared (cm^2). The WHO classification was used in the assessment of the BMI results. BMI classification was accepted as being <18.5 = Underweight, 18.5–24.9 = Normal weight, 25.0–29.9 = Pre-obese, 30.0–34.9 = Obese, (Class 1) and 35.0–39.9 = Obese (Class 2) (World Health Organization, 2020).

Statistical analysis

The data collected were analyzed using the SPSS 20.0 descriptive statistics program (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corporation). The descriptive statistics in the analysis included numbers and percentages; Chi-squared analysis was used for numerically rendered differences between dependent and independent variables; and the independent groups *t*-test and the Mann–Whitney *U*-test were used for data rendered in the form of measurements. Logistic regression analysis was used to determine the risk factors affecting the mental health of the students. Statistical significance was accepted as $p < 0.05$.

Results

Sociodemographic characteristics, health status and bullying victimization of the students are shown in Table 1.

The results of mental health status, presence of insomnia and MHIS subscale scores are shown in Table 2. The frequency of students with scores of 5 and above who were assessed to be at risk in terms of mental health according to GHQ-28 was 41.9%; the frequency of students with an insomnia problem according to the BIS was 39.4%.

Table 3 presents the comparison of subscale mean scores of the MHIS according to the GHQ-28 cut-off point. It was seen that in the GHQ-28, those at risk in terms of mental health problems had lower scores than those not at risk in all the subscales except in the MHIS subscales of sexuality and anger control ($p < 0.05$).

Table 1 Sociodemographic characteristics, health status and bullying victimization of the students

Variables		*n*	*(%)*
Sex ($n = 770$)	Female	590	76.6
	Male	180	23.4
Age ($n = 763$)	Ages 17-21	733	96.1
	Ages 22-26	24	3.1
(mean = 19.06 ± 1.73; min = 17, max = 42)	Age 27 and above	6	0.8
Department ($n = 770$)	Nursing	191	24.8
	Faculty of Medicine	119	15.5
	Dentistry	114	14.8
	Physiotherapy	100	13.0
	Nutrition	76	12.7
	Midwifery	78	10.1
	Health Management	70	9.1
Body mass index ($n = 589$)	Underweight	87	14.8
	Normal	430	73.0
(mean = 21.55 ± 3.28; min = 14.69, max = 36.89)	Overweight + obese	72	12.2
Diagnosed chronic illness ($n = 763$)	Yes	74	9.7
	No	689	90.3
Number of days in the past 30 in which cigarette was smoked ($n = 749$)	I never smoked any	582	77.7
	≥1/day	167	22.3
Number of days in the past 30 in which alcohol was consumed ($n = 765$)	I never drank	615	80.4
	1–9 da	82	12.3
	ys	56	7.3
	≥10/day		
Number of days in the past seven days spending at least 60 min on physical activity, or exercises such as push-ups, sit-ups or weightlifting that challenged or strengthened the muscles were performed ($n = 769$)	Never did	340	44.2
	1–3 da	300	39.0
	ys	129	16.8
	4–7 da		
	ys		
Did you have serious trouble concentrating, remembering or making decisions because of some physical, mental or emotional problem? ($n = 768$)	Yes	257	33.5
	No	511	66.5
Have you been bullied in the past 12 months? ($n = 765$)	Yes	60	7.8
	No	705	92.2
Have you been cyberbullied in the past 12 months over an electronic medium (text, Instagram, Facebook or other social media)? ($n = 761$)	Yes	72	9.5
	No	689	90.5

Table 4 displays the comparison of independent variables according to the GHQ-28 cut-off point. According to these comparisons, it can be seen that being female (44.6%), having a chronic illness (52.1%), the number of days in the past 30 in which cigarettes were smoked, the number of days in the past seven days in which physical activity was performed, being overweight or obese, bullying victimization and insomnia were associated with mental health risk according to GHQ-28 ($p < 0.05$).

The percentages of the students at risk on the GHQ-28 according to their departments of study were dentistry (58.2%), physiotherapy (43.6%), midwifery (41.6%), nursing (39.5%), medicine (38.6%) and nutrition (34.0%).

Table 5 presents the results of logistic regression analysis, which was performed using a model incorporating the factors that were found to be associated with mental disorder according to GHQ-28 in univariate analysis and MHIS subscale points. Accordingly, insomnia (β: 3.341), smoking (β: 2.226) and high scores on the MHIS-sexuality subscale (β: 1.115) were identified as the risk factors for mental health in first-year student health sciences, and high scores on the MHIS-family relations subscale (β: 0.832) and being male (β: 0.316) were seen to reduce risks associated with mental health.

Table 2 Mental health status, presence of insomnia and Mental Health Improvement Scale subscale scores

Variable	n	*(%)*
*General Health Questionnaire (28 points) (*n = *732)*		
Healthy (1–4 points)	425	58.1
At risk in terms of mental health (five points and above)	307	41.9
*Insomnia (*n = *746)*		
No	452	60.6
Yes	294	39.4
*In the past 12 months, have you ever neglected your daily activities because you felt unhappy/hopeless almost every day for two weeks or more? (*n = *766)*		
Yes	411	53.7
No	355	46.3
*In the past 12 months, have you seriously considered attempting suicide? (*n = *765)*		
Yes	25	3.3
No	740	96.7
*In the past 12 months, have you made a plan to attempt suicide? (*n = *519)*		
Yes	15	2.9
No	504	97.1
*How many times have you attempted suicide in the past 12 months? (*n = *721)*		
Once	7	1.0
Never	714	99.0
Mental Health Improvement Scale Subscales	*Mean ± SD Score*	*Min–Max Score*
Friendship	15.19 ± 3.95	0–20
Values	14.71 ± 2.10	0–16
Personal development	19.78 ± 3.75	0–24
Sexuality	8.47 ± 4.62	0–16
Self-esteem/self-value	11.61 ± 3.36	0–16
Coping with stress	7.29 ± 2.94	0–12
Physical health	6.65 ± 2.81	0–12
Family relations	7.90 ± 2.87	0–12
Communication-coping	16.24 ± 4.92	0–24
Being able to say no	8.40 ± 2.73	0–12
Anger control	8.81 ± 2.64	0–12
Knowing oneself	9.40 ± 2.37	0–12

Discussions

In this study, which was conducted to evaluate risk status and related factors pertaining to first-year health sciences university students, the health professionals of tomorrow, we found that 41.9% of the students were at risk in terms of mental health according to GHQ-28, that 39.4% had a problem with insomnia according to the BIS (Table 2), that those at risk on the MHIS had lower scores on all the subscales except the gender and anger control subscales compared to healthy individuals (Table 3) and that, therefore, these students' skills in improving their mental health were at a low level. Insomnia (β: 3.341) and smoking (β: 2.226) were the risk factors most associated with mental health disorders in first-year health sciences students in the study population (Table 5).

The prevalence of psychological problems among first-year health sciences university students detected in the present study was similar with the literature: the prevalent rate of psychological problems among university students has been reported as between 23.8% and 53.7% (İlhan *et al.*, 2014; Othman *et al.*, 2019; Tesfaye Kelemu *et al.*, 2020; Usher and Curran, 2019).

In terms of the factors related to being at risk in terms of psychological health, it has been reported in the literature that female students are at higher risk than males, as in the present study (Said *et al.*, 2013; Tesfaye Kelemu *et al.*, 2020). There is also research, however, showing no significant difference between males and females in terms of psychological

Table 3 Comparison of subscale mean scores of the Mental Health Improvement Scale according to the GHQ-28 cut-off point ($n = 732$)

Mental Health Improvement Scale subscales	*GHQ-28* 1–4 points (n = 425) Median	25th–75th percentile	5 points and over (n = 307) Median	25th–75th percentile	*Z*; (p)*
Friendship	17.00	14.00–19.00	15.00	12.00–18.00	*4.59 (<0.001)*
Values	16.00	14.00–16.00	16.00	13.00–16.00	*2.24 (0.025)*
Personal development	20.00	18.00–23.00	19.00	17.00–23.00	*3.19 (0.001)*
Sexuality	8.00	4.00–12.00	9.00	5.00–13.00	*0.74 (0.454)*
Self-esteem/self-value	12.00	11.00–15.00	10.0	9.00–1 3.00	*6.28 (<0.001)*
Coping with stress	8.00	6.00–10.00	6.00	4.00–9.00	*6.73 (0.00)*
Physical health	7.00	6.00–9.00	6.00	4.00–8.00	*6.53 (<0.001)*
Family relations	9.00	7.00–11.00	7.00	5.00–9.00	*6.73 (<0.001)*
Communication-coping	17.00	15.00–21.00	15.00	12.00–18.00	*6.61 (<0.001)*
Being able to say no	9.00	7.00–11.00	8.00	6.00–10.00	*4.55 (<0.001)*
Anger control	9.00	7.00–11.00	9.00	7.00–11.00	*1.88 (0.059)*
Knowing oneself	10.00	8.50–12.00	9.00	8.00–12.00	*2.08 (0.037)*

Note: *Mann–Whitney *U*-test

Table 4 Comparison of independent variables according to the GHQ-28 cut-off point

Variables		*GHQ-28 score* 1–4 points (Healthy) n (%)	≥5 points (At risk) n (%)	*Chi-square*	*p*
Sex ($n = 732$)	Female	311 (55.4)	250 (44.6)	*6.78*	*0.00*
	Male	114 (66.7)	57 (33.3)		
Diagnosed chronic illness ($n = 725$)	Yes	34 (47.9)	37 (52.1)	*3.35*	*0.04*
	No	387 (59.2)	267 (40.8)		
Smoking status in the past 30 days ($n = 749$)	Never	341 (60.1)	215 (38.7)	*15.137*	*0.00*
	≥1 day	69 (43.9)	88 (56.1)		
Drinking alcohol in the past 30 days ($n = 765$)	Never	347 (59.3)	238 (40.7)	*2.43*	*0.130*
	≥1 days	74 (52.1)	68 (47.2)		
Physical activity* ($n = 769$)	Never	165 (50.6)	161 (49.4)	*13.967*	*0.001*
	1–3 days	185 (65.4)	98 (34.6)		
	≥4 days	74 (60.7)	48 (39.3)		
Sedentary activity** ($n = 731$)	Yes	45 (43.7)	58 (18.9)	*10.084*	*0.001*
	No	379 (60.4)	249 (39.6)		
Weight status according to BMI ($n = 562$)	Underweight	36 (44.4)	45 (55.6)	*7.44*	*0.024*
	Normal	232 (56.6)	178 (43.4)		
	Overweight or obese	47 (66,2)	24 (33,8)		
Bullied victimization in the past 12 months ($n = 727$)	Yes	24 (42.9)	32 (57.1)	*5.64*	*0.01*
	No	397 (59.2)	274 (40.8)		
Cyberbullying in the past 12 months ($n = 723$)	Yes	22 (33.3)	44 (66.7)	*17.84*	*0.00*
	No	396 (60.3)	261 (39.7)		
Insomnia ($n = 709$)	Yes	108 (39.6)	165 (60.4)	*59.75*	*0.00*
	No	301 (69.0)	135 (31.0)		

Notes: *Number of days in the past seven days spending at least 60 min on physical activity, or exercises such as push-ups, sit-ups or weightlifting that challenged or strengthened the muscles were performed; **spending more than 3 h with the computer or played video game in a day

symptoms (Othman *et al.*, 2019; Pesen and Mayda, 2020). The discrepancy in the results of these studies points to a need for more evidence in this regard.

According to the results of the study, it was found that among the factors having a negative impact on mental health was being diagnosed with a chronic illness. It has been reported that diagnosed disease is a risk factor for mental issues (Engidaw *et al.*, 2020). Similarly, Uzunçakmak (2018) also reported that compared to individuals without a diagnosed disease, those with a diagnosed illness had 2.25 times as many psychological issues

Table 5 Logistic regression analysis of variables thought to impact mental health according to the GHQ-28 cut-off point

Variable	B	*Std. Error*	*Wald*	*Exp(β)*	*Confidence interval*	p
Insomnia	1.206	0.271	19.742	3.341	1.962–5.688	*<0.001*
Smoking in the past 30 days	0.800	0.324	6.089	2.226	1.179–4.202	*0.014*
MHIS–Sexuality	0.109	0.34	10.189	1.115	1.043–1.192	*0.001*
MHIS–Family relations	−0.183	0.067	7.431	0.832	0.730–0.950	*0.006*
Sex	−1.153	0.339	11.543	0.316	0.162–0.614	*0.001*

Notes: The model includes sex, weight status, insomnia, MHIS subscores of friendship, values, personal development, sexuality, self-esteem/self-value, coping with stress, physical health, family relations, communication-coping, anger control, being, able to say no and knowing oneself, smoking status in the past 30 days, physical activity status (number of days in the past seven days spending at least 60 min on physical activity, or exercises such as push-ups, sit-ups or weightlifting that challenged or strengthened the muscles were performed), sedentary activity status (spending more than 3 h with the computer or played video game in a day), bullied victimization in the past 12 months, cyberbullying in the past 12 months and diagnosed chronic illness; R^2 = 0.280 (Cox & Snell R square), R^2 = 0.374 (Nagelkerke *R* square), Hosmer and Lemeshow test p = 0.169, Model χ^2 = 114.616, $p < 0.001$

(Keskin and Tamam, 2018). Our findings point to the importance of evaluating and supporting students with a diagnosed illness in terms of mental health.

It was found that students who did not engage in physical activity and those who smoked had higher risk scores. Other studies have revealed that physical activity has a negative correlation with psychological problems (Buffel *et al.*, 2014; Pesen and Mayda, 2020). While it is known that cigarettes have many adverse effects on health, individuals with psychological issues are more likely to be addicted to smoking, with the result that this habit constitutes a threat to their health. The correlation between smoking addiction and depression has been reported in the literature (Khademalhosseini *et al.*, 2015) and it has been demonstrated that addicted smokers are twice as likely to suffer from depression than non-smokers (Heris *et al.*, 2020). It has been shown that adolescents who are smokers are more likely to have problems with behavioral and emotional functions and to suffer from symptoms of anxiety and depression compared to their non-smoking peers (Harrison *et al.*, 2020). When all the research findings and the results of the present study are considered together, it can be said that it would be beneficial to include interventions designed to prevent smoking addiction in campus life.

Our study also showed that in the context of BMI, underweight students were at risk in terms of mental health. By its simplest definition, mental health concerns the relationships of emotions, behavior and thoughts. As with other types of behavior, eating behavior is evaluated in terms of under-/overeating or maladjustment and, in fact, all behaviors are components of mental health. Studies in the literature stress the importance of nutrition not only for body functions but also for mental health (Adan *et al.*, 2019). It is asserted that anger, being under pressure, stress or tension as well as emotions have an impact on eating behaviors (Konttinen *et al.*, 2010), that emotional eating is one of the factors that affect eating behaviors and that behavioral problems with eating are related to psychological issues such as stress, depression and sadness (Galmiche *et al.*, 2019).

Our study showed that the GHQ-28 risk score of bullied students was higher than that of those who had not been bullied. Pörhöla *et al.* have reported on the results of a study they conducted at 47 universities in four countries, revealing that 25.2% of students in Argentina, 11.9% of students in the USA, 5.3% of students in Finland and 2% of those in Estonia had been exposed to bullying (Pörhölä *et al.*, 2020). In a study, the authors suggested that there was a positive correlation between cyberbullying/cyber victimization and anxiety, depression, somatization, hostility, impulsivity and internet addiction; they also asserted that being bullied was a risk factor for depression, suicidal thoughts and attempting to commit

suicide (Garaigordobil and Machimbarrena, 2019). Interventions to prevent bullying/victimization among university students should be a part of efforts to improve mental health.

Almost half of the students in this study reported that they had feelings of unhappiness/hopelessness almost every day. Moreover, 3.3% of the students revealed that they had seriously thought of committing suicide in the past 12 months, while 2.9% said they had made plans to commit suicide and 1% had actually attempted suicide. Alver *et al.* (2010) found in their study that those university students who felt happy displayed a significantly lower degree of psychological symptoms compared to those who perceived themselves to be unhappy or partially unhappy. In a study conducted in Pakistan, approximately 40% of university students were found to have a lifelong history of suicidal thoughts while 7% actually attempted to commit the act of suicide (Bibi *et al.*, 2019). According to Turkish Statistical Institute data for 2018, there were 3,161 cases of suicide in Turkey, with the rough rate of suicide amounting to 3.88 per 100,000 of the population (TurkishStatisticalInstitute, 2017). A review written by Gili *et al.* (2019) revealed that the groups at high risk of attempting suicide were young people and individuals with mental disorders. In the light of this information, it can be said that it is important to include preventative mental health approaches in campus health services at universities. In this study, interviews were held with the students who had attempted suicide (n = 7); one of the students was treated at the hospital; three were treated as outpatients; and the others were referred to specialists for counseling. Those who had suicidal thoughts or made plans to commit suicide were scheduled for monitoring.

A greater percentage of students shown to be experiencing problems with sleep on the BIS (60.4%) had GHQ-28 scores of 5 and higher compared to those who did not have sleeping problems (31.0%). In a study, 46.2% of the students were found to have insomnia and those with sleep problems were seen to have 2.56 times more symptoms of depression compared to the other students (Önal and Hisar, 2018). Some authors reported that sleep problems were correlated with psychological problems in university students (Tesfaye Kelemu *et al.*, 2020). Problems with sleep, learning and memory are related to emotional regulation and are complaints that are observed in most psychological issues. Although sleep disorders can be viewed as an illness in and of themselves, they can also appear as a symptom of another physical or mental illness (Lovell *et al.*, 2015). It can be said that the approach to the health of university students should focus on sleep problems and developing good habits of sleep hygiene.

It was found that the students' scores on all of the subscales of the MHIS except for "Sexuality" and "Anger control" were above the mean, and the individuals in the risk group, according to the GHQ-28, displayed lower scores on all the subscales of the MHIS. İlhan *et al.* (2014) report a negative correlation between health-improving behavior and mental problems. Rodriguez-Ayllon *et al.* (2019) point to a negative correlation between depression scores and health lifestyle behaviors. Some concepts related to improvement/strengthening of mental health in the literature have been stated as quality of life, endurance, flexibility, robustness, awareness, psychological well-being, positive mental health and agency, which is the ability of an individual to take on responsibility for making decisions about one's own life and health (Coşkun, 2011).

In this study, it was also found that the "sexuality" subscores of the MHIS were associated with the risk for mental health; contrary to expectations, it was determined that the risk for mental health increased as the "sexuality" scores increased (Table 5). Therefore, although the increase in the "sexuality" subscores means that the individuals have the skills to improve their mental health, it is interesting that high "sexuality" subscores were found to be risky for mental health.

It can be thought that there is a need for especially qualitative research on this subject. One of the findings of the present study is that high scores in the MHIS "family relations"

subscores are slightly protective in terms of mental health (B:0.832). That is, young people who try to improve family relationships are at low risk in terms of mental health. It is known that healthy family relationships are important in improving mental health (Thomas *et al.*, 2017; Kadioglu *et al.*, 2019). It can therefore be said that this finding is compatible with the literature.

When it is considered that in this study, the students displayed high scores in mental health-improving behaviors, which signifies a lower risk of experiencing mental health problems, it can be said that supporting the improvement of health behaviors is important in improving mental health.

Study limitations

The main limitation of the present study is its cross-sectional design, which does not allow for causal or directional inferences. In addition, the results cannot be generalized to other populations because of the nature of cross-sectional design.

Conclusion

Approximately half of the university first-year students newly starting out on the health sciences campus are in the risk group in terms of mental health; these students experience problems in improving their psychological well-being. One out of three students have a physical, mental or emotional problem that causes them to have serious difficulties with concentration, memory or decision-making; these students may also suffer from insomnia and about half have feelings of unhappiness/hopelessness. Our results indicated that the students were at risk from a mental health standpoint and that there was an urgent need for interventions and arrangements to address this issue. Interventions directed at risk factors must be made a priority.

All newly enrolled first-year university students must first be evaluated in this context. Female students must be made a priority in these interventions. Students must be assessed in terms of a possible chronic illness and students should be able to benefit from the services of a continuously available health services unit on campus that will make this evaluation. On-campus sports facilities should be expanded, and students should be helped to adopt healthy and adequate diets, particularly those with BMIs that indicate they are underweight. Psychological issues should be assessed among those who smoke or suffer from insomnia, and students with suicidal thoughts or those who have actually tried to commit suicide should be offered the benefits of an on-campus psychological counseling center. Students should be provided with a safe educational environment.

References

Adan, R.A., *et al.* (2019), "Nutritional psychiatry: towards improving mental health by what you eat", *European Neuropsychopharmacology*, Vol. 29 No. 12, pp. 1321-1332.

Al-Nakeeb, Y., *et al.* (2015), "An investigation into the lifestyle, health habits and risk factors of young adults", *International Journal of Environmental Research and Public Health*, Vol. 12 No. 4, pp. 4380-4394.

Alver, B., Dilekmen, M. and Ada, S. (2010), "Ünİversİte Öğrencİlerİnİn bazi öznel algilamalarina göre Psİkolojİk Belİrtİlerİ", *Turkish Psychological Counseling & Guidance Journal*, Vol. 4 No. 33, pp. 13-23.

Bay, T. and Ergun, A. (2018), "Validity and reliability of Bergen ınsomnia scale (BIS) Among adolescents", *Clinical and Experimental Health Sciences*, Vol. 8 No. 4, pp. 268-275.

Bibi, A., Blackwell, S.E. and Margraf, J. (2019), "Mental health, suicidal ideation, and experience of bullying among university students in Pakistan", *Journal of Health Psychology*, Vol. 26, No. 8, pp. 1185-1196, 1359105319869819.

Buffel, V., Van de Velde, S. and Bracke, P. (2014), "Professional care seeking for mental health problems among women and men in Europe: the role of socioeconomic, family-related and mental health status factors in explaining gender differences", *Social Psychiatry and Psychiatric Epidemiology*, Vol. 49 No. 10, pp. 1641-1653.

CDC (2019), "Youth risk behavior surveillance system (YRBSS)", available at: www.cdc.gov/healthyyouth/data/yrbs/index.htm (accessed 12 November).

Coşkun, B. (2011), "Koruyucu psikiyatri açısından ruh sağlığının güçlendirilmesi", *Turkiye Klinikleri J Psychiatry-Special Topics*, Vol. 4 No. 4, pp. 110-119.

Demirel, S.A., EğlenceE, R. and Kaçmaz, E. (2011), "Üniversite öğrencilerinin ruhsal durumlarinin belirlenmesi", *Nevşehir Hacı Bektaş Veli Üniversitesi SBE Dergisi*, Vol. 1 No. 1, pp. 18-29.

Engidaw, N.A., Abdu, Z. and Chinani, I. (2020), "Prevalence and associated factors of common mental disorders among residents of ıllu ababore zone, southwest Ethiopia: a cross-sectional study", *International Journal of Mental Health Systems*, Vol. 14 No. 1, pp. 1-8.

Galmiche, M., *et al.* (2019), "Prevalence of eating disorders over the 2000–2018 period: a systematic literature review", *The American Journal of Clinical Nutrition*, Vol. 109 No. 5, pp. 1402-1413.

Garaigordobil, M. and Machimbarrena, J.M. (2019), "Victimization and perpetration of bullying/cyberbullying: connections with emotional and behavioral problems and childhood stress", *Psychosocial Intervention*, Vol. 28 No. 2, pp. 67-73.

Gili, M., *et al.* (2019), "Mental disorders as risk factors for suicidal behavior in young people: a meta-analysis and systematic review of longitudinal studies", *Journal of Affective Disorders*, Vol. 245, pp. 152-162.

Goldberg, D. and Williams, P. (1988), *The User's Guide to the General Health Questionnaire*, Granada Learning Group, London.

Harrison, A., *et al.* (2020), "Cigarette smoking, mental health, and other substance use among court-involved youth", *Substance Use & Misuse*, Vol. 55 No. 4, pp. 572-581.

Heris, C.L., *et al.* (2020), "Factors influencing smoking among indigenous adolescents aged 10–24 years living in Australia, New Zealand, Canada, and the United States: a systematic review", *Nicotine & Tobacco Research*, Vol. 22 No. 11, pp. 1946-1956.

Hicks, T. and Heastie, S. (2008), "High school to college transition: a profile of the stressors, physical and psychological health issues that affect the first-year on-campus college student", *Journal of Cultural Diversity*, Vol. 15 No. 3, pp. 143-147.

İlhan, N., Bahadırlı, S. and Toptaner, N.E. (2014), "Üniversite öğrencilerinin ruhsal durumları ile sağlık davranışları arasındaki ilişkinin belirlenmesi", *Clinical and Experimental Health Sciences*, Vol. 4 No. 4, pp. 207-215.

Jackson, E.S., Tucker, C.M. and Herman, K.C. (2007), "Health value, perceived social support, and health self-efficacy as factors in a health-promoting lifestyle", *Journal of American College Health*, Vol. 56 No. 1, pp. 69-74.

Kadioglu, H., *et al.* (2019), "Development and preliminary psychometric properties of mental health promotion scale", *European Journal of Public Health*, Vol. 29 No. 4, pp. ckz186-557.

Keskin, N. and Tamam, L. (2018), "Ruhsal bozukluklarda uyku", *Arşiv Kaynak Tarama Dergisi*, Vol. 27 No. 1, pp. 27-38.

Khademalhosseini, Z., Ahmadi, J. and Khademalhosseini, M. (2015), "Prevalence of smoking, and its relationship with depression, and anxiety in a sample of ıranian high school students", *Enliven: Pharmacovigil Drug Saf*, Vol. 1 No. 1, p. 5.

Kilic, C. (1996), "General health questionnaire: validity and reliability", *Turkish Journal of Psychiatry*, Vol. 7 No. 1, pp. 3-9.

Koç, M., Çolak, T.S. and Düsünceli, B. (2013), "Anksiyete, duygudurum ve psikotik belirtilerin lisans egitimi sürecindeki gidisi/The progress of anxiety, mood, and psychotic symptoms during undergraduate education", *Anadolu Psikiyatri Dergisi*, Vol. 14 No. 3, pp. 260.

Konttinen, H., *et al.* (2010), "Emotional eating and physical activity self-efficacy as pathways in the association between depressive symptoms and adiposity indicators", *The American Journal of Clinical Nutrition*, Vol. 92 No. 5, pp. 1031-1039.

Lovell, G.P., *et al* (2015), "A Cross-sectional investigation of depressive, anxiety, and stress symptoms and health-behavior participation in Australian university students", *Nursing & Health Sciences*, Vol. 17 No. 1, pp. 134-142.

Maddah, D., *et al.* (2020), "Health behaviors, life skills, mental health, and demographic factors associated with mental health among university students in a developing country", *Research Square*, pp. 1-30, available at: file:///C:/Users/Lenovo/Downloads/Health_Behaviors_Life_Skills_Mental_Health_and_Dem.pdf

Önal, G.Ş. and Hisar, K.M. (2018), "Üniversite öğrencilerinde uykusuzluk şiddeti ve depresyon semptomları ilişkisi ve depresyon tedavisinin uykusuzluk şiddetine etkisi", *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*, Vol. 7 No. 1, pp. 125-130.

Othman, N., *et al.* (2019), "Perceived impact of contextual determinants on depression, anxiety and stress: a survey with university students", *International Journal of Mental Health Systems*, Vol. 13 No. 1, pp. 1-9.

Pallesen, S., *et al.* (2008), "A new scale for measuring insomnia: the Bergen ınsomnia scale", *Perceptual and Motor Skills*, Vol. 107 No. 3, pp. 691-706.

Pedrelli, P., *et al.* (2015), "College students: mental health problems and treatment considerations", *Academic Psychiatry*, Vol. 39 No. 5, pp. 503-511.

Pesen, A. and Mayda, A.S. (2020), "Tıp fakültesi öğrencilerinin depresyon, anksiyete, stres düzeyleri ve ilişkili faktörler", *Sakarya Tıp Dergisi*, Vol. 10 No. 2, pp. 240-252.

Pörhölä, M., *et al.* (2020), "Bullying in university between peers and by personnel: cultural variation in prevalence, forms, and gender differences in four countries", *Social Psychology of Education*, Vol. 23 No. 1, pp. 143-169.

Rodriguez-Ayllon, M., *et al.* (2019), "Role of physical activity and sedentary behavior in the mental health of preschoolers, children and adolescents: a systematic review and meta-analysis", *Sports Medicine*, Vol. 49 No. 9, pp. 1383-1410.

Said, D., Kypri, K. and Bowman, J. (2013), "Risk factors for mental disorder among university students in Australia: findings from a web-based cross-sectional survey", *Social Psychiatry and Psychiatric Epidemiology*, Vol. 48 No. 6, pp. 935-944.

Sarokhani, D., *et al.* (2013), "Prevalence of depression among university students: a systematic review and meta-analysis study", *Depression Research and Treatment*, Vol. 2013, available at: www.ncbi.nlm.nih.gov/pmc/articles/PMC3800630/pdf/DRT2013-373857.pdf

Seven, S. (2018), "Çocuk ruh sağlığı", *Pegem Atıf İndeksi*, Akademi, Ankara, pp. 2-20.

Tesfaye Kelemu, R., Bayray Kahsay, A. and Ahmed, K.Y. (2020), "Prevalence of mental distress and associated factors among Samara university students, northeast Ethiopia", *Depression Research and Treatment*, Vol. 2020, p. 7836296.

Thomas, P.A., Liu, H. and Umberson, D. (2017), "Family relationships and well-being", *Innovation in Aging*, Vol. 3, pp. 1-11.

TurkishStatisticalInstitute (2017), "Death Statistics, 2018", available at: https://data.tuik.gov.tr/Bulten/Index?p=Olum-Istatistikleri-2018-30701

Usher, W. and Curran, C. (2019), "Predicting australia's university students' mental health status", *Health Promotion International*, Vol. 34 No. 2, pp. 312-322.

World Health Organization (2020), "Body mass index", available at: www.who.int/data/gho/data/themes/topics/topic-details/GHO/body-mass-index

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