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MASTER OF PUBLIC HEALTH PROGRAM

**Prevalence of internet addiction and its association with mood and sleep disorders among
young adults in Astana, Kazakhstan**

Master of Public Health Thesis project Utilizing Professional Publication Framework

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Abstract

Background: In recent years, the Internet has become the most essential tool in both studying and entertainment, by giving the fast and easy access to all the information for students. However, uncontrolled excessive use of internet negatively influences a person's life, leading him to "Internet addiction" (IA) or "Problematic Internet use". Despite the fact, that more than half of Kazakhstani population (55.8 %), which is approximately 10 million, uses internet on a daily base, there is a lack of studies on internet addiction in Kazakhstan. Therefore, our study aims were: (1) to estimate the prevalence of IA among university and college students; (2) to explore the association of IA with various factors, related to socio-demographics, family relationships, mood and sleep disorders, self-esteem, physical and social activities, and academic performance of the students.

Methods: The cross-sectional study sample comprised 400 students of Astana city. Students completed a structured questionnaire comprised of a Young's 20-item internet addiction scale, Depression Anxiety Stress Scales (DASS 21), Insomnia severity index scale, and questions about socio-demographic characteristics. Univariate, bivariate and multivariate analysis were used to analyze the obtained data.

Results: Potential IA prevalence rate was 19.75% and it was significantly different between males and females (p -value = 0.000); males had higher prevalence (65.82%) than females (34.18%). Significant associations were found between potential IA and, stress, anxiety, depression, social and physical activity (p -value < 0.05).

Conclusion: These study findings have revealed a high prevalence of internet addiction among students. Association of internet addiction with mood disorders underlies the need for improving mental health services for adolescents.

Introduction

In recent years, the Internet has become the most essential tool in both studying and entertainment, by giving the fast and easy access to all the information for students. The number of internet users in 2016 was 3.5 billion, the half of the world population (ICT "Facts and Figures 2016", 2016). No doubt, introduction of the internet has been found to bring great benefits for the organizations, governments and overall for people all over the world. However, its uncontrolled excessive use negatively impacting person's emotional stability, relationships and daily functions. Today, this phenomenon is known as "Internet addiction" or "Problematic Internet use" (C.H. Ko, et.al. 2012). 6% of worldwide population was found to be pathologically addicted to the Internet, in which Asia accounts for 7.1%, and West and North Europe accounts for 2.6% (Uddin et al., 2016). A systematic review about problematic internet use reported that the prevalence among United States youth was 26.3% (Moreno, M. A., et.al. 2011). With the increasing number of internet users, the number of addicted ones is also increasing year by year by thousands.

According to the Beard (2005), person can be defined as addicted if he is preoccupied with the Internet, continuously needs to use the Internet with increased amount of time, has made unsuccessful efforts to control, and stop using Internet, and feel depressed during this period, and finally, stays online longer than originally intended (Beard, 2005).

Many research findings have noted that several mental disorders accompany internet addiction (IA). However, there is a debate regarding the order, which comes first, the internet addiction or the disorder (Kratzer & Hegerl, 2007). A longitudinal study conducted by Dong et.al. tried to clarify this question. They reported that IA results in higher scores for depression, anxiety, hostility, interpersonal sensitivity, and psychoticism (Dong, Lu, Zhou & Zhao, 2011). Ineme and his team (Ineme et.al, 2017) reported an opposite relationship, where the increase in depression as an independent variable, significantly related with increase in internet addiction as a dependent variable.

Severe addiction to the internet was found to be associated additionally, with low self-esteem (Naseri, Mohamadi, Sayehmiri & Azizpoor, 2015), poor physical activity and sleep deprivation (Kim et al., 2010), impulsivity (Lee et al., 2012) and finally, suicide (Lin et al., 2014). Demographic factors, such as age, gender, marital status, place of living and so on, can also affect to the prevalence of IA (Pujazon-Zazik & Park, 2010). Researchers, Frangos, Frangos and Kiohos (2010), reported that the males were more likely to be addicted than the females, similarly divorced more addicted than married. Moreover, students with poor academic grades had potential internet addiction than those with good academic standings. Surveys also found that the most vulnerable population is the young people between the ages of 12 and 24 (Ineme et.al, 2017).

According to the annual report of International Telecommunication Union (ITU), in Kazakhstan, in 2010 the number of internet users was more than 5 million ("ICT Facts and Figures 2017", 2017). In 2016, this number had increased by 5 million and became approximately 10 million. This means that 55.8 % of the population daily uses internet ("ICT Facts and Figures 2017", 2017). This confirms that the number of population who uses the internet in Kazakhstan is increasing each year. To the best of the author's knowledge, there is no official published studies in Kazakhstan, that reported prevalence of addiction.

Therefore, the purpose of this study was to examine the prevalence of internet addiction and its association with mood and sleep disorders among young adults in Astana, Kazakhstan. The specific study objectives were: 1) to determine the prevalence of internet addiction among 18-24 age-old students in Astana city; 2) to assess the relationship between potential internet addiction and mood disorders, such as depression, anxiety, and stress; 3) to determine the relationship between internet addiction and insomnia; 4) to find the relationship between internet addiction and self-esteem, and 5) to identify the prevalence of internet addiction by purpose of time spent online such as, usage of internet for a study, entertainment, to play video games or for chatting and blogging.

Methods and Materials

Ethical considerations

The Research Ethics Committee of Nazarbayev University School of Medicine (NUSOM REC) approved the protocol of the study. Verbal informed consent was taken to assure the anonymity of the study from all the participants before they started filling the survey.

Survey procedure and sampling

The cross-sectional survey was carried out in randomly selected colleges and universities in the city of Astana during the period of December 2017– February 2018. Inclusion criteria were students between age 18-24, who agreed to participate in the study. Exclusion criteria were: age under 18 years and above 24.

Data collection

Data were collected using self-administered standardized anonymous questionnaires in two languages: Kazakh and Russian. Questionnaires consisted of demographic, family status, physical activity, social activity, academic performance sections and four widely validated scales, such as Internet Addiction Test (IAT) by Kimberly Young (Young, 1996), the Insomnia Severity Index (Bastien, 2001), the Depression Anxiety Stress Scales (DASS 21) (Henry & Crawford, 2005) and the Rosenberg Self Esteem Scale (RSES) (Petersen, 1965). It took 10-15 minutes to participants to fill the questionnaire.

Sample size

Sample size calculation was performed by using StatCalc in Epi Info 7.2.2.2. It was based on findings of an exploratory cross-sectional study among Chinese adolescents (CHEUNG & WONG, 2010). The study found, that out of the 719 participants, 60.4% were male and 39.6% were females; and 42.10 % of non-internet addicts were depressed while 58.9% of addicts were depressed. Furthermore, 51.70% of addicts were insomniacs and 26.30% of non-addicts had an

insomnia (CHEUNG & WONG, 2010). Based on these prevalences, the calculated sample size for our study was found to be 650. . After the data collection, our study sample was comprised of 413 participants. The questionnaires with incomplete responses were excluded, and overall 400 of questionnaires were included into the final analysis.

Measures

Socio-demographics

Questions about age, gender, year of study, marital status, number of siblings, monthly income of the family, family status, living place, social activity, physical activity, the reason using the internet, and questions about academic performance were asked in the socio-demographic section of the survey.

The Young Internet Addiction Test (YIAT)

The Young Internet Addiction Test (YIAT) is widely used and validated reliable tool to assess the internet addiction among adolescents and adults developed by Kimberly Young (Younes et al., 2016). A self-reporting scale consisted of 20 questions measuring firstly, seven questions about overall patterns of Internet usage, then 3 questions about participant's productivity at home, school, or work, next, three questions about their social behaviors, and finally seven questions about emotional connection to and response from using the internet. Students answer to the 20 YIAT items on a 6-point Likert measure, where zero means "does not apply" and five - "always". An overall score will vary between 0 and 100. Total scores range from 0 to 30 points are contemplated as a normal level of Internet usage; scores from 31 to 49 showed the incidence of a mild level of Internet addiction; 50 to 79 indicated a moderate level; and scores of 80 to 100 reflected the presence of a severe dependence on the Internet (Young & Abreu, 2010). Then, for multivariate logistic analysis, this variable was dichotomized and the cut-off point of 50 was used, with scores 0-49 indicating normal internet use, and scores equal to 50 or more - potential internet addiction (Younes et al., 2016).

Insomnia Severity Index Test

The Insomnia Severity Index Test (ISIT) is a 7-item, also self-report tool that assess the severity of the insomnia. It measures the problems with waking up in the morning, sleep onset, dissatisfaction with sleeping, maintenance of sleep, problems with daytime functioning and distress due to sleep difficulties and its perception. Similarly, it is a Likert scale from 0 to 5, where 0 means no problem and 4 indicates a very severe problem. The total score 28 was expounded as following: 0 to 7 normal; 8 to 14 mild; of 15 to 21 moderate; and from 22 to 28 severe insomnia (Gagnon, Belanger, Ivers & Morin, 2013).

Rosenberg Self Esteem Scale

A Rosenberg Self Esteem Scale (RSRS) measures the global self-worth by determining both positive and negative feelings about the self. It consists of 10 questions, where 4-point Likert scale format, ranging from strongly agree to strongly disagree is used. Items 1, 2, 4, 6 and 7 were rated as normal and for items 3, 5, 8, 9 and 10 opposite rating was used, that results in total score of 0 to 30. The cut-off point was as following: from 0 to 15 low self-esteem, and from 16 to 30 high self-esteem. (Petersen, 1965)

DASS21

This self-reported DASS 21 test evaluates the severity of behavioral and emotional symptoms that are correlated with depression, anxiety disorder and stress by providing a mild, moderate or severe result. There are 20 questions, where 1) Depression symptoms related items: 3, 5, 10, 13, 16, 17, 21; 2) Anxiety disorder related items: 2, 4, 7, 9, 15, 19, 20; and 3) Stress related items: 1, 6, 8, 11, 12, 14, and 18. All the questions are valued from zero to three, thus each of the axes gives partial scores from 0 to 18-24 depending on the number of questions assigned. The cut-off points are presented in Supplementary Table 1 (Appendix 1) (Henry & Crawford, 2005).

Statistical analysis

STATA 12 (STATA Corporation, USA, Texas, 2012) was used to conduct the analysis of the data. Univariate analysis was done to summarize the data and analyze the pattern. Pearson's Chi-square test and Fisher's exact test were conducted to do bivariate analysis. Internet addiction ($<50, \geq 50$) was dichotomized as the dependent variable and grouped as normal internet users and potential internet addiction. Variables that showed statistically significant ($p < 0.05$) associations with dependent variable of IA in bivariate analysis, were candidates for the multivariate model. Multivariate analysis was carried to control the impact of multiple explanatory variables presented concurrently and to find which of them has an independent effect on the internet addiction.

Since anxiety, stress and depression were highly correlated with each other, they were not entered in the same model. As a result, three multivariate logistic regression analyses were done with the independent variables such as gender, siblings, social activity, moderate and vigorous physical activities, ISI score, RSES score and the DAS scores for depression, anxiety and stress separately, as independent variables.

Results

Socio-demographic characteristics of the participants

Sociodemographic characteristics of the total sample of 400 students are presented in Table 1. The study population comprised of 178 (44.50%) male and 222 (55.50%) female, whose age ranged from 18 to 24 years with a mean of 19.02 ± 1.39 years. The majority of the participants were of Kazakh ethnicity (92.25%) and only 5.75% were representatives of other ethnicities. The data included 125 (31.25%) 1st year students, 132 (33%) 2nd year, 27(6.75%) and 116 (29%) 3rd and 4th year students, respectively.

Table 1. Socio-demographic characteristics of students in Astana city in 2018 (n=400).

Gender	Number	Percentage (%)
male	178	44.50
female	222	55.50
Age		
	Mean \pm SD	
	19.02 \pm 1.39	
Ethnicity		
Kazakh	369	92.25
Russian	8	2.00
Other	23	5.75
Year of Study		
1st	125	31.25
2nd	132	33.00
3rd	27	6.75
4th	116	29.00

96.75% of the participants were single and remaining 3.25% were married. The most the students came from families with 1-2 (38%) or 3-4 (33.25%) children. 33.75% of students came from families with a monthly income less than 100 000 tenge. Majority had parents, mother and father (73.75%). In addition, 35.50% of students lived in a house that was rented with their family.

Table 1. Socio-demographic characteristics of students in Astana city in 2018 (n=400) (continued)

Martial Status		
Single/Unmarried	387	96.75
Married	13	3.25
Siblings		
None	46	11.50
1-2	152	38.00
3-4	133	33.25
more than 5	69	17.25
Monthly Income (in tenge)		
Less than 100 000	135	33.75
100 000-199 000	126	31.50
200 000 - 299 000	62	15.50
More than 300 000	77	19.25
Family		
Living in Two parents family	295	73.75
Living in Single Mother family	63	15.75
Living in Single Father family	7	1.75
Living without parents	35	8.75
Living Place		
Family House	110	27.50
Renting with family	142	35.50
Dormitory	103	25.75
Live alone at personal home	45	11.25
Activity		
Regularly do any type of sports	102	25.50
Regularly sing and/or dance	75	18.75
Regularly attend other student clubs	61	15.25
Inactive	119	29.75
More than one	43	10.75
Moderate Physical Activity (non-exhausting exercises such as fast walking, baseball, tennis, slow bicycling, etc.)		
Low (0–1 times/ week)	134	33.50
Medium (2–4 times/week)	198	49.50
High (5 or more times/week)	68	17.00
Vigorous Physical Activity (exhausting exercises such as running, jogging, football, soccer, basketball, rollerblading, skateboarding, etc.)		
Low (0–1 times/ week)	205	51.25
Medium (2–4 times/week)	135	33.75
High (5 or more times/week)	60	15.00
Use Internet		
Yes	395	98.75
No	5	1.25
Main reason using the internet		
Study, doing homework	128	32.00
Watch video, entertainment	41	10.25
Playing video games	11	2.75
Social network, chatting, blogging	86	21.50
More than one reason	134	33.50
Performance		
Excellent	86	21.50
Good	225	56.25
Mediocre	74	18.50
Poor	14	3.50
Very poor	1	0.25

It was found out that 119 (29.75%) of 400 students do not attend any type of social activity, and also 49.50% (198) practice moderate physical activities, such as walking fast, playing tennis, slow bicycling and etc., 2-4 times per week; while 51.25% (205) do only once or even do not do vigorous physical activities per week. One third of the students indicated that they use internet for studying and doing homework (32%), whereas another third of students used it for more than one reason (33.50%).

Table 2. Prevalence of internet addiction, mood and sleep disorders among young adults in Astana city in 2018 (n=400).

	Number	Percentage (%)
IAT		
Normal	198	49.50
Mild	123	30.75
Moderate	55	13.75
Severe	24	6.00
Mean± SD		34.8725± 21.84099
Depression		
Normal	228	57.00
Mild	51	12.75
Moderate	88	22.00
Severe	22	5.50
Extremely Severe	11	2.75
Mean± SD		4.595± 3.857223
Anxiety		
Normal	200	50.00
Mild	60	15.00
Moderate	46	11.50
Severe	54	13.50
Extremely Severe	40	10.00
Mean± SD		4.4375± 3.778463
Stress		
Normal	296	74.00
Mild	56	14.00
Moderate	31	7.75
Severe	17	4.25
Mean± SD		5.125±3.656885
ISI		
Normal	203	50.75
Mild	149	37.25
Moderate	42	10.50
Severe	6	1.50
Mean± SD		8.275± 4.997681
RSES		
Low	118	29.50
High	282	70.50
Mean± SD		20.34±6.16

The average Internet addiction test score was found to be 34.87 ± 21.84 . The prevalence of extremely severe depression among students was 2.75% however, for anxiety it was revealed to be 10%. The percentage of students with severe stress was 4.25%. 1.50% of participants had severe insomnia whereas 29.50% had low self-esteem. The insomnia presented mean score of 8.27 ± 4.99 , self-esteem 20.34 ± 6.16 . Furthermore, the mean score for depression was 4.59 ± 3.86 , anxiety 4.44 ± 3.78 , and stress 5.13 ± 3.66 (Table 2).

Bivariate analysis

The potential internet addiction prevalence rate was found to be equal to 19.75% (Table 3). The bivariate analysis revealed that the prevalence of potential internet addiction was statistically significantly different between males and females with $p=0.000$. Males had higher prevalence (65.82%) than females (34.18%).

Table 3. Bivariate analysis of the relationships between potential internet addiction and students' characteristics: insomnia, depression, anxiety, and stress

	Normal n (%)	Potential Addicts n (%)	Pearson chi2 and P-value
Total 400	321 (80.25)	79 (19.75)	
ISI			Pearson chi2(3) = 6.3934 Pr = 0.094
Normal	164(51.09)	39(49.37)	
Mild	124 (38.63)	25 (31.65)	
Moderate	30 (9.35)	12 (15.19)	
Severe	3 (0.93)	3 (3.80)	
Depression			Pearson chi2(4) = 30.7900 Pr = 0.000
Normal	202 (62.93)	26 (32.91)	
Mild	41 (12.77)	10 (12.66)	
Moderate	59 (18.38)	29 (36.71)	
Severe	12 (3.74)	10 (12.66)	
Extremely Severe	7 (2.18)	4 (5.06)	
Anxiety			Pearson chi2(4) = 37.8831 Pr = 0.000
Normal	179 (55.76)	21 (26.58)	
Mild	51 (15.89)	9 (11.39)	
Moderate	35 (10.90)	11 (13.92)	
Severe	31 (9.66)	23 (29.11)	
Extremely Severe	25 (7.79)	15 (18.99)	
Stress			Pearson chi2(3) = 32.7516 Pr = 0.000
Normal	254 (79.13)	42 (53.16)	
Mild	42 (13.08)	14 (17.72)	
Moderate	18 (5.61)	13 (16.46)	
Severe	7 (2.18)	10 (12.66)	

Moreover, it was found that, DAS, number of siblings, social activity, moderate and vigorous physical activities had statistically significant relationship with potential internet addiction. However, surprisingly ISI and RSES were not significantly related to the internet addiction, as it was expected.

Specifically, higher rate of potential internet addiction, (3.80% vs 0.93%; p=0.000). The rate of students with internet addiction in depressed students was higher than among students without depression (show combined percentages of IA vs non-IA among moderate, severe and extremely severely depressed; p=0.000). The highest rate of potential internet addiction was detected in participants with extremely severe anxiety, 18.99%, while the normal users' percentage found to be 7.79%. Furthermore, of severely stressed students 12.66% had potential internet addiction, and 2.18% were normal users.

Table 4. Bivariate analysis of the relationships between potential internet addiction and students' characteristics: gender, siblings, activity, moderate and vigorous physical activity

	Normal n (%)	Potential Addicts n (%)	Pearson chi2 and P-value
Gender			Pearson chi2(1) = 18.1224 Pr = 0.000
Male	126 (39.25)	52 (65.82)	
Female	195 (60.75)	27 (34.18)	
Siblings			Pearson chi2(3) = 18.5248 Pr = 0.000
None	26 (8.10)	20 (25.32)	
1-2	127 (39.56)	25 (31.65)	
3-4	110 (34.37)	23 (29.11)	
more than 5	58 (18.07)	11 (13.92)	
Activity			Pearson chi2(4) = 15.3108 Pr = 0.004
Regularly do any type of sports	89 (27.73)	13 (16.46)	
Regularly sing and/or dance	63 (19.63)	12 (15.19)	
Regularly attend other student clubs	39 (12.15)	22 (27.85)	
Inactive	93 (28.97)	26 (32.91)	
More than one	37 (11.53)	6 (7.59)	
Moderate Physical Activity (non-exhausting exercises such as fast walking, baseball, tennis, slow bicycling, etc.)			Pearson chi2(2) = 43.7445 Pr = 0.000
Low (0-1 times/ week)	112 (34.98)	22 (27.85)	
Medium (2-4 times/week)	174 (54.21)	24 (30.38)	
High (5 or more times/week)	35 (10.90)	33 (41.77)	
Vigorous Physical Activity (exhausting exercises such as running, jogging, football, soccer, basketball, rollerblading, skateboarding, etc.)			Pearson chi2(2) = 61.0492 Pr = 0.000
Low (0-1 times/ week)	180 (56.07)	25 (31.65)	
Medium (2-4 times/week)	115 (35.83)	20 (25.32)	
High (5 or more times/week)	26 (8.10)	34 (43.04)	

Number of siblings was also a predictor of internet addiction among students. The higher rate of internet addiction was found among students who had no siblings (25.32% vs 8.10), compared to those who had more than 5 siblings (13.92 vs 18.07), $p=0.000$. Next, the students who attend to more than one social activity in a week had a low rate of potential internet addiction, which is 7.59%, while socially inactive students had higher percentage, 32.91%. Remarkably, there was a statistically significant association between internet addiction and moderate physical activity. Nonetheless, participants who do moderate sports 5 or more times per week had greater rate of Internet addiction (41.77%) than ones who do only once or even do not do moderate activity per week (27.85%), $p=0.000$. Similarly, high vigorously physically active students were more potential addicts, than low physically active students were (43.04% vs 32.65%; $p=0.000$) (Table 4).

Finally, variables that were statistically significant were shown in the Table 3 and 4. These variables were included to the multivariate logistic regression analysis in the next step.

The multivariate logistic regression model included gender, number of siblings, social activity, moderate and vigorous physical activity, insomnia, depression, anxiety and stress as predictor variables that were statistically significant in the previous bivariate analysis, and the internet addiction as a dependent variable. Moreover, the predictors were categorized. As it was found that depression, stress and anxiety were highly correlated, three different, separate models were done.

Table 5. Internet addiction and Depression, multivariate logistic regression analysis

Variables	Adj. OR	P-value	95% CI
Gender: Female	0.291	0.001	0.137 - 0.616
Siblings: 1 or 2	0.363	0.050	0.132 - 0.998
Vigorous Physical Activity: High	11.382	0.000	3.586 - 36.124
Activity: Inactive	5.347	0.002	1.891- 15.118
Depression			
Mild	4.156	0.007	1.474 - 11.721
Moderate	8.513	0.000	3.699 - 19.591
Severe	13.862	0.000	4.369 - 43.978
Extremely Severe	27.919	0.000	5.957 - 130.851

The table 5 demonstrates the first model with depression variable. Once the explicative variables were controlled for in multivariate analysis, the gender still remained to be the statistically significant predictor of the internet addiction (odds ratio =0.29, p=0.001). While, only having 1 or 2 siblings remained to be significant predictor (odds ratio=0.36, p= 0.050). Similarly, being inactive become also a statistically significant predictor of being pathological addict (odds ratio= 5.34, p=0.002). However, moderate physical activity become no longer significantly associated (p>0.05), whereas high vigorous physical activity remained to be the predictor with high odds ratio (odds ratio=11.38, p=0.000). Lastly, the depression also found to be statistically significantly associated

with the internet addiction, where the extremely severe depression had the highest odds ratio, 27.92 with a $p=0.000$.

Table 6. Internet addiction and Anxiety, multivariate logistic regression analysis

Variables	Adj.OR	P-value	95% CI
Gender: Female	0.283	0.002	0.129 - 0.617
Siblings: 1 or 2	0.353	0.044	0.128 - 0.971
Vigorous Physical Activity: High	16.124	0.000	4.743 - 54.815
Activity: Inactive	5.319	0.002	1.868 - 15.147
Anxiety			
Mild	3.600	0.019	1.238 - 10.463
Moderate	6.828	0.001	2.199 - 21.202
Severe	14.134	0.000	5.439 - 36.727
Extremely Severe	21.290	0.000	7.412 - 61.151

The model done with anxiety variable showed the similar results as depression. First of all, the gender: female also was a significant predictor of internet addiction with odds ratio of 0.28 and $p=0.002$, less than male's odds ratio. Next, the number of siblings that are between 1 and 2, persisted to be a predictor (odds ratio=0.35, $p=0.044$) that was less than not having any siblings. Social inactivity also remained to be the statistically significant variable on internet addiction (odds ratio=5.32, $p=0.002$). Moderate physical activity became likewise in previous model, no more significantly associated ($p>0.05$). Conversely, vigorous physical activity found to be significantly associated ($p<0.05$). Finally, the anxiety found to be a statistically significant associated with internet addiction, and alike depression, the highest odds ratio resulted by extremely severe anxiety (odds ratio=21.29, $p=0.000$) (Table 6).

Table 7. Internet addiction and Stress, multivariate logistic regression analysis

Variables	Adj.OR	P-value	95% CI
Gender: Female	0.338	0.004	0.161 - 0.711
Moderate Physical Activity: Medium	0.406	0.040	0.172 - 0.959
Vigorous Physical Activity: High	19.979	0.000	6.000 - 66.530
Activity: Inactive	5.449	0.001	1.968 - 15.081
Stress			
Mild	4.053	0.002	1.693 - 9.698
Moderate	13.352	0.001	4.867 - 36.631
Severe	15.231	0.000	7.088 - 83.04

Finally, a model with a stress variable demonstrated different results (Table 7). Firstly, there was no longer association between number of siblings and potential internet addiction, due to the high p-value. The inactive social activity remained the same, meaning it also significantly associated in this model (odds ratio= 5.45, p=0.001). Surprisingly, moderate activity 2-3 times per week became a statistically significant predictor of pathological internet addiction (odds ratio=0.406, p-value=0.040). Vigorous physical activity stayed the same (p<0.05), with a high level of activity with high odds ratio (odds ratio =19.98). As well as, all levels of stress became also statistically significantly associated with pathological internet addiction with p value less than 0.05.

Discussion:

It is important to study internet addiction among the university and college students, observing the percussion growth in internet use in this subset of population, especially in developing countries, as Kazakhstan. University and college students are a predominantly vulnerable group because of the time they spend on the internet. This study is an initial step toward understanding the magnitude of pathological internet addiction among students in Kazakhstan.

The main purpose of this study was to find the prevalence of pathological internet addiction among university and college students in Astana city, and to evaluate the association of IA with students' characteristics, such as socio-demographics, social and physical activeness, and with mood disorders (depression, anxiety, and stress), insomnia and their self-esteem.

It was found out, that the prevalence of pathological IA among students is 19.75%. This rate is higher than the rate of entire Asian countries, which was 7.1%, and West and North Europe countries 2.6% (Uddin et al., 2016). However, this finding is similar to the prevalence reported by research of Younes et al. ,16.8% at the university in USA (Younes et al., 2016). This high rate raises concern to address pathological internet addiction as a substantial emerging mental health issue among young adults. We found that 49.50% students were normal users while 30.75% cases have mild addiction, 13.75% students have moderate addiction and 6.00% of them have severe addiction to internet. Moderate and severe levels were combined and accounted as a pathological internet addicts.

In this study, males were observed to be more addicted than females, 65.82% and 34.18% respectively. A study among professional students in India, and other two more studies, reported the similar result (Sharma, Sahu, Kasar & Sharma, 2014; Anusha Prabhakaran, Patel, Ganjiwale & Nimbalkar, 2016; Grover, Basu & Chakraborty, 2010). This difference is explained by the fact that males are more likely to use internet in online games, gambling and watching pornography, that have all been associated with pathological internet addiction (Morahan-Martin & Schumacher, 2000). Nonetheless, in this study 32% indicated that they use internet for studying and doing

homework, whereas 33.50% use for more than one reason, such as entertainment, blogging and chatting, and studying. On the other hand, other studies did not find any difference between genders (Vigna-Taglianti et al., 2017).

The mean age of the participants was 19.02 ± 1.39 years, and there was no statistically significant in internet addiction between different age groups. One of the studies done by Mashhor Al-hantoushi et al. also stated no difference between age groups, with a mean age of 17 years (Alhantoushi & Alabdullateef, 2014).

Equally important, there were found many factors statistically significantly associated with potential internet addiction. Regarding the number of siblings, 31.65% of students had 1-2 siblings and were addicts. The multivariate logistic regression showed that the odds ratio of it is less than one in all three models, which means that with an increase of number of siblings the internet addiction decreases. This can be also seen from the bivariate analysis, where the rate decreases from 31.65% (1-2 siblings) to 13.92% (more than 5 siblings). One of the Chinese research reported that being only child increases the likelihood of developing an internet addiction (He et al., 2016). In a like manner, social activeness became a significant predictor of internet addiction. 29.75% of students indicated themselves as socially inactive, and after conducting multivariate analysis, it was found that the increase of inactiveness accrete internet addition. This finding was consistent with the an European findings, where a groups with highest rates in Compulsive internet use scale scores and time spent in the internet had the lowest social participation (Rumpf et al., 2013). Besides social activity, physical activeness also found to be the statistical predictor of pathological internet addiction. In all three model, high vigorous physical activity remained to be statistically significant, which mean that increase of physical activity can increase the pathological internet addiction. This happens, because after tiring exercise, students relax by surfing on the internet, developing addiction. Nonetheless, researches showed that Internet addiction was higher in students lacking physical activity as compared to those with regular physical activity (Khan, Shabbir & Rajput, 2017).

The prevalence of participants suffering from severe insomnia found to be 1.50%, and there is a statistically significant association between potential internet addiction and insomnia in bivariate analysis. The similar finding was stated by the research done by Younes et al. (Younes et al., 2016). However, the prevalence is less than other findings (Choueiry et al., 2016; Jiang et al., 2015). However, the insomnia became no more predictor of internet addiction after controlling the variables in multivariate logistic regression.

Furthermore, multivariate logistic regression demonstrated that depression, anxiety and stress (DAS) are statistically significant predictors of potential internet addiction. In addition, the odds ratios of DAS were more than one, which means that more the level of DAS more the person becomes addicted. A systematic review done by Carli et al., found that among 20 studies 75% reported there were significant positive correlations of pathological internet addiction with depression, and 57% with anxiety (Carli et al., 2013).

Lastly, the prevalence of students with low self-esteem was found to be 29.50%. However, there was no statistically significant association between self-esteem and internet addiction, thus it was not included as a predictor variable.

This research was one of the first studies done about IA and its risk factors in Kazakhstan, which can give a start to further investigations. The study was conducted using the validated self-reported questionnaires, which reflects the interviewee's own perspective, making it more suitable for reporting subjective disorders. However, this may also cause a recall bias. Moreover, this was a cross-sectional research, and therefore our findings should be interpreted cautiously in relation to causality of reported associations. . Further longitudinal investigations needed to explore the direction of the association between mood disorders and internet addiction. Other potential risk factors that we were not able to account for, should be investigated in future studies with a bigger sample size.

Conclusion

With an increase of internet usage, the internet addiction issues among young adults also emerging rapidly in a world. Due to the high prevalence rate of pathological internet addiction and its associations with mood and other disorders, which are correspondingly correlated with suicide, interventions for early detection and prevention of mental disorders among adolescents and young adults need to be developed.

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APPENDICES

Appendix A. The cut-off points of DASS21

Level/Disorder	Depression	Anxiety	Stress
Normal	0 - 4	0 - 3	0 - 7
Mild	5 - 6	4 - 5	8 - 9
Moderate	7 - 10	6 - 7	10 - 12
Severe	11 - 13	8 - 9	13 - 16
Extremely severe	≥ 14	≥ 10	≥ 17

Appendix B. Survey questions

(English version) Questionnaire

Demographic questions:

1. What is your age? (please write in)

2. What is your gender?

1. Male
2. Female

3. What is your ethnicity?

1. Kazakh
2. Russian
3. Other (Please, specify) _____

4. Year of study?

1. 1st year
2. 2nd year
3. 3rd year
4. 4th year

5. Marital status

1. Married
2. Single
3. Divorced

6. How many siblings do you have?

1. none
2. 1-2
3. 3-4
4. more than 5

7. What is your average family monthly income (in tenge)?

1. Less than 100 000
2. 100 000 – 199 000
3. 200 000 – 299 000
4. 300 000 – 399 000
5. 400 000 – 499 000
6. 500 000 and above

8. Family background situation:

1. Living with two married parents
2. Living with mother only
3. Living with father only
4. Living with no parents

9. Living place

1. Family home
2. Rent
3. Dormitory
4. Personal home

10. During your leisure time what kind of social activities do attend?

1. Regularly do any type of sports

2. Regularly sing and/or dance
3. Regularly attend other student clubs (ex. debate club, cooking club etc.)
4. Regularly attend to out of university activities (volunteering, meetings)
5. Inactive

11. How often do you do Physical activity?

Type of Physical activity/Times Per Week	Low (0–1 times/week)	Medium (2–4 times/week)	High (5 or more times/week)
Moderate Physical Activity (non-exhausting exercises such as fast walking, baseball, tennis, slow bicycling, etc.)	1	2	3
Vigorous Physical Activity (exhausting exercises such as running, jogging, football, soccer, basketball, rollerblading,skateboarding, etc.)	1	2	3

12. Do you use Internet?

1. Yes
2. No (If ‘No’, please go to the question # 15)

13. Main reason using the internet

1. Study, doing homework
2. Watch video, entertainment
3. Playing video games
4. Social network, chatting,blogging

14. How well do you believe you are performing at college?

1. Excellent
2. Good
3. Mediocre
4. Poor
5. Very poor

To begin, answer the following questions from 15-34 by using this scale:

0 Does not apply

- 1 Rarely
- 2 Occasionally
- 3 Frequently
- 4 Often
- 5 Always

	Question	Scale					
		0	1	2	3	4	5
15	How often do you find that you stay online longer than you intended?	0	1	2	3	4	5
16	How often do you neglect household chores to spend more time on-line?	0	1	2	3	4	5
17	How often do you prefer the excitement of the Internet to intimacy with your partner?	0	1	2	3	4	5

18	How often do you form new relationships with fellow online users?	0	1	2	3	4	5
19	How often do others in your life complain to you about the amount of time you spend online?	0	1	2	3	4	5
20	How often do your grades or school work suffers because of the amount of time you spend online?	0	1	2	3	4	5
21	How often do you check your email before something else that you need to do?	0	1	2	3	4	5
22	How often does your job performance or productivity suffer because of the Internet?	0	1	2	3	4	5
23	How often do you become defensive or secretive when anyone asks you what you do online?	0	1	2	3	4	5
24	How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?	0	1	2	3	4	5
25	How often do you find yourself anticipating when you will go online again?	0	1	2	3	4	5
26	How often do you fear that life without the Internet would be boring, empty, and joyless?	0	1	2	3	4	5
27	How often do you snap, yell, or act annoyed if someone bothers you while you are on-line?	0	1	2	3	4	5
28	How often do you lose sleep due to late-night log-ins?	0	1	2	3	4	5
29	How often do you feel preoccupied with the Internet when offline, or fantasize about being on-line?	0	1	2	3	4	5
30	How often do you find yourself saying “just a few more minutes” when online?	0	1	2	3	4	5
31	How often do you try to cut down the amount of time you spend online and fail?	0	1	2	3	4	5
32	How often do you try to hide how long you’ve been on-line?	0	1	2	3	4	5
33	How often do you choose to spend more time online over going out with others?	0	1	2	3	4	5
34	How often do you feel depressed, moody or nervous when you are offline, which goes away once you are back online?	0	1	2	3	4	5

For questions 35-54, please rate your agreement with following statements by using this scale:

0 Did not apply to me at all

1 Applied to me to some degree, or some of the time

2 Applied to me to a considerable degree or a good part of time

3 Applied to me very much or most of the time

	Question	Scale			
35	I found it hard to wind down	0	1	2	3
36	I was aware of dryness of my mouth	0	1	2	3
37	I couldn't seem to experience any positive feeling at all	0	1	2	3
38	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3

39	I found it difficult to work up the initiative to do things	0	1	2	3
40	I tended to overreact to situations	0	1	2	3
41	I experienced trembling (e.g. in the hands)	0	1	2	3
42	I felt that I was using a lot of nervous energy	0	1	2	3
43	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
44	I felt that I had nothing to look forward to	0	1	2	3
45	I found myself getting agitated	0	1	2	3
46	I found it difficult to relax	0	1	2	3
47	I felt downhearted and blue	0	1	2	3
48	I felt I was close to panic	0	1	2	3
49	I was unable to become enthusiastic about anything	0	1	2	3
50	I felt I wasn't worth much as a person	0	1	2	3
51	I felt that I was rather touchy	0	1	2	3
52	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
53	I felt scared without any good reason	0	1	2	3
54	I felt that life was meaningless	0	1	2	3

For questions 55-57, please rate your agreement with following statements:

	None	Mild	Moderate	Severe	Very Severe
55. Difficulty falling asleep	0	1	2	3	4
56. Difficulty staying asleep	0	1	2	3	4
57. Problem waking up too early	0	1	2	3	4

58. How Satisfied/Dissatisfied are you with your sleep pattern?

0. Very Satisfied
1. Satisfied
2. Moderately Satisfied
3. Dissatisfied
4. Very Dissatisfied

59. How Noticeable to others do you think your sleep problem is in terms of impairing the quality of your life?

0. Not at all Noticeable
1. A Little
2. Somewhat
3. Much
4. Very Much Noticeable

60. How Worried/Distressed are you about your current sleep problem?

0. Not at all Worried

1. A Little
2. Somewhat
3. Much
4. Very Much Worried

61. To what extent do you consider your sleep problem to interfere with your daily functioning (e.g. daytime fatigue, mood, ability to function at work/daily chores, concentration, memory, mood, etc.)?

0. Not at all Interfering
1. A Little
2. Somewhat
3. Much
4. Very Much Interfering

For questions 35-54, please rate your agreement with following statements by using this scale:

- 1.Strongly disagree
- 2.Disagree
- 3.Agree
- 4.Strongly agree from

	Question	Scale			
62	On the whole I am satisfied with myself.	1	2	3	4
63	At times I think I'm no good at all.	1	2	3	4
64	I think that I have a number of good qualities.	1	2	3	4
65	I am able to do things as well as most other people	1	2	3	4
66	I feel I do not have much to be proud of.	1	2	3	4
67	I certainly feel useless at times.	1	2	3	4
68	I feel that I am a person of worth, at least on an eq with others.	1	2	3	4
69	I wish I could have more respect for myself.	1	2	3	4
70	All in all, I am inclined to feel that I am a failure.	1	2	3	4
71	I take a positive attitude toward myself.	1	2	3	4

(Russian version)

Анкета

1. Сколько вам лет? (напишите)

2. Какого Вы пола?

1. мужской
2. женский

3. Каково ваше этническое происхождение?

1. казах/казашка
2. русский/русская
3. другое (пожалуйста, уточните)_____

4. Год обучения?

1. 1-ый год
2. 2-ой год
3. 3-ий год
4. 4-ый год

5. Семейное положение

1. женат/замужем
2. не женат/не замужем
3. в разводе

6. Сколько у Вас родных братьев и сестер?

1. нет
2. 1-2
3. 3-4
4. больше 5

7. Каков средний ежемесячный доход Вашей семьи (в тенге)?

1. меньше 100 000
2. 100 000 – 199 000
3. 200 000 – 299 000
4. 300 000 – 399 000
5. 400 000 – 499 000
6. 500 000 и более

8. Семейная ситуация:

1. Живу с обеими родителями
2. Живу с матерью
3. Живу с отцом
4. Живу без родителей

9. Ваше нынешнее место жительства

1. семейный дом
2. снимаю
3. общежитие
4. собственный дом

10. Какими видами социальной активности Вы занимаетесь во время досуга?

1. регулярно занимаюсь спортом
2. регулярно пою и/или танцую
3. регулярно посещаю студенческие клубы (например, дискуссионный клуб, кулинарный клуб и т.д.)
4. не активен/не активна
5. Больше одного. Укажите _____

11-12. Как часто Вы занимаетесь физическими упражнениями?

Вид физической активности/Количество раз в неделю	Низкая (0–1 раз/неделя)	Средняя (2–4 раз/неделя)	Высокая (5 или больше раз/неделя)
11. Умеренная физическая активность (ненапрягающие упражнения, такие как быстрая ходьба, бейсбол, теннис, медленное катание на велосипеде и т. д.)	1	2	3
12. Тяжелая физическая активность (утомительные упражнения, такие как бег, бег трусцой, футбол, баскетбол, катание на роликах, скейтбординг и т. д.)	1	2	3

13. Вы пользуетесь Интернетом?

1. Да
2. Нет (Если выбрали вариант “Нет”, продолжайте с вопроса №15)

14. Основная причина использования Интернета

1. Исследование, выполнение домашних заданий
2. Смотрю видео, развлечения
3. Играю видеоигры
4. Социальная сеть, общение в чате, блоги

15. По Вашему мнению, какая у Вас успеваемость ?

1. Отличная
2. Хорошая
3. Удовлетворительная
4. Плохая
5. Очень плохая

Ответьте на следующие вопросы от 16-35, используя эту шкалу:

- 0 Не применимо
- 1 Редко
- 2 Время от времени
- 3 Зачастую
- 4 Часто
- 5 Всегда

	Вопрос	Шкала					
		0	1	2	3	4	5
16	Как часто Вы находите, что Вы остаетесь в сети дольше, чем планировали?	0	1	2	3	4	5
17	Как часто Вы пренебрегаете домашними делами, чтобы потратить больше времени в режиме онлайн?	0	1	2	3	4	5
18	Как часто Вы предпочитаете волнение общения в Интернете близости с вашим партнером?	0	1	2	3	4	5
19	Как часто вы формируете новые отношения с другими онлайн-пользователями?	0	1	2	3	4	5

20	Как часто другие в Вашей жизни жалуются на Вас о том, сколько времени Вы проводите в Интернете?	0	1	2	3	4	5
21	Как часто Ваши оценки или работа страдают из-за того, сколько времени Вы проводите в Интернете?	0	1	2	3	4	5
22	Как часто Вы проверяете свою электронную почту перед тем, что Вам нужно сделать?	0	1	2	3	4	5
23	Как часто Ваша работа или производительность страдают из-за Интернета?	0	1	2	3	4	5
24	Как часто Вы становитесь защитным или скрытным, когда кто-нибудь спрашивает вас, что Вы делаете в Интернете?	0	1	2	3	4	5
25	Как часто Вы блокируете тревожные мысли о своей жизни успокаивающими мыслями в Интернете?	0	1	2	3	4	5
26	Как часто Вы ожидаете, когда снова выйдете в Интернет?	0	1	2	3	4	5
27	Как часто Вы боитесь, что жизнь без Интернета будет скучной, пустой и безрадостной?	0	1	2	3	4	5
28	Как часто Вы срываетесь, кричите или раздражаетесь, если кто-то беспокоит Вас, когда Вы в онлайн?	0	1	2	3	4	5
29	Как часто Вы теряете сон из-за поздних ночных входов в Интернет?	0	1	2	3	4	5
30	Как часто Вы чувствуете себя озабоченным Интернетом в оффлайн режиме или фантазируете о том, чтобы быть в режиме онлайн?	0	1	2	3	4	5
31	Как часто Вы говорите «еще несколько минут» когда Вы онлайн?	0	1	2	3	4	5
32	Как часто Вы пытаетесь сократить количество времени, которое Вы проводите в Интернете и это заканчивается провалом?	0	1	2	3	4	5
33	Как часто вы скрываете сколько времени вы были онлайн?	0	1	2	3	4	5
34	Как часто Вы выбираете провести больше времени в Интернете, чем выйти из дома?	0	1	2	3	4	5
35	Как часто Вы чувствуете себя подавленным, капризным или нервным, когда находитесь в оффлайн режиме и это чувство уходит, когда Вы снова в сети?	0	1	2	3	4	5

По вопросам 36-55, пожалуйста, оцените свое согласие со следующими заявлениями, используя эту шкалу:

0 Не применимо ко мне вообще

1 Применимо ко мне в какой-то степени, или иногда

2 Применимо ко мне в значительной степени или большую часть времени

3 Применимо ко мне все время

	Вопрос	Шкала			
		0	1	2	3
36	Мне трудно расслабиться после трудной работы	0	1	2	3
37	Я чувствую сухость во рту	0	1	2	3
38	У меня не бывает никакого хорошего самочувствия	0	1	2	3

39	У меня возникает затрудненное дыхание (например, чрезмерно быстрое дыхание, одышка при отсутствии физических нагрузок)	0	1	2	3
40	Мне трудно начать работать над чем-то	0	1	2	3
41	Я имею тенденцию слишком остро реагировать на ситуации	0	1	2	3
42	Я испытываю дрожь (например, в руках)	0	1	2	3
43	Я чувствую, что я использую много нервной энергии	0	1	2	3
44	Меня беспокоят ситуации, в которых я могу впасть в панику и почувствовать себя дураком	0	1	2	3
45	Я чувствую, что у меня нет хороших ожиданий	0	1	2	3
46	Я чувствую себя взволнованным	0	1	2	3
47	Мне трудно расслабиться	0	1	2	3
48	Я чувствую смущение и грусть	0	1	2	3
49	Я чувствую, что я близок к панике	0	1	2	3
50	Я не могу быть в восторге от чего-либо	0	1	2	3
51	Я чувствую, что у меня нет ценности, как человека	0	1	2	3
52	Я чувствую, что я был довольно обидчивым	0	1	2	3
53	Я чувствую биение своего сердца в отсутствие физических нагрузок (например, учащение сердечного ритма, сердечную недостаточность)	0	1	2	3
54	Я пугаюсь без веских оснований	0	1	2	3
55	Я чувствую, что жизнь бессмысленна	0	1	2	3

По вопросам 56-58, пожалуйста, оцените свое согласие со следующими заявлениями:

	Нет	Умеренная	Серьезная	Тяжелая	Очень тяжелая
56. Сложность засыпания	0	1	2	3	4
57. Бессонница	0	1	2	3	4
58. Проблема просыпаться слишком рано	0	1	2	3	4

59. Как Вы удовлетворены / неудовлетворены своим сном?

0. Очень доволен
1. Удовлетворен
2. Умеренно удовлетворен
3. Недоволен
4. Очень недоволен

60. Как Вы считаете, насколько заметна другим Ваша проблема со сном, связанная с ухудшением качества вашей жизни?

- 0. Совсем не заметна
- 1. Немного
- 2. В некотором роде
- 3. Значительно
- 4. Очень заметна

61. Насколько Вы беспокоитесь / страдаете из-за проблем со сном?

- 0. Совсем не беспокоюсь
- 1. Немного
- 2. В некотором роде
- 3. Значительно
- 4. Очень беспокоюсь

62. В какой степени Вы считаете, что ваша проблема со сном препятствует ежедневному функционированию (например, дневная усталость, перепады настроения, неспособность работать / выполнять ежедневные занятия, концентрация, память и т. д.)?

- 1. Совсем не препятствует
- 2. Немного
- 3. В некотором роде
- 4. Значительно
- 5. Очень препятствует

По вопросам 63-72, пожалуйста, оцените свое согласие со следующими заявлениями, используя эту шкалу:

- 1. Сильно не согласен
- 2. Не согласен
- 3. Согласен
- 4. Очень согласен

	Вопрос	Шкала			
		1	2	3	4
63	В целом я доволен собой.	1	2	3	4
64	Время от времени я думаю, что я вообще ни на что не годен.	1	2	3	4
65	Я думаю, что у меня есть ряд хороших качеств.	1	2	3	4
66	Я могу делать вещи так же хорошо, как и большинство других людей.	1	2	3	4
67	Я чувствую, что мне нечем гордиться.	1	2	3	4
68	Иногда я чувствую себя бесполезным.	1	2	3	4
69	Я чувствую, что я достойный человек, по крайней мере, на равне с другими.	1	2	3	4
70	Хотелось бы, чтобы я мог больше уважать себя.	1	2	3	4
71	В общем, я склонен чувствовать, что я неудачник.	1	2	3	4
72	Я отношусь к себе позитивно.	1	2	3	4

(Kazakh version)
Сауалнама

1. Жасыңыз нешеде? (көрсетіңіз)

2. Жынысыңыз?

1. Ер
2. Әйел

3. Ұлтыңызды көрсетіңіз?

1. Қазақ
2. Орыс
3. Басқа (көрсетіңіз) _____

4. Оқу жылыңыз?

1. 1 курс
2. 2 курс
3. 3 курс
4. 4 курс

5. Отбасы жағдайы

1. Үйленген/ Тұрмыс құрған
2. Үйленбеген/ Тұрмыс құрмаған
3. Ажырасқан

6. Отбасыңызда қанша ағайындысыз?

1. жоқ
2. 1-2
3. 3-4
4. 5 немесе жоғары

7. Отбасыңыздың орташа айлық табыс мөлшері (теңге)?

1. 100 000-нан төмен
2. 100 000 – 199 000
3. 200 000 – 299 000
4. 300 000 – 399 000
5. 400 000 – 499 000
6. 500 000 және жоғары

8. Отбасылық-тұрмыстық жағдай:

1. Ата-анамен тұрамын
2. Анаммен ғана тұрамын
3. Әкеммен ғана тұрамын
4. Ата-анасыз тұрамын

9. Өзіңіздің қазіргі тұру орныңыз

1. Отбасылық үй
2. Жалға алу
3. Жатақхана
4. Жеке үй

10. Бос уақытыңызда қандай қоғамдық іс-шараларға қатысасыз?

1. Жүйелі түрде спорттың кез келген түрімен айналысамын
2. Жүйелі түрде өлең айтамын және/немесе билеймін
3. Жүйелі түрде басқа студенттік ұйымдарға қатысамын (мысалы, дебат ұйымы, аспаздық ұйымы)
4. Белсенді емеспін
5. Біреуден артық іс шараларға қатысамын. Көрсетіңіз _____

11-12. Сіз қаншалықты жиі физикалық белсендісіз?

Физикалық белсенділік түрі/Аптасына	Төмен (аптасына /0-1 рет)	Орташа (аптасына/2–4 рет)	Жоғары (аптасына /5 немесе одан да көп)
11.Орташа физикалық белсенділік (жылдам серуендеу, бейсбол, теннис, баяу велосипедпен жүру және т.б.)	1	2	3
12. Қуатты физикалық белсенділік (жүгіру, футбол, баскетбол, ролик тебу, скейтбординг және т.б.)	1	2	3

13. Ғаламторды (интернет) қолданасыз ба?

1. Ия
2. Жоқ (Егерде «Жоқ» жауабын таңдасаңыз , № 15 сұрақтан жалғастырыңыз)

14. Ғаламтор қолдануда негізгі мақсатыңыз

1. Оқу, үй жұмысын жасау
2. Бейнероликтер көру, ойын-сауық
3. Бейне ойындар ойнау
4. Әлеуметтік желі, сөйлесу, блог жазу

15. Сіздің оқу орныңызда өзіңізді қаншалықты жақсы деңгейде көрсетудемін деген ойдасыз?

1. Өте жақсы
2. Жақсы
3. Қанағаттанарлық
4. Қанағаттанарлықсыз
5. Нашар

16-35 сұрақтар үшін, өзіңіздің келісіміңізді келесі өлшемдерді қолдана отырып бағалаңыз

- 0 Қолданылмайды
 1 Сирек
 2 Арасында
 3 Кейде
 4 Жиі
 5 Әрқашан

	Сұрақ	Өлшем					
		0	1	2	3	4	5
16	Сіз жоспарланғаннан да ұзақ уақыт бойы желіде отыратыныңызды қаншалықты жиі кездестіресіз?	0	1	2	3	4	5
17	Сіз онлайн режимінде көбірек уақыт өткізу үшін үй шаруаларын қаншалықты жиі кейінге қалдырасыз?	0	1	2	3	4	5
18	Сіз ғаламтор желісінде өз серіктесіңізбен сөйлесу кезінде қобалжуды сезінуді қаншалықты жиі ұнатасыз?	0	1	2	3	4	5
19	Сіз басқа онлайн пайдаланушылармен жаңа қарым-қатынастарды қаншалықты жиі жасайсыз?	0	1	2	3	4	5

20	Өміріңіздегі адамдар сіздің ғаламтор желісіне қанша уақыт жұмсайтынығыз туралы қаншалықты жиі шағымданады?	0	1	2	3	4	5
21	Ғаламтор желісінде өткізген уақытыңыз сіздің бағаларыңызға немесе жұмысыңызға қаншалықты жиі кедергі жасайды?	0	1	2	3	4	5
22	Сіз электрондық поштаңызды басқа нәрседен бұрын қаншалықты жиі тексересіз?	0	1	2	3	4	5
23	Сіздің жұмысыңыздың сапасы немесе өнімділігі ғаламтор әсерінен қаншалықты жиі төмендейді?	0	1	2	3	4	5
24	Ғаламторда не істеп жатқаныңызды сұраса, сіз қаншалықты жиі құпиялы боласыз?	0	1	2	3	4	5
25	Сіз ғаламтор желісіндегі тыныштандыратын ойлармен өміріңіздегі мазалайтын ойларды қаншалықты жиі бұғаттайсыз?	0	1	2	3	4	5
26	Қайтадан ғаламтор желісіне кіруді қаншалықты жиі күтесіз?	0	1	2	3	4	5
27	Ғаламторсыз өмірдің қызықсыз, бос және қайғылы болуы қаншалықты жиі қорқыныш сезімін тудырады?	0	1	2	3	4	5
28	Сіздің он-лайн кезіңізде біреу сізді алаңдатса, қаншалықты жиі жиіркеніп, айқайлайсыз немесе тітіркенесіз?	0	1	2	3	4	5
29	Сіз кешкі, түнгі онлайн режимде ғаламторда отырғандықтан қаншалықты жиі ұйықтамайсыз?	0	1	2	3	4	5
30	Сіз желіден тыс кезіңізде, Ғаламтор желісінде өзіңізді жұмыс бастымын деп немесе онлайн режимінде болу туралы қаншалықты жиі қиялдайсыз?	0	1	2	3	4	5
31	Онлайн режимінде сіз өзіңізге қаншалықты жиі «бірнеше минут отыра тұрайын» деп айтасыз?	0	1	2	3	4	5
32	Ғаламторда өткізген уақытты қаншалықты жиі қысқартуға тырыстыңыз және ол сәтсіздікке ұшырадыңыз?	0	1	2	3	4	5
33	Онлайн режимінде болғаныңызды қаншалықты жиі жасырасыз?	0	1	2	3	4	5
34	Басқа адамдармен уақыт өткізудің орнына, ғаламторды қолдану, онлайн режимін қаншалықты жиі таңдайсыз?	0	1	2	3	4	5
35	Оффлайн режимінде болғанда қаншалықты жиі депрессияны немесе көңіл-күйсіздікті сезінесіз, бірақ онлайн болған кезде барлығы орнына келеді?	0	1	2	3	4	5

36-56 сұрақтар үшін, өзіңіздің келісіміңізді келесі өлшемдерді қолдана отырып бағалаңыз:

0 Маған мүлдем қолданылмайды

1 Маған белгілі бір дәрежеде немесе кейде қолданылады

2 Маған белгілі бір дәрежеде немесе көп уақыттарда қолданылады

3 Маған маған барлық уақытта қолданылады

Сұрақ		Өлшем			
36	Маған демалу, шаршағанды басу қиынға түседі	0	1	2	3
37	Менің аузымда құрғақтылық сезіледі	0	1	2	3

38	Менде ешқашан жақсы, көтеріңкі көңіл-күй болмайды	0	1	2	3
39	Мен тыныс алу қиындықтарын бастан өткердім (мысалы, шамадан тыс жылдам тыныс алу, физикалық белсенділіксіз тыныс жетіспеушілік)	0	1	2	3
40	Маған қандай да бір жұмысты өз еркімен бастау қиынға соғады	0	1	2	3
41	Мен қандай да бір жағдайларға қатты жауап қайтара бастаймын	0	1	2	3
42	Менде дірілдеу болады (мысалы, қолымда)	0	1	2	3
43	Мен көптеген жүйке энергиясын қолданатынымды сезінемін	0	1	2	3
44	Мен үрейленіп, өзін ақымақтыққа айналдыруға болатын жағдайлар туралы алаңдаушылық білдіремін	0	1	2	3
45	Мен асыға күтетін ештеңе жоқ екенін сезінемін	0	1	2	3
46	Мен қобалжитынымды байқадым	0	1	2	3
47	Маған рахаттану қиын бола бастағанын байқадым	0	1	2	3
48	Мен өзімді ыңғайсыз сезінемін	0	1	2	3
49	Мен үрейге жақын екенімді сезіндім	0	1	2	3
50	Мен ынташылық білдіре алмаймын	0	1	2	3
51	Мен өзімді лайықты тұлға ретінде санамаймын	0	1	2	3
52	Мен өзімнің ілтипатты екенімді сезіндім	0	1	2	3
53	Физикалық белсенділік болмаған кездерде, жүрегімнің әрекеті мазалайды (мысалы, жүрек соққысы жиілігінің артуы, жүрек соққысының болмауы)	0	1	2	3
54	Менде себепсіз қорқыныштар болады	0	1	2	3
55	Мен өмірдің мағынасыз екенін сезінемін	0	1	2	3

56-58 сұрақтар үшін, өзіңіздің келісіміңізді келесі мәлімдемелерді қолдана отырып бағалаңыз:

	Жоқ	Қалыпты	Орташа	Қиын	Өте қиын
56. Ұйықтау қиындылығы	0	1	2	3	4
57. Ұйқысыз, ояу жүру қиындылығы	0	1	2	3	4
58. Ерте тұру қиындылығы	0	1	2	3	4

59. Сіз қаншалықты өзіңіздің ұйқыңызбен қанағаттанасыз/қанағаттанбайсыз

0. Өте қанағаттанарлық
1. Қанағаттанарлық
2. Орташа қанағаттанарлық
3. Қанағаттанарлықсыз
4. Өте қанағаттанарлықсыз

60. Сіздің ұйқы мәселеніз сіздің өміріңіздің сапасына нұқсан келтіру басқа адамдарға қаншалықты маңызды деп ойлайсыз?

0. Мүлдем маңызды емес
1. Маңызды емес
2. Біраз маңызды
3. Маңызды
4. Өте маңызды

61. Сіздің қазіргі ұйқы мәселесі сізді қаншалықты алаңдатады?

0. Мүлдем алаңдатпайды
1. Алаңдатпайды
2. Біраз алаңдатады
3. Алаңдатады
4. Қатты алаңдатады

62. Сіздің ұйқы мәселеніз сіздің күнделікті іс-әрекеттеріңізге/жұмысыңызға (мысалы, күндізгі шаршау, көңіл-күй күнделікті өмірде жұмыс істеу мүмкіндігі, концентрация, жады және т.б.) қаншалықты кедергі жасайды деп ойлайсыз?

0. Мүлдем кедергі жасамайды
1. Кедергі жасамайды
2. Біраз кедергі жасайды
3. Кедергі жасайды
4. Қатты кедергі жасайды

63-72 сұрақтар үшін, өзіңіздің келісіміңізді келесі өлшемдерді қолдана отырып бағалаңыз

1. Мүлдем келіспеймін
2. Келіспеймін
3. Келісемін
4. Толығымен келісемін

	Сұрақ	Өлшем			
		1	2	3	4
63	Жалпы, мен өзіме қанағаттанамын.	1	2	3	4
64	Кейде өзімді пайдасыз адам деп сезінемін.	1	2	3	4
65	Менің жақсы қасиеттерім бар деп ойлаймын.	1	2	3	4
66	Мен басқа адамдар сияқты көптеген нәрселерді істей	1	2	3	4
67	Мен өзімде мақтана аларлықтай ештеңем жоқ деп ойла	1	2	3	4
68	Кейде мен өзімді жарамсыз деп сезінемін.	1	2	3	4
69	Мен өзімді басқа адамдармен бірдей деңгейде деп сан	1	2	3	4
70	Мен өзіме құрметпен қарағым келеді.	1	2	3	4
71	Жалпы, мен өзімді сәтсіз адам деп сезінемін.	1	2	3	4
72	Мен өзіме оң көзқараспен қараймын.	1	2	3	4

Appendix C. Informed consent form

(English version)

Hello Dear Students!

This project aims to investigate the psychosocial health of students in the city of Astana.

Your participation is voluntary, and you have the right to stop your participation at any time, which will not entail any consequences. The questionnaire consists of demographic questions such as age, gender, ethnicity and family issues; and also questions related to your academic performance, a sense of anxiety, family cohesion, and the use of the Internet.

The questionnaire is basically consists of questions with multiple choice, where you have to choose one of the given answers. It also contains of several open questions, where you will need to write down the answer. Participation in the study will take approximately 15 minutes. After filling in the questionnaire, please put it in an envelope. I also ask you to fill out the questionnaire yourself and not to discuss it with anyone.

Your identification information will not be determined by your answers, and all information is anonymous. You will not be asked to write your name or to sign anything. Each questionnaire will be assigned with a unique identification number for further analysis. After the questionnaires have been transferred into the database, written questionnaires will be destroyed. The database will be stored on the researcher's computer, which is protected with a password. The research is anonymous, and any opportunity to link your personal information with your application is excluded, as none of the forms will have identifying information.

Potential risks from this study are minimal, and you can freely cease participation at any time and without any consequences, and skip any issues that cause discomfort.

Responsible for this research is Akbota Tolegenova atolegenova@nu.edu.kz

Cell phone number 8 702 771 47 69

The research is controlled by:

Dr. Byron Crape byron.crape@nu.edu.kz

Dr. Raushan Alibekova raushan.alibekova@nu.edu.kz

Здравствуйтесь Дорогой Студент!

Данный проект изучает психосоциальное здоровье студентов в городе Астана.

Ваше участие является добровольным, и Вы имеете право прекратить участие в любой момент, что не повлечет за собой никаких последствий. Анкета состоит из демографических вопросов, таких как возраст, пол, этническая принадлежность и вопросы про семью; вопросов, связанные с вашей успеваемости, чувством беспокойства, сплоченности семьи, и использованием Интернета.

Вопросник в основном состоит из вопросов с множественным выбором, где нужно будет выбрать один из заданных вариантов ответа. Он содержит несколько открытых вопросов, где нужно будет записать ответ. Участие в исследовании займет приблизительно 15 минут. После заполнения вопросника положите его в конверт. Прошу также заполнять анкету самостоятельно и ни с кем не обсуждая вопросы и ответы.

Ваша идентификация никоим образом не будет определяться Вашими ответами, и вся информация анонимна. Вас не попросят написать свое имя или подписать что-либо. Каждому вопроснику будет присвоен уникальный идентификационный номер для дальнейшего анализа. После того, как вопросники будут переведены в базу данных, письменные анкеты будут уничтожены. База данных будет храниться на компьютере исследователя, который защищен паролем. Исследование анонимно, и исключается любая возможность связать Вашу личную информацию с Вашей анкетой, поскольку ни одна из форм не будет иметь идентифицирующую информацию.

Потенциальные риски от данного исследования минимальны, и Вы можете беспрепятственно прекратить участие в любой момент и без каких-либо последствий, а также пропустить любые вопросы, вызывающие дискомфорт.

Ответственным за этот проект является Акбота Толегенова, atolegenova@nu.edu.kz,

Номер телефона 8 702 771 47 69

Проект контролируется:

Др. Байрон Крэйп byron.crape@nu.edu.kz

Др. Раушан Алибекова raushan.alibekova@nu.edu.kz

Сәлеметсіз бе құрметті студент!

Бұл жоба Астана қаласының студенттердің психологиялық-әлеуметтік денсаулығын зерттейді.

Бұл сауалнамаға қатысу ерікті болып табылатынды, және кез-келген уақытта сауалнамаға қатысуды тоқтатуға құқығыңыз бар, бұл ешқандай қолайсыз салдарға әкелмейді.

Сауалнамада сіздің жасыңыз, ұлтыңыз және т.б. демографиялық сұрақтар бар, онымен қоса сіздің оқу деңгейіңіз жайлы, отбасыңыз жайлы, және ғаламторды қолдану деңгейіңіз туралы сұрақтар бар.

Сұрақтар көбінде түрлі жауаптарымен келеді, тек аз бөлігі өзіңіз толтыруға беріледі. Сауалнаманы толтыруға шамамен 15 минут кетеді. Толтырып болған соң, конвертке салуыңызды сұраймын. Сауалнаманы өзіңіз жеке толтыруыңыз күтіледі.

Сіздің аты-жөніңіз анықталмайды және барлық ақпарат жасырын болып қалады. Сізден атыңызды жазуыңыз немесе құжатқа қол қоюыңыз сұралмайды. Барлық сауалнама қағаздарына жеке реттік сан беріліп, компьютерге енгізіледі. Енгізіліп біткен соң, қағаз сауалнамалар жойылады. Компьютерге көшкен файл зерртеушінің компьютерінде сақталады. Компьютерде құпия сөзбен қорғалған.

Бұл жоба сізге минималды қауіп туғызады. Егер, қандай да бір сұраққа жауап беру ыңғайсыздық туғызса, сұрақты өткізуге немесе сауалнамаға қатысудан бас тартуға болады.

Жобаға жауапты тұлға: Төлегенова Ақбота atolegenova@nu.edu.kz,

Тел. нөмірі 8 702 771 47 69

Проект басшылары:

Др. Байрон Крэйп byron.crape@nu.edu.kz

Др. Раушан Әлібекова raushan.alibekova@nu.edu.kz

Appendix D. Conference presentation and journals for potential publication

Conference presentation

Oral conference presentation entitled “Prevalence of internet addiction and its association with mood and sleep disorders among young adults in Astana, Kazakhstan: preliminary findings of the cross-sectional study” at the 1st International Conference on Promoting the Mental Health and Wellbeing of Children and Adolescents, which was organized by UNICEF in Almaty in January 19-20, 2018.

List of journals for potential publication:

1. American Journal of Public Health
2. International Journal of Public Health
3. Asia-Pacific Journal of Public Health
4. Global Public Health
5. Journal of Public Health Policy
6. Journal of Community Health
7. International Health
8. The International Journal of Adolescent Health
9. The Journal of Adolescent and Family Health
10. SAGE Journals