

Risk factors and prevalence of depression among students of the American University of Armenia

Master of Public Health Integrating Experience Project

A Research Grant Proposal

By

Yogeshwaran Jaishankar

Advising team:

Vahe Khachadourian, MD, MPH, PhD

Anahit Demirchyan, MD, MPH

Gerald and Patricia Turpanjian School of Public Health

American University of Armenia

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List of abbreviation

| | |
|----------|--|
| ASR | - Age-Standardized Incidence Rate |
| AUA | - American University of Armenia |
| CES-D-16 | - Center for Epidemiologic Studies-Depression scale |
| DSM-V | - The Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders |
| IRB | - Institutional Review Board |
| ICD-10 | - The Tenth Edition of the International Classification of Diseases |
| MDD | - Major Depressive Disorder |
| SPSS | - Statistical Package for the Social Sciences |
| USA | - United States of America |
| USD | - United States Dollar |
| WHO | - World Health Organization |
| YSMU | - Yerevan State Medical University |

Abstract

Background: The most prevalent mental health disorder among college students is depression. Gender, genetic, biological and psychological factors, and environmental determinants are among variables associated with depressive episodes. Stressful life circumstances such as exposure to violence, financial difficulties, detachment from the loved ones, chronic ailments, and lack of care can aggravate the preexisting depression or provoke an episode of depression. According to available estimates from 2013, the prevalence of depression among adolescents in Yerevan was 16.7% (21.6% among girls and 6.2% among boys). The prevalence of depression was even higher among medical students of Yerevan State Medical University: 50.8% among Indian and 27.9% among Armenian students. These estimates suggest that depression among university students could be a significant problem in Armenia.

Aim: The objective of this study is to elucidate the prevalence and socio-demographic risk factors (age, gender, family structure, socio-economic status, parent's educational status, and employment status) of depression among students of the American University of Armenia (AUA).

Methods: A cross-sectional anonymous survey will be administered among AUA students. The survey will include questions about the socio-demographic status of the respondents and the Center for Epidemiologic Studies Depression scale adapted for Armenian population (CES-D-16) to assess the prevalence of probable depressive symptoms among the students. The data will be collected utilizing SurveyGizmo, an online survey platform. The link of the online survey will be activated from October 16, 2021 till November 5, 2021; and the link of the questionnaire will

be emailed to all AUA students. The student investigator will conduct univariate and multivariable logistic regression analysis.

Logistic considerations: The ethical aspect of the proposed study was approved by the Institutional Review Board (IRB) of the American University of Armenia. The estimated budget to conduct the proposed study is 1,190,000 AMD. The overall proposed duration of the study will be three months: from October 1, 2021 to December 30, 2021.

Study implication: The results obtained from the study will improve understanding of the risk factors and prevalence of depression and help the student-counseling center of AUA to improve and advance the psychological counseling services provided to the students.

Specific Aims and Research Questions

To date, no study has assessed the prevalence of depression among the students of the American University of Armenia (AUA). The existing evidence discussed below proposes that depression among the university students could be a significant problem in a country like Armenia. The objective of this study is to elucidate the prevalence and risk factors of depression among AUA students. The research questions are the following:

1. What is the prevalence of depression among AUA students?
2. Are socio-demographic characteristics such as age, gender, family structure, socio-economic status, parent's educational status, and employment status associated with depression among AUA students?

Background

According to the National Institute of Mental Health estimates from 2017, more than a quarter (25.8%) of young adults aged from 18 to 25 in the United States of America (USA) experience a mental illness.¹ According to the World Health Organization (WHO), "Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community".² Anxiety, depression, stress and eating disorders are the prevalent mental health problems encountered amongst the students;^{3,4} where anxiety and depression are the most prevalent disorders.⁵

Depression is a consequential ailment that has cost-effective and efficacious treatment options.^{6,7,8} It demands medical attention like other diseases; nevertheless, it is often neglected.⁹ According to the WHO, "Depressive disorders are characterized by sadness, loss of interest or

pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration".¹⁰

Diagnosis of depression

The diagnosis of depression is commonly performed using the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) of the American Psychiatric Association.¹¹ The DSM-V consists of two core and seven other depression associated symptom. According to DSM-V, the diagnostic criteria for clinical depression includes the manifestation of at least five out of the nine symptoms (should include one core symptom) to be present for two or more weeks.¹¹ These five symptoms may include both somatic and non-somatic symptoms. Somatic symptoms are those that are also typical for somatic disorders (Table 1).¹²⁻¹⁴

The 10th Edition of the International Classification of Diseases (ICD-10) defines depression by the symptoms mentioned above based on specific degree; mild (two core + two supplementary symptoms), moderate (two core + four supplementary symptoms) and severe (three core + five supplementary symptoms with or without psychotic symptoms) (Table 1). All these symptoms should be present mostly every day for a month or more.¹⁵ Individuals with psychosis interpret or perceive reality around them differently.¹⁶ The two main symptoms of psychosis are delusion and hallucination.¹⁶

Burden, prognosis and lifetime course of depression

Even though depression usually does not kill a person, it is the fourth common cause of the global disease burden, which significantly affects quality of life of individuals.^{17,18} With respect to the total years lost, depression is the pre-eminent cause of disability worldwide.^{17,18} In 2015, over 322 million cases (4.4% of the global population)^{19,20} of depression were recorded

worldwide. The rates of depression vary across the countries. For instance, in 2017, the global age-standardized incidence rate (ASR) of depression in Myanmar was 1.28 per 1000 that is the lowest, and the highest ASR of depression was 6.59 per 1000 in Lesotho.²¹

Although the preponderance of people suffering from depression does not commit suicide, suffering from the Major Depressive Disorder (MDD) significantly increases the risk of suicide.²²⁻²⁷ Every single day, 3,000 deaths occur due to suicide, adding up to about one million suicides per year. For every one committed suicide, at least 20 people attempt to end their lives.²⁸ Additionally, individuals diagnosed with depression has greater risk of developing cardiovascular disease, stroke, osteoporosis, diabetes and Alzheimer's disease.²⁹⁻³⁴

The diurnal chores and performances are diminished among individuals suffering from depression because of the impaired intellectual and social behaviors.^{35,36} Depression poses a financial menace to an individual, which gradually can spread to family, employee, employer, and ultimately to the society. According to the National Co-morbidity Survey Replication estimates, in the USA, an employee who suffers from depression has a financial loss of 4400 United States Dollars (USD), and this transmutes into a national wage loss of 36.6 billion USD per annum.³⁷

Risk factors

Research illustrates that depression is a complex phenomenon; several factors play a role for individuals risk of depression.^{38,39} Gender, genetic, biological and psychological factors, and environmental determinants are found to be associated with depressive episodes.⁴⁰⁻⁴² Stressful life circumstances such as exposure to violence, low socioeconomic status, detachment from the

loved ones, chronic ailments, and lack of care can either aggravate the preexisting depression or provoke an episode of depression.^{43,44}

One of the notable risk factors for depression is gender.⁴⁵⁻⁴⁸ Although both genders are affected by depression, epidemiologically, female are at a greater risk of developing depression compared to male.^{46,49-51}

Genetic studies elucidate that multiple genes along with other environmental factors increase the risk of depression.^{52,53} Adolescents with parents who suffer from depression are more prone (3 – 4 times higher hazard) to develop of depression compared to those adolescents with parents who don't suffer from depression.^{51,54}

Stressful school environment, physical and sexual exploitation, social isolation, and conflicts with friends and family are some of the several risk factors that has higher degree of associated with depression.⁵⁵⁻⁵⁹

The personal characteristics of an individual carry a considerable risk for the development of depression during adolescence. Factors like high self-criticism, diminished self-esteem, reduced school performance, anxiety, cognitive distortion, and scarcity of social skills may increase the risk of developing depression.⁵⁵ The presence of other mental problems, including anxiety disorder, panic, attention deficit hyperactive disorder, and socio phobia can also increase the risk of depression.^{55, 60-62}

Situation in Armenia

According to the WHO estimates, the prevalence of psychological diseases in Armenia is higher than in Western Europe and Russia.⁶³ WHO data show that in 2017, the prevalence of

depressive disorder in Armenia was 142,712 cases (5% of the total population) and the total years lived with disability attributed to depression was 71,493.¹⁰ Several research studies assessed psychological health among adult population groups living in Armenia, including survivors of the 1988 earthquake and also above 65 years old population (geriatric population) residing at the retirement homes of Armenia.⁶⁵⁻⁶⁷

In 2002, a study conducted among the 1988 earthquake survivor cohort found that 52% of the study participants reported to have depressive symptoms.⁶⁵ In 2009, a study conducted among 1988 earthquake surviving bereaved adolescents reported that depression was higher among the orphaned adolescents compared to the adolescents who lost either one of their parents.⁶⁶ In 2006, a comparative study was conducted among geriatric population residing at the households and retirement homes of Armenia. The depressive symptoms among the participants living in households and retirement homes were 81.2% and 76%, respectively.

In 2019, a health behavior survey was conducted among the Armenian adolescent population. The study included 5,892 children of 11, 13, 15, and 17 years old from 167 schools in all regions of Armenia; among them 2,882 were boys and 3,010 were girls. The study found that 32% of the 17-year-old and 21% of the 11 to 15-year-old adolescents reported that during the past twelve months, they felt sad and desperate that hindered their everyday activities for a minimum two-week time period.⁶⁸ The prevalence of probable depressive symptoms was higher among female students and the students of higher age. The report showed a positive association between age and frequency of depressive signs, with up to 36% of the 15-year-old and 41% of the 17-year-old reporting depressive symptoms. During the 12-month period prior to the study, around 6% of the study population reported that they had thoughts of suicide.⁶⁸ This study

demonstrated that the mental health of adolescent children has become slightly worse compared to the findings of previously conducted similar studies.⁶⁸

In 2013, a study conducted among 191 Indian and 197 Armenian medical students of the Yerevan State Medical University (YSMU) evaluated the risk factors and the level of depression.⁶⁹ The prevalence of probable depressive symptoms was higher among Indian students compared to Armenian students of YSMU (50.8% and 27.9%). After controlling for confounders (daily hassles score, class material given to student, and perceived medical school stress), the study affirmed that the female students had 1.71 times higher odds of developing probable depression compared to the male.

In 2013, a study was conducted among the adolescent population of Yerevan to assess the risk factors and prevalence of adolescent depression. The total number of students included in the study was 713; among them 487 were females and 226 were males.⁷⁰ The study estimated that 16.7% of the study participants had probable depressive symptoms; from the study population, 21.6% of girls and 6.2% of boys were depressed. After controlling for the confounders, the research recognized some potential risk factors that were related to development of depression among the adolescent population, these included female gender, having widowed parents, having parents being separated or divorced, poor financial status, being unsatisfied with housing conditions, having troubles with class peers, while having high self-esteem had protective effect.⁷⁰

Methods

Study design, setting and population

Considering cost-effectiveness and suitability of the design for addressing the research questions, we will use a cross-sectional study design with a self-administrated questionnaire.⁷¹ The target population of the study will be all the students of the AUA registered during the fall 2021 semester.

Sample size calculation

Variant one

The formula utilized to estimate the sample size for the study in a finite population is

$$n = \frac{N * Z^2 * P (1 - P)}{d^2(N - 1) + Z^2 * P (1 - P)}$$

n = Sample size with correction to finite population

N = Population size

Z = Z statistic of a level of confidence

P = Expected proportion

d = Level of precision

Based on the previously conducted study, the prevalence of depression among the Indian and Armenian medical students of Yerevan State Medical University was 51% and 28%, respectively.⁷⁰ According to the 2019 fall summary, the total number of students enrolled in AUA is 1803; from that, only 137 students are non-Republic of Armenia citizens.⁷² The expected

proportion (rate) of depressed among the study population is 27.9%, considering that 92.4% of the AUA students are Residents of Armenia. The level of confidence (Z) is 95% and the desired level of precision for the study is 2%.

$$n = \frac{1803 * 1.96^2 * 0.28(1 - 0.72)}{0.0004 (1803 - 1) + 1.96^2 * 0.28 (1 - 0.72)} = 754$$

The sample size required for this finite population is 754. According to the 2018 exit survey conducted among the graduating undergraduate and graduate students of AUA, the response rate was 41.3% and 58.2%, respectively.^{73,74} On average, the response rate among the students of AUA should be 49.6~50%. Adjusting to the 50% refusal rate, the final adjusted sample size to estimate the prevalence of depression among AUA students is 1,508.

Variant two

The standard formula for calculating the sample size for comparing two independent groups in a cross-sectional study.

$$n = \frac{(Z_{\alpha/2} \sqrt{2\hat{P}\hat{Q}} + Z_{\beta} \sqrt{P_1Q_1 + P_2Q_2})^2}{(P_1 - P_2)^2}$$

Based on the previously conducted study, the proportion of depression between female and male students was 16.7% and 11.6%, respectively.⁶⁹ The level of confidence (Z) is 95% ($Z_{\alpha/2} = 1.96$) and the power is 80% ($Z_{\beta} = 0.842$)

$$P_1 = 0.167$$

$$P_2 = 0.116$$

$$Q_1 = 0.833$$

$$Q_2 = 0.884$$

$$\hat{P} = \frac{P_1 + P_2}{2} = 0.14$$

$$\hat{Q} = 1 - \hat{P} = 0.86$$

$$n = \frac{[1.96\sqrt{2(0.14)(0.86)} + 0.842\sqrt{(0.167)(0.833) + (0.116)(0.884)}]^2}{(0.167 - 0.116)^2} = 725$$

The sample size calculated for one group is 725. Therefore, the total number of sample required for the two groups is 1,450. After adjusting to the 50% refusal rate, the final sample size to estimate the association between socio-demographic determinants and depression among the students of AUA is 2,900. As the total student population of the AUA is 1803, conducting a census among the AUA student population will be appropriate for the study.

Data Collection

To collect data, the student investigator will utilize the online “SurveyGizmo” software to design the survey and execute it among the AUA student population. The pre-tested questionnaire will be utilized to conduct the survey. To collect data, the web link for the questionnaire will be shared to all the Bachelor and Master students who are studying at the AUA via e-mail along with the informed consent clarifying the study objectives. The link of the online survey will be active from October 16, 2021 till November 5, 2021. During this time period, data collection will ensue. To improve the response rate, the student investigator will send two reminder notifications with six-day time interval between each notification via e-mail

to the students of AUA. The two reminders will be sent on 23th of October and 30th of October, 2021. The study will not offer any incentive for responding to the survey.

Study Instrument

The self-administrated online survey will be emailed to the AUA students. The survey contains questions about socio-demographic status of students and the revised 16-negative-item set of the Center for Epidemiologic Studies-Depression scale (CES-D-16).⁷⁵ CES-D is an instrument constructed to estimate the general population's depressive symptoms (Appendix1).⁷⁵ The CES-D-16 questionnaire comprises of three underlying dimensions of depression: Interpersonal Relations, Depressed Affect, and Somatic-Retarded Activity.⁷⁶ The original CES-D-20 questionnaire was validated among the Armenian population.⁷⁵ In 2011, Demirchyan et al. (2011) concluded that the Armenian population conspicuously concealed their response to the positively formulated questions that artificially amplified the depression scores. Therefore, for this study, the modified 16-item CES-D scale will be used with the four positively formulated anhedonia-measuring items removed from the original 20-item scale.⁷⁵ The subjects who participate in the study will rate the questions in the CES-D-16 on the following response scale: 0 [less than 1 day (Rarely), 1 [1- 2 days (sometimes), 2 [3-4 days (moderate amount of time) and 3 [5-7 days (Most of the time).⁷⁵ Based on the responses, the CES-D-16 (depression) score will be calculated. The CES-D-16 possible range of score is from 0 to 48, the presence of more symptoms is indicated by the increase in the CES-D-16 score.⁷⁵ The 16-item CES-D cutoff score for no depression in Armenian population is less than 19 and for depression, the cutoff score is 19 and more, with the sensitivity and specificity of 0.86 and 0.81, respectively.⁷⁷

Data Analysis

The researcher will utilize Statistical Package for the Social Sciences (SPSS®) V21.0 software to conduct data analysis. The online database from the “SurveyGizmo” will be transferred into SPSS format. The categorical variables will be summarized using proportions and frequencies, and the continuous variables will be presented by means and standard deviations. To compare categorical variables, chi-square test will be utilized, and to compare continuous variables, independent T-test will be applied. Then the student investigator will perform univariate and multivariable logistic regression analysis to evaluate the crude and adjusted odds ratios of the association between outcome variable (depression status) and each independent variable, and assess the strength of each significant association. To conduct the multivariable logistic regression analysis, dummy variables will be created for non-binary categorical variables. Likelihood Ratio test and Hosmer-Lemeshow goodness-of-fit test will be utilized to determine the final model fit. The result will be considered as statistically significant if the p-value is less than 0.05.

Budget and timeline

The complete budget of the study adds up to be 1,190,000 AMD. Personnel salaries, administrative costs like office rent, stationary costs, online survey tool and statistical software were included in the budget (Table 2). The overall duration of the study will be three months: from October 1, 2021 to December 30, 2021. The permission from the provost will be acquired prior the data collection. The project coordinator will develop the survey questionnaire in the SurveyGizmo survey tool from October 9, 2021 till October 15, 2021. The student investigator will proceed to online data collection from October 16, 2021 till November 5, 2021. The data analysis will be performed by the research team from 13th of November till 6th of December,

2021. The project coordinator will complete the final report of the study from 7th of December, 2021 till 31th of December, 2021 (Table 3).

Strengths and Limitations

To the knowledge of the student investigator, this is the first study to investigate the risk factors and prevalence of depression amongst the students in AUA. Depression among the students will be measured by utilizing a validated questionnaire (CES-D-16), which is widely used in Armenia. The information about the psychological counseling service in the campus of AUA will be provided to the students. Self-administrated mode ensures the privacy of the participants during survey compared to the interviewer –administered mode. So, the students would answer the sensitive questions in the instrument more honestly.

Some of the questions about socio-demographic status of students are not validated among the Armenian population. However, the instrument will be pretested prior to the study among the study population. Despite the advantages of online survey, it is more prone to lower response rate compared to other techniques. As the instrument contains questions about the participant's past experience; there is a potential risk of recall bias. Finally, the study results cannot be generalized to other student population in Armenia, because of the differences in educational culture and settings.

Humans/animals subjects

Institutional Review Board (IRB) of the American University of Armenia approved the ethical acceptability of this study. As a next step, the student investigator will acquire the permission from the Provost to conduct the study in AUA. The consent form along with the questionnaire will be sent via e-mail; and the consent form will clearly notify that the

participation of the students in the study is purely voluntary and termination of it at any point has no consequences. Prior to answering the survey questionnaire, the informed consent will be authorized by the study participants by checking “Agree” button/key at the end the informed consent form. To ensure confidentiality, the IP address of the students will not be recorded. The individual identifiers of the study participants will not be obtained.

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Tables

Table 1. Diagnostic criteria for depression

| | <i>Symptoms</i> | <i>DSM-V</i> | <i>ICD-10</i> | <i>Somatic/non-somatic</i> |
|-----|---|--------------|---------------|----------------------------|
| 1. | Depressed mood | Yes (C) | Yes (C) | Non-somatic |
| 2. | Loss of energy or fatigue | Yes (C) | Yes (C) | Somatic |
| 3. | Diminished pleasure or interest in pursuit | Yes (A) | Yes (C) | Non-somatic |
| 4. | Feelings of uselessness or unreasonable guilt | Yes (A) | Yes (A) | Non-somatic |
| 5. | Impaired capability to concentrate or think | Yes (A) | Yes (A) | Somatic |
| 6. | Insomnia or hypersomnia | Yes (A) | Yes (A) | Somatic |
| 7. | Diminished self-confidence or esteem | No | Yes (A) | Non-somatic |
| 8. | Change in weight or food | Yes (A) | Yes (A) | Somatic |
| 9. | Psychomotor agitation | Yes (A) | Yes (A) | Somatic |
| 10. | Recurrent suicidal thoughts | Yes (A) | Yes (A) | Non-somatic |

C = core symptom, A = other depression associated symptom, ICD-10 = 10th Edition of the DSM-V= 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders; International Classification of Diseases

Table 2: Budget

| <i>Budget Item</i> | <i>Appointment type</i> | <i>Number of required units</i> | <i>Amount per unit</i> | <i>Total</i> |
|---|-------------------------|---------------------------------|------------------------|---------------|
| <i>Personnel salaries</i> | | | | |
| Project coordinator | Monthly | 3 | 200,000 AMD | 600,000 AMD |
| Statistician | Monthly | 1 | 200,000 AMD | 200,000 AMD |
| <i>Administrative costs</i> | | | | |
| Office rent | Monthly | 3 | 100,000 AMD | 300,000 AMD |
| Stationary (notepad, pen, pencil) | - | 1 | 10,000 AMD | 10,000 AMD |
| SurveyGizmo | Monthly | 1 | 12,000 AMD | 12,000 AMD |
| Statistical Package for the Social Sciences (SPSS®) V21.0 | Monthly | 1 | 48,000 AMD | 48,000 AMD |
| Other expenses | | | | 20,000 AMD |
| Total | | | | 1,190,000 AMD |

AMD = Armenian Dram

Table 3: Timeline

| Study Activity | Month 1 | | | | Month 2 | | | | Month 3 | | | |
|--|----------------|----|----|----|----------------|----|----|----|----------------|----|----|----|
| | W1 | W2 | W3 | W4 | W1 | W2 | W3 | W4 | W1 | W2 | W3 | W4 |
| IRB Approval | X | | | | | | | | | | | |
| Preparation of the study instrument in the SurveyGizmo | | X | | | | | | | | | | |
| Data collection | | | X | X | X | | | | | | | |
| Data managing | | | | | | X | | | | | | |
| Data analysis | | | | | | | X | X | X | | | |
| Final report preparation | | | | | | | | | | X | X | X |

W = Week

Appendices

APPENDIX 1: Study Instrument

Dear student, I kindly ask you to actively participate in this survey. This questionnaire is aimed to assess the stress level that may lead to depression among the students of AUA. There is no correct or wrong answer; so, please answer the question carefully and honestly. This questionnaire will take only 15 minutes of your time.

1. What is your birth date? _____ / _____ / _____

Day / Month / Year

2. What is your gender?

1. Male
2. Female

3. What is your course year in AUA?

1. First year
2. Second year
3. Third year
4. Fourth year

4. Which student are you?

1. Local
2. International

5. What is the name of the degree that you are studying in AUA? _____

6. Where do you live?
1. My home
 2. My family's home
 3. Rented a place alone
 4. Rented place with a roommate
 5. Hostel
 6. Other (please, specify) _____
7. What is the total number of people currently living with you in the same household?

8. Who currently lives with you in the same household?(Check all that apply)
- | | | |
|-----------------------------|------------------------------|-----------------------------|
| 1. Mother | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. Father | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. Stepmother | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Stepfather | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. Grandmother | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Grandfather | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 7. Siblings | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 8. Others (please, specify) | _____ | |
| 9. Nobody | | |

The next question is for those who are living with their family. If you are living alone, please skip to question number 10

9. How many children under 18 years old live with you in your family? _____
10. What is your marital status?
1. Single
 2. Engaged
 3. Married
 4. Divorced
 5. Other (please specify) _____

11. Your parents are:

1. Married
2. Divorced
3. Separated
4. Never married and living apart
5. Never married but living together
6. Widowed (please specify which parent is dead) _____
7. Other (specify) _____

12. Do you currently live with your family?

1. Yes (**SKIP TO Q 15**)
2. No

13. How often do you miss your family?

1. All the time
2. Often
3. Seldom
4. Never

14. When do you miss your family the most?

1. When I am under stress
2. During the exams
3. When I am sick
4. Other (please, specify) _____

15. Do you think that the amount of class study material given to you to learn is:

1. Too much for you to do
2. Too much but you can do it
3. Just the right amount
4. Too little

Please continue answering questions, if you have a mother/female guardian, but if you do not have a mother/female guardian, please, go to question 18.

16. Is your mother/female guardian currently employed?

1. Yes
2. Retired
3. No
4. Don't know
5. Other (specify) _____

17. How much education has your mother/female guardian completed?

1. School (less than 10 years)
2. School (10 years)
3. Professional technical education (10-13 years)
4. Institute/University
5. Postgraduate
6. Don't know
7. Other (specify) _____

Please continue answering questions if you have a father/male guardian, but if you do not have a father/male guardian, please, go to question 20.

18. Is your father/male guardian currently employed?

1. Yes
2. No
3. Self-employed
4. Seasonal worker or farmer
5. Retired
6. Don't know
7. Other (specify) _____

19. How much education has your father/male guardian completed?

1. School (less than 10 years)
2. School (10 years)
3. Professional technical education (10-13 years)
4. Institute/University
5. Postgraduate
6. Don't know
7. Other (specify) _____

20. Have you ever tried cigarette smoking, even one or two puffs?

1. Yes
2. No (**SKIP TO Q. 24**)

21. How old were you when you first tried a cigarette? _____

22. During the past 30 days (one month), on how many days did you smoke cigarettes? _____

23. How many cigarettes do you smoke on a typical day when you are smoking? _____

24. Have you ever tried any alcoholic beverages?

1. Yes
2. No (**SKIP TO Q. 27**)

25. During the past 30 days (one month), on how many days did you drink alcoholic beverages?

26. How many drinks containing alcohol do you have on a typical day when you are drinking (one drink is 1 glass of wine; can/bottle of beer; shot of liquor, whiskey or vodka, or mixed drink)? _____

27. Have you thought about or attempted suicide in your lifetime?

1. No
2. It was just a passing thought
3. I briefly considered it, but not seriously
4. I thought about it and was somewhat serious
5. I had a plan of suicide, which I thought would work and seriously considered it
6. I attempted suicide, but I do not think I really meant to die
7. I attempted suicide, and I think I really hoped to die
8. Don't know

30. Do you have a familial history of mental health illness?

1. Yes
2. No
3. Don't know

31. Do you have a chronic physical illness?

1. Yes
2. No

32. Do you have a chronic mental illness?

1. Yes
2. No

33. Which of the following best describes the approximate amount of your household's average monthly income?

1. Less than 50,000 AMD
2. from 50,000 to 100,000 AMD
3. from 101,000 to 200,000 AMD
4. from 201,000 to 300,000 AMD
5. above 300,000 AMD
6. I don't know

34. Mark only one box for each characteristic.

| After becoming a student at AUA, to what extent do you think your following characteristics were changed: | 1. Completely changed | 2. To some extent | 3. Did not change at all |
|---|-----------------------------|-----------------------------|-----------------------------|
| 1. Sleeping pattern | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 2. Eating habit | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 3. Living condition | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 4. Dressing style | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |

CES-D

35. Using the following scale, please describe how you felt during the past seven days: how often have you felt like each of these? Please answer all the questions by filling in the boxes below (mark only one box for each).

| | | Rarely or none of the time (less than 1 day) | Some or a little of the time (1- 2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
|-----|---|--|--|--|------------------------------------|
| 1. | Things that usually do not bother me bothered me. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 2. | I did not feel like eating; my appetite was poor. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 3. | I felt like I could not get rid of my low mood even with the help of my family and friends. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 4. | I had trouble keeping my mind on what I was doing. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 5. | I felt depressed. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 6. | I felt that everything I did was an effort. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 7. | I thought my life had been a failure. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 8. | I felt fearful. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 9. | My sleep was restless. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 10. | I talked less than usual. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |

| | | Rarely or none of the time (less than 1 day) | Some or a little of the time (1- 2 days) | Occasionally or a moderate amount of time (3-4 days) | Most or all of the time (5-7 days) |
|-----|--------------------------------|--|--|--|------------------------------------|
| 11. | I felt lonely. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 12. | People were unfriendly. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 13. | I had crying spells. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 14. | I felt sad. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 15. | I felt that people dislike me. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |
| 16. | I could not get 'going'. | 0. <input type="checkbox"/> | 1. <input type="checkbox"/> | 2. <input type="checkbox"/> | 3. <input type="checkbox"/> |

36. Have you ever utilized the counseling service provided inside the campus of AUA?

1. Yes
2. No
3. I refuse to answer

APPENDIX 2: Consent form

American University of Armenia

Turpanjian School of Public Health

Institutional Review Board #1

Informed Consent form (English)

Title of Research Project: Risk factors and Prevalence of depression among the students of the American University of Armenia

Hello. My name is Yogeshwaran Jaishankar. I am a second-year student at the Master of Public Health program at the American University of Armenia (AUA). This survey is conducted within the scope of the Master thesis project.

You are requested to participate in a research study. **This survey will take approximately 14 minutes to complete.** Prior to your participation in the study, your understanding concerning the research project and what it entailed is essential. Please read the provided information cautiously.

The purpose of this study is to assess the prevalence and risk factors of depression among the students of the American University of Armenia. The survey questionnaire contains questions about your socio-demographic characteristics, family, behavior, health, life events, and depression.

All students studying at AUA will be requested to participate in this study. You are invited to take part in this study because you are a student of the AUA. **Your participation in the survey is voluntary and confidential. The information about your participation in this study will**

not be available to anyone as no contact and/or identifying information of you will be recorded in the survey. The information provided will be available only to the researchers for the research purpose only. Your decision to participate or refuse to participate or to skip any question that you feel uncomfortable to answer will not have any kind of consequence.

The study does not pose any direct risks or benefits. Your participation in our study will contribute to a better understanding of the prevalence of depression among the AUA students. The result obtained from the study will be helpful to the student-counseling center of AUA to improve and advance the services provided to the students. Your individual response to the study is not only important for the AUA, but also benefits for the better understanding of risk factors of depression in general and in Armenian student population.

If you agree to participate in the study, at the end of this consent, you will be requested to check the “Agree” option. You can still withdraw from the study, even after you checked the “Agree” option. If you decide to check the “disagree” option, you will be spontaneously withdrawn and not contacted again. Please do not share the link with anyone, as it will affect the purpose (validity) of the study.

If you feel that you are harmed or been mistreated by participating in the study, you should contact the Human Protections Administrator of the American University of Armenia, Varduhi Hayrumyan(+37460) 61 25 61.

For any additional questions concerning the study, kindly contact the principal investigator of the study: Dr. Vahe Khachadourian (+37460) 61 2570.

I have carefully read and understood the information provided in the consent form. I understand that my participation in this study is entirely voluntary and that I can withdraw from the study at any time, without any reason and consequence. I voluntarily agree to take part in this study.

Agree

Disagree