RESEARCH ARTICLE

Association between psychological distress and health risk behaviours among youth in Karachi

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Abstract

Objective: To determine the frequency of psychological distress and its association with health risk behaviours among youth in an urban setting.

Method: The cross-sectional study was conducted from May to September 2023 at the Indus University of Health Sciences, Karachi, and comprised individuals of either gender aged 15-24 years. Psychological distress was assessed using the Kessler 10+ scale and health risk behaviours were evaluated using a structured questionnaire covering dietary habits, drug abuse, hygiene, physical activity, tobacco use, violence, and unintentional injury. Data was analysed using SPSS 26.

Results: Of the 455 individuals approached, 391(85.9%) were included; 237(68.9%) females and 107(31.1%) males. The median age of the participants was 21 years (interquartile range: 19-22 years). The overall median score for psychological distress was 24 (interquartile range: 19-30), with 285(72.9%) participants reporting psychological distress. Psychological distress had significant association with mother's education (adjusted odds ratio: 0.28, 95% confidence interval: 0.1-0.77) and university bullying (adjusted odds ratio: 8.01, 95% confidence interval: 2.4-26.71).

Conclusion: The prevalence of psychological distress among the young subjects was high. Efforts aimed at addressing bullying in educational settings is critical for mitigating psychological distress.

Keywords: Adolescent, Logistic models, Health risk, Tobacco use, Substance-related disorders, psychological distress.

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Introduction

Psychological distress among youth has been rising globally, presenting a significant challenge in both developing and developed countries. Psychological distress is defined as non-specific symptoms of anxiety, stress and depression. Increased levels of psychological distress are indicative of impaired mental health.[1] Left untreated, psychological distress can lead to societal disease burden, including decreased productivity and a diminished quality of life.[2] Youth, a transitional period between childhood and adulthood, has long-lasting implications on individual's wellbeing, autonomy and identity.[3] Morbidity and mortality in youth is often due to lifestyle practices[4] Health risk behaviours, such as drug use, hygiene, physical activity, tobacco use, violence and unintentional injury, risky sexual behaviours and eating disorders, are strongly correlated with psychological distress in youth.[5] The prevalence of mental health issues among young people is often linked to elevated chances of substance abuse, exposure to violence, and engaging in risky sexual behaviours, potentially resulting in human immunodeficiency virus (HIV), sexually transmitted diseases (STDs) and unintended pregnancies. Given that numerous health behaviours and patterns are solidified during adolescence and persist into adulthood, it is crucial to support young individuals in cultivating positive mental wellbeing.[6]

A web-based survey compared psychological distress in university students aged 18-34 years with the general population, and concluded that the prevalence of distress was 19%, and it was especially high in females and financially burdened students.[7] A study described the association between psychological distress and number of sexual partners, and concluded that youth with greater psychological distress had a greater likelihood of substance use leading to increased sexual risk.[8] Another study concluded that around 18% of boys and 25% of girls went through cyberbullying over a 12-month period that eventually led to low self-esteem and psychological distress in Quebec schools.[9]

However, a study in Ghana suggested no significant relationship between health risk behaviours and psychological distress, indicating the complexity of these associations.[10]

In 2020, the population of Pakistan aged 15-29 years was approximately 44 million, which was almost one quarter of total national population. However, there was decreased understanding of the relationship between youth psychological distress and health-risk behaviours.[11]

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All around the globe, due to rapid urbanization, health-risk behaviours have increased dramatically. In Pakistan, insufficient data existed regarding these behaviours, especially among young people. The objective of this study was to determine the frequency of psychological distress among youth and to study the associated health risk behaviours.

Subjects and Methods

The cross-sectional study was conducted from May to September 2023 at the Indus University of Health Sciences (IUHS), Karachi. After approval from the College of Physicians and Surgeons of Pakistan (CPSP), Karachi, and the institutional ethics review board, the sample size was calculated using the World Health Organisation (WHO) calculator[12] with assumed 50% prevalence of psychological distress among youth, 5% margin of error and 95% confidence level. The sample was raised using non-probability convenience sampling method[13] from among the IUHS students, with permission from the administration, and informed consent from the subjects. Those included were individuals of either gender aged 15-24 years. Those not willing to participate were excluded.

Data was collected using a self-administered two-part questionnaire. The first section used the Kessler 10+ scale[14] for evaluating psychological distress, with scores ranging 10-50. A cut-off score ≥20 was labelled as psychological distress.

Health risk behaviours were assessed by using a structured questionnaire that included dietary behaviours, drug use, hygiene, physical activity, tobacco use, violence, and unintentional injury.

Data was analysed using SPSS 26. Data normality was assessed using the Shapiro Wilk test. Data was reported as mean±standard deviation, median with interquartile range (IQR) or as frequencies and percentages, as appropriate. Confounding variables. such as age, gender, education and health risk behaviour, were controlled through regression analysis. Binary logistic regression was applied to confirm the association between psychological distress and independent variables. First, univariate analysis was applied, and all variables with $p<0.25$ were included in multivariable analysis in which variables were retained based on their clinical relevance, which ensured the inclusion of variables that have established importance in the literature or practical applications, and $p<0.1$ in univariate analysis, which indicated a potential statistical association. This dual approach ensured that the model incorporated both statistically significant predictors and variables of clinical importance, even if their statistical significance was borderline. Crude odds ratio (COR) and adjusted odds ratio (aOR) with 95% confidence interval (CI) were calculated, taking $p\leq0.05$ as significant.

Results

Of the 455 individuals approached, 391(85.9%) were included; 237(68.9%) females and 107(31.1%) males (Figure 1). The median age of the participants was 21 years (interquartile range: 19-22 years) (Table 1).

Table-1: Baseline characteristics.

Variables	n (%)
Gender	
Female	237 (61.8)
Male	107 (38.2)
Age (years)	
Median Age	21
Interquartile Range	19-30
Marital Status	
Single	393 (94.9)
Married	19 (4.5)
Separated	1 (0.2)
Widowed	0 (0)
Divorced	1 (0.2)
Family structure	
Nuclear	284 (68.9)
Extended	128 (31)
Ethnicity	
Sindhi	65 (15.7)
Punjabi	84 (20.2)
Pakhtoon	86 (20.7)
Urdu speaking	114 (27.5)
Balochi	11 (2.6)
Others	54 (13)
Mother's Education	
No formal education	76 (18.4)
Able to read	40 (9.6)
Not able to read	42 (10.1)
Primary	29 (7.0)
Middle (8 class)	34 (8.2)
Matric	73 (17.6)
Intermediate	56 (13.5)
Graduation	57 (13.8)
Other	6 (1.4)
Subject Specialty	
Nursing and Midwifery	278 (67.3)
Medical technology	102 (24.7)
Physiotherapy	33 (7.9)
Father's Education	
No formal education	33 (8)
Able to read	34 (8.2)
Not able to read	9 (2.1)
Primary	18 (4.3)
Middle (8 class)	35 (8.5)
Matric	76 (18.4)
Inter	80 (19.4)
Graduate	112 (27.1)
Other	15 (3.6)

Of the total, 111(27.14%) participants reported eating breakfast for ≤4 days in the preceding 7 days, 53(12.83%) reported drinking carbonated drinks for >3 days, 17(4.11%) reported using cannabis and 19(4.61%) reported using amphetamines or methamphetamines for non-medical purposes (Table 2).

Table-2: Health risk behaviours.

Health Risk Behaviours	n (%)
During the past 7 days, on how many days did you eat breakfast?	
≤4 days	111 (27.1)
>4 days	298 (72.8)
During the past 7 days, how many times did you drink a can, bottle, or glass of a carbonated soft drink such as Coca-Cola or 7up?	
≤3	360 (87.1)
>3	53 (12.8)
During your life, have you used cannabis (also called marijuana / bhang / ganja)?	
No	397 (95.8)
Yes	17 (4.1)
During your life, have you used amphetamines or methamphetamines (also called ice) for non-medical purposes?	
No	393 (95.3)
Yes	19 (4.6)
During the past 30 days, how many times per day did you usually clean or brush your teeth?	
< 1 time	38 (9.2)
Once Daily	230 (55.6)
2 or more times	145 (35.1)
During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of Physical activity each day like walking and exercise. etc.).	
≤4 days	155 (37.6)
>4 days	257 (62.3)
Have you ever consumed alcohol?	
Yes	390 (94.8)
No	21 (5.1)
During the past 30 days, how often did you wash your hands after using the toilet or latrine?	
Never	3 (0.7)
Rarely	8 (1.9)
Sometimes	18 (4.3)
Most of the time	38 (9.2)
Always	345 (83.7)
How much time do you spend during a typical or usual day sitting and watching television, playing computer games, using your mobile phone, talking with friends in a usual day?	
Less than 1 hour per day	33 (7.9)
1 to 2 hours per day	69 (16.6)
3 to 4 hours per day	133 (32.1)
5 to 6 hours per day	84 (20.2)
7 to 8 hours per day	39 (9.4)
More than 8 hours per day	56 (13.5)
Have you ever smoked a cigarette, even one or two puffs?	
No	321 (77.9)
Yes	91 (22)
During the past 30 days, on how many days did you smoke cigarettes?	
0 days	50 (55.5)
1 to 5 days	15 (16.6)
6 to 10 days	6 (6.6)
11 to 15 days	3 (3.3)
16 to 20 days	2 (2.2)
21 to 25 days	3 (3.3)
26 to 30 days	11 (12.2)
During the past 12 months, were you bullied on university property?	
No	344 (83.2)
Yes	69 (16.7)
During the last 12 months were you seriously injured one or more times?	
No	340 (82.1)
Yes	74 (17.8)
During the past 30 days, how often were you able to talk to someone about difficult problems and worries?	
Never	81 (19.5)
Rarely	122 (29.4)
Sometime	150 (36.2)
Most of the time	43 (10.3)
Always	18 (4.3)

The overall median score for psychological distress was 24 (IQR: 19-30), with 285(72.9%) participants reporting psychological distress (Figure 2).

Psychological distress had significant association with mother's education (aOR: 0.28, 95% CI: 0.1-0.77) (Table 3) and university bullying (aOR: 8.01, 95% CI: 2.4-26.71) (Table 4).

Discussion

Overall, 72.9% of the youth sample reported being psychologically distressed, and 27.8 % reported being severely distressed. The prevalence was higher than the rates (42%) documented by the Centres for Disease Control and Prevention (CDC) in 2021.[15] The current findings indicated that psychological distress was a concern among Pakistani youth. If left unaddressed, these mental health issues may resurface in adulthood.[16]

In the current study, just 27.14% of the participants reported eating breakfast four days or fewer within the preceding week. A 2016 study in Iran noted that regular breakfast consumption was associated with fewer mental health issues. The percentage of psychiatric distress among regular breakfast consumers ranged from 7% to 33.3%, significantly less than both breakfast skippers and semi-skippers.[17] Another study in 2022 found that individuals who consumed breakfast less than once weekly displayed a

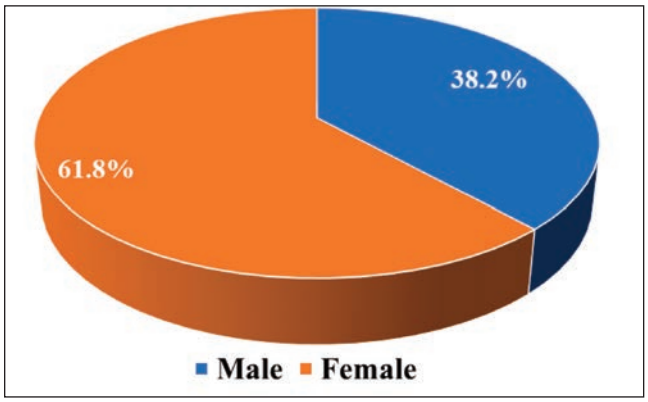

Figure-1: Gender distribution.

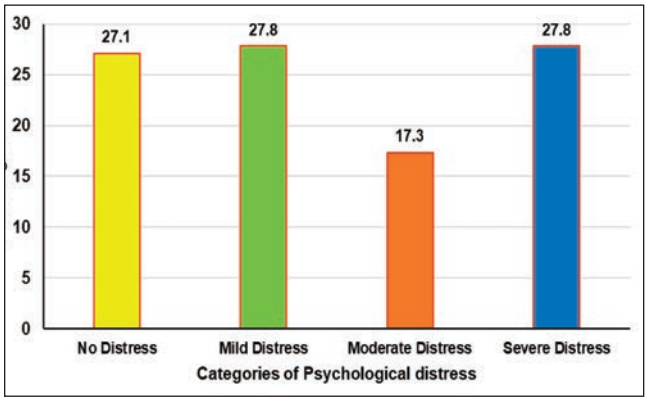

Figure-2: Distribution of physiological distress among the participants.

heightened propensity for suicide attempts compared to those who ate breakfast 6-7 times weekly.[18]

In alignment with earlier findings[19] the current study also indicated that both females and males experienced equal levels of distress (73% and 72% respectively), in contrast to a previous study[20] which noted a higher incidence of psychological distress in females (27.1%) compared to males (18.5%).

Parental education is a very important factor for reducing psychological distress among youth and adolescents A systematic review[21] found that lower levels of parental education can lead to higher psychological distress in adolescents and children. Similar to a research in 2013,[22] the current findings suggested that individuals whose mothers had completed middle school or the 8th grade had lower odds of experiencing psychological distress compared to those with no formal education.

The current results also demonstrated that bullying in university could also lead to psychological distress, which has also been explained in the literature.[23] The finding was supported by a study conducted among adolescents in Ontario, suggesting that higher levels of bullying placed adolescents at the risk of developing higher psychological distress, which, in turn, could lead to short sleep duration.[24]

The use of cannabis, amphetamines, or methamphetamines did not show a significant correlation with psychological distress in the current study, but alcohol consumption was found to be significant in univariate analysis (aOR: 7.19, 95% CI: 0.92-56.02), which was similar to a study conducted in multiple developing countries.[25]

Table-3: The association of demographic variables with psychological distress.

Independent Variables	COR (95% CI)	aOR (95%CI)
Age (years)		
≤20	Ref€	
>20	1.55 (0.99-2.44)	1.53 (0.95-2.56)
Gender		
Male	Ref	
Female	1.01 (0.64-1.58)	
Marital Status		
Single	Ref	
Married	1.42 (0.46-4.37)	
Separated	NA	
Widowed	NA	
Divorced	NA	
Family structure		
Nuclear	Ref€	
Extended	1.57 (0.95-2.57)	
Ethnicity		
Sindhi	Ref	
Punjabi	0.60 (0.27-1.32)	
Pakhtoon	0.62 (0.28-1.36)	
Urdu speaking	0.53 (0.25-1.12)	
Balochi	NA	
Others	0.38 (0.16-0.88)	
Mothers Education		
No formal education	Ref€	
Able to read	1.06 (0.39-2.89)	1.59 (0.54-4.71)
Not able to read	0.56 (0.23-1.36)	0.82 (0.32-2.14)
Primary	0.37 (0.14-0.95)	0.41 (0.15-1.15)
Middle (8 class)	0.22 (0.09-0.54)	0.28 (0.1-0.77)β
Matric	0.55 (0.25-1.20)	0.9 (0.39-2.09)
Intermediate	0.74 (0.31-1.74)	1.29 (0.49-3.38)
Graduation	0.53 (0.23-1.19)	0.86 (0.36-2.09)
Other	NA	
Subject Specialty		
Nursing and Midwifery	Ref	
Medical technology	0.69 (0.42-1.13)	
Physiotherapy	0.88 (0.39-1.98)	
Family medicine	NA	
Fathers Education		
No formal education	Ref	
Able to read	0.42 (0.12-1.42)	
Not able to read	0.62 (0.1-3.92)	
Primary	0.62 (0.14-2.69)	
Middle (8 class)	0.71 (0.2-2.52)	
Matric	0.36 (0.12-1.05)	
Inter	0.47 (0.16-1.37)	
Graduate	0.46 (0.16-1.31)	
Other	0.26 (0.06-1.09)	

COR: Crude odds ratio, aOR: Adjusted odds ratio, CI: Confidence interval.

Table 4: The association of health risk behaviours with psychological distress.

Questions	Response category	COR (95% CI)	aOR (95%CI)
During the past 7 days, on how many days did you eat breakfast?	≤4 days	Ref[ε]	-
	>4 days	0.7 (0.42-1.17)	-
During the past 7 days, how many times did you drink a can, bottle, or glass of a carbonated soft drink such as Coca-Cola or 7up?	≤3	Ref	-
	>3	1.16 (0.59-2.27)	-
During your life, have you used amphetamines or methamphetamines (also called ice) for non-medical purposes?	No	Ref	-
	Yes	1.42 (0.46-4.37)	-
During the past 30 days, how many times per day did you usually clean or brush your teeth?	< 1 time	Ref	-
	Once Daily	0.57 (0.24-1.36)	-
	2 or more times	0.59 (0.24-1.45)	-
During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of Physical activity each day like walking and exercise etc).	≤4 days	Ref[ε]	-
	>4 days	0.76 (0.48-1.2)	7.19 (0.92-56.02)
Have you ever consumed alcohol?	No	Ref	-
	Yes	7.85 (1.04-59.25)	-
How much time do you spend during a typical or usual day sitting and watching television, playing computer games, using your mobile phone, talking with friends in a usual day?	< 1 hour per day	Ref[ε]	-
	1 to 2 hours per day	0.21 (0.05-0.77)	-
	3 to 4 hours per day	0.24 (0.06-0.83)	-
	5 to 6 hours per day	0.21 (0.05-0.75)	-
	0.21 (0.05-0.75)	0.33 (0.08-1.35)	-
	> 8 hours per day	0.36 (0.09-1.41)	-
Have you ever smoked a cigarette, even one or two puffs?	No	Ref[ε]	-
	Yes	1.54 (0.88-2.7)	-
During the past 12 months, were you bullied on university property?	No	Ref[β]	-
	Yes	10.2 (3.13-33.17)	8.01 (2.4-26.71)[β]
During the last 12 months were you seriously injured one or more times?	No	Ref[β]	-
	Yes	2.15 (1.11-4.16)	1.93 (0.9-4.16)
During the past 30 days, how often were you able to talk to someone about difficult problems and worries?	Never	Ref	-
	Rarely	1.14 (0.62-2.09)	-
	Sometime	1.7 (0.93-3.1)	-
	Most of the time	1.65 (0.7-3.84)	-
	Aways	1.75 (0.52-5.83)	-

[β]*p*-value <0.05; [ε]p-value <0.25; COR: Crude odds ratio, aOR: Adjusted odds ratio, CI: Confidence interval.

The results of the current study suggest that further research is required to understand the impact of health risk behaviours on youth mental health, especially in educational institutions where certain public health policies should be made that prioritise mental health, providing counselling and support to reduce distress levels among students.

Moreover, equal levels of distress was observed in males and females which signifies that comprehensive mental health strategies should be made which address the needs of both genders equally.

The positive impact of maternal education on reducing psychological distress shows the importance of parental education, especially of mothers. It can reduce mental health problems among children. Therefore, initiatives should be taken where parental support is encouraged in their children's academic and personal lives to nurture a healthy, stress-free environment for future generations.

The association of psychological distress and bullying emphasises that anti-bullying programmes should be started in educational institutions along with such policies and practices that prevent bullying, and provide proper support to victims.

Community support systems should be established for youth so that psychological distress can be properly addressed. Such activities can be promoted by services that may have a positive impact on youth's mental health.

Programmes that address dietary factors holistically may prove to be more effective in reducing psychological distress among youth.

Longitudinal studies could offer more profound insights into the enduring impacts of early mental health challenges and the effectiveness of different interventions.

The limitation of the current study was that it did not include sexual practices, sleep patterns and parental marital status. Another limitation was its cross-sectional design and the inability to establish the causal relationship between psychological distress and health risk behaviours.

Conclusion

The level of psychological distress among youth was significant, and in need of targeted interventions. Efforts aimed at reducing substance abuse, especially alcohol consumption, and addressing bullying in educational settings were critical for reducing psychological distress in this demographic.

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References

1. Viertiö S, Kiviruusu O, Piirtola M, Kaprio J, Korhonen T, Marttunen M, et al. Factors contributing to psychological distress in the working population, with a special reference to gender difference. BMC Public Health 2021;21:611. doi: 10.1186/s12889-021-10560-y.
2. Gulliver A, Griffiths KM, Christensen H, Brewer JL. A systematic review of help-seeking interventions for depression, anxiety and general psychological distress. BMC Psychiatry 2012;12:81. doi: 10.1186/1471-244X-12-81.
3. Institute of Medicine (IOM), National Research Council (NRC). Investing in the health and well-being of young adults. Washington, DC: The National Academies Press; 2015.
4. In: DiClemente RJ, Hansen WB, Ponton LE, eds. Handbook of Adolescent Health Risk Behavior, 1st ed. New York, USA: Springer New York, NY; 2013. doi: 10.1007/978-1-4899-0203-0
5. Clark C, Haines MM, Head J, Klineberg E, Arephin M, Viner R, et al. Psychological symptoms and physical health and health behaviours in adolescents: a prospective 2-year study in East London. Addiction 2007;102:126-35. doi: 10.1111/j.1360-0443.2006.01621.x.
6. Wood D, Crapnell T, Lau L, Bennett A, Lotstein D, Ferris M, et al. Emerging Adulthood as a Critical Stage in the Life Course. In: Halfon N, Forrest CB, Lerner RM, Faustman EM, eds. Handbook of Life Course Health Development, 1st ed. Cham, Switzerland: Springer, 2018; pp 123-43. doi: 10.1007/978-3-319-47143-3_7
7. Stallman HM. Psychological distress in university students: A comparison with general population data. Aust Psychol 2010;45:249-57. doi: 10.1080/00050067.2010.482109.
8. Elkington KS, Bauermeister JA, Zimmerman MA. Psychological distress, substance use, and HIV/STI risk behaviors among youth. J Youth Adolesc 2010;39:514-27. doi: 10.1007/s10964-010-9524-7.
9. Cénat JM, Hébert M, Blais M, Lavoie F, Guerrier M, Derivois D. Cyberbullying, psychological distress and self-esteem among youth in Quebec schools. J Affect Disord 2014;169:7-9. doi: 10.1016/j.jad.2014.07.019.
10. Atorkey P, Byaruhanga J, Paul C, Wiggers J, Bonevski B, Tzelepis F. Multiple Health Risk Factors in Vocational Education Students: A Systematic Review. Int J Environ Res Public Health 2021;18:637. doi: 10.3390/ijerph18020637.
11. Qidwai W, Ishaque S, Shah S, Rahim M. Adolescent lifestyle and behaviour: A survey from a developing country. PloS 0ne 2010;5:e 12914.
12. Calculator.net. Sample Size Calculator. [Online] 2024 [Cited 2025 April 04]. Available from URL: https://www.calculator.net/sample-size-calculator.html?type=1&cl=90&ci=5&pp=50&ps=&x=Calculate.
13. Pengpid S, Peltzer K. Prevalence and associated factors of psychological distress among a national sample of in-school adolescents in Morocco. BMC Psychiatry 2020;20:475. doi: 10.1186/s12888-020-02888-3.
14. Andrews G, Slade T. Interpreting scores on the Kessler Psychological Distress Scale (K10). Aust N Z J Public Health 2001;25:494-7. doi: 10.1111/j.1467-842x.2001.tb00310.x.
15. Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (HHS). Public Health Reassessment And Order Suspending The Right To Introduce Certain Persons From Countries Where A Quarantinable Communicable Disease Exists. [Online] 2021 [Cited 2025 February 08]. Available from URL: https://stacks.cdc.gov/view/cdc/108493
16. Lynam DR, Caspi A, Moffitt TE, Loeber R, Stouthamer-Loeber M. Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. J Abnorm Psychol 2007;116:155-65. doi: 10.1037/0021-843X.116.1.155.
17. Ahadi Z, Kelishadi R, Qorbani M, Zahedi H, Aram M, Motlagh ME, et al. Association of Breakfast Intake with Psychiatric Distress and Violent Behaviors in Iranian Children and Adolescents: The CASPIAN-IV Study. Indian J Pediatr 2016;83:922-9. doi: 10.1007/s12098-016-2049-7.
18. Park H, Lee K. Association Between Breakfast Consumption and Suicidal Attempts in Adolescents. Psychol Res Behav Manag 2022;15:2529-41. doi: 10.2147/PRBM.S380192.
19. Basnet B, Jaiswal M, Adhikari B, Shyangwa PM. Depression among undergraduate medical students. Kathmandu Univ Med J (KUMJ) 2012;10:56-9. doi: 10.3126/kumj.v10i3.8021.
20. In: McManus S, Bebbington P, Jenkins R, Brugha T, eds. Mental health and wellbeing in England: Adult Psychiatric Morbidity Survey 2014. Leeds, England: NHS Digital; 2016.
21. Mcleod JD, Shanahan MJ. Trajectories of poverty and children's mental health. J Health Soc Behav 1996;37:207-20.
22. Park AL, Fuhrer R, Quesnel-Vallée A. Parents' education and the risk of major depression in early adulthood. Soc Psychiatry Psychiatr Epidemiol 2013;48:1829-39. doi: 10.1007/s00127-013-0697-8.
23. Thomas HJ, Chan GC, Scott JG, Connor JP, Kelly AB, Williams J. Association of different forms of bullying victimisation with adolescents' psychological distress and reduced emotional wellbeing. Aust N Z J Psychiatry 2016;50:371-9. doi: 10.1177/0004867415600076.
24. Sampasa-Kanyinga H, Chaput JP, Hamilton HA, Colman I. Bullying involvement, psychological distress, and short sleep duration among adolescents. Soc Psychiatry Psychiatr Epidemiol 2018;53:1371-80. doi: 10.1007/s00127-018-1590-2.
25. Balogun O, Koyanagi A, Stickley A, Gilmour S, Shibuya K. Alcohol consumption and psychological distress in adolescents: a multi-country study. J Adolesc Health 2014;54:228-34. doi: 10.1016/j.jadohealth.2013.07.034.

Author Contribution:

N: Literature search, design, concept, questionnaire design, data collection, basic data analysis and drafting.

AI: Literature search, design, concept, questionnaire design, advanced data analysis, interpretation, writing and final approval.