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ORIGINAL RESEARCH

A Cross-Sectional Study of Anxiety and Depression in a Cohort of Nigerian Undergraduates

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Abstract

Background: Globally, there is a rising concern regarding the increased prevalence of mental disorders among university students, as studies have demonstrated a significant clinical measure of psychiatric morbidities among undergraduates worldwide. Sadly, there is a paucity of data on the burden of mental illness among undergraduates in Nigeria, and undergraduate students' mental health problems have not received the requisite public attention in Nigeria and many other countries.
Objectives: To determine the prevalence of anxiety and depressive symptoms and the correlation between anxiety and depression in a cohort of Nigerian undergraduate students.
Methods: We conducted a cross-sectional study of 877 undergraduates at Bowen University Hospital in Iwo Osun State, Nigeria, between October 2022 and May 2023.
Results: 14.9%, 10.4%, and 1.9% of undergraduate students had mild, moderate, and severe anxiety disorders, respectively. Similarly, 11.2%, 5.1%, and 0.5% of students had mild, moderate, and severe depression, respectively. The study showed a strong positive correlation between anxiety disorders and depression among undergraduate students.
Conclusion: This study revealed a high prevalence of anxiety and depressive symptoms. There is a need for concerned authorities to have a blueprint for an efficient mental health support structure and ensure adequate training of personnel at university health centres.

Keywords: Anxiety, Depression, Hospital Anxiety Depression Scale, Undergraduates, Mental Health.

Introduction

Mental health issues are now occupying the forefront of public health discourse, as they

account for one-third of the causes of disability worldwide. [1] Globally, there is a rising concern regarding the increase in the prevalence of mental disorders among university students.[2] According to the World Health Organization (WHO), depression and anxiety disorders are among the leading causes of illness and disease among adolescents. At the same time, suicide is the fourth leading cause of death among persons within the age group of 15-29 years, commonly found in the university.[3] Anxiety is a condition notably associated with feelings of tension, uneasiness, worries, or fear, which can occur with or without a precipitating stimulus. [4] Depression comprises a group of symptoms such as persistent low mood, loss of interest in pleasurable activities, reduced energy, loss of concentration, prominent weight changes, altered sleep patterns, feelings of hopelessness and/or worthlessness, and suicidal thoughts or ideas. [5]

Undergraduate students are particularly trying to navigate a crucial stage of life development, which can be difficult. This period of transition from adolescence to adulthood involves social, emotional, and physical maturity to handle and cope with life issues.[6] In the process, individuals try to discover themselves, form intimacy, explore different aspects of life, and provide solutions to thorny situations as they arrive.[7] Combining all of these with the rigour of academic pursuit may pose a significant demand for them.

In a university environment, undergraduates experience an array of challenges, such as adapting to life outside the home, academic stress, inadequate housing, financial and relationship difficulties, peer pressure, and sleep difficulties.[8] Students must grapple with all these to survive the tasking academic condition in which they find themselves, making them vulnerable to psychological distress. The tension and worry that accompany examination preparation and the eventual release of results have an untold effect on mental health.[9]

Since a significant number of studies have shown a considerable clinical measure of psychiatric morbidities among undergraduates globally, the rising incidence of mental health issues among undergraduates has become a pertinent issue.[10] Li et al. reported that the global prevalence of anxiety and depressive symptoms among university students was 39.0% and 33.6%, respectively.[11] A similar review by Waleria *et al.* revealed that anxiety and depression accounted for 24.5% and 26.1 %, respectively. [12] Higher figures were reported in studies conducted in the USA, Malaysia, and Egypt, especially among students of Medicine and Nursing. [13 - 15] In Nigeria, recent studies have reported 28.1% and 16.4% for anxiety and 21.3% and 12.7% for depression. [16,17] There is a dearth of information on psychiatric morbidity among undergraduates in Nigeria. Most of the studies in Nigeria were conducted among specific groups of students (medical, pharmacy, and others). However, little information exists among undergraduates across different departments. Therefore, this study looked at a more extensive scope involving students from diverse disciplines.

Unfortunately, the mental health conditions of undergraduates have not received the needed public health attention, which behoves the university and policymakers to ensure frantic efforts are taken concerning this. Understanding the burden of psychological distress among them will further elucidate the importance of developing mental health policies on campuses for early screening and intervention. This study aimed to investigate the burden of anxiety and depressive symptoms among undergraduate students at Bowen University, Iwo, Osun State, Nigeria.

Methods

Study site

The study was conducted between 17 October 2022 and 20 May 2023 at the Bowen University

Hospital in the Iwo urban (population range of 250,000-499,999 inhabitants), Osun State, in southwestern Nigeria. Bowen University, founded by the Nigerian Baptist Convention in 2001, is one of Nigeria's oldest private coeducational institutions of higher education.

Study design and participants

This cross-sectional study included 877 undergraduate students who were recruited using a systematic random sampling method. Undergraduates from different departments and gender groups participated in this study in other semesters.

Data collection

The researchers explained the nature of the study, its objectives, risks, such as temporary emotional discomfort or distress caused by responding to sensitive questions about anxiety and depression, the benefits of participation, and the right to remain or opt out of the study to the prospective participants. After obtaining informed consent, we ran a self-administered questionnaire comprising sociodemographic information and 14 HADS items. Sociodemographic parameters collected from the students included age, sex, and study course. Depression and anxiety among the participants were measured using the HADS items in the questionnaires, which is a valuable tool with good levels of validity and reliability and is widely utilized in many studies for this purpose. [18 - 20] The Hospital Anxiety and Depression Scale was used because it has been validated in Nigeria. [21] Each HADS item was categorized as either HADS-A for statements related to symptoms of anxiety or HADS-D for statements related to symptoms of depression. Each item had four possible responses, which were scored from 0 to 3, with 3 denoting the highest anxiety or depression level. Once responses to each item were determined, subscale totals (HADS-A and HADS-D) were calculated by adding the responses to all relevant subscale items. HADS is divided into four ranges: normal (0-7), mild (8-10), moderate (11-15), and severe (16-21).

The questionnaires were pretested among 35 undergraduates in April 2022 at a neighbouring university to evaluate the clarity of the demographic and HADS items. The data obtained from this pretest was used to calculate the reliability coefficient, resulting in a value of 0.705. This good psychometric property is consistent with findings from a previous study in Nigeria. [18]

Statistical analysis

The completed questionnaires were serially coded and entered into a computer. Data were analyzed using SPSS version 22(IBM, New York, USA). Means, standard deviations (SD), frequencies, and percentages of participant characteristics were calculated. The independent variables included sociodemographic parameters, and the HADS score was the outcome variable. The association between depression, anxiety and other variables was assessed using the Chi-Square test. Statistical significance for all inferential analyses was set at $p<0.05$.

Ethical approval

The Directorate of Research and Strategic Partnership, Bowen University, Iwo, Nigeria, approved this study with certificate number BUREC/COHES/FMD/002.

Results

Eight hundred and seventy-seven questionnaires were administered but 810 were available for analysis, yielding a response rate of 92.4%. 323 (39.9%) were males and 487 (60.1%) out of the 810 participants were females. The median age was 18.07 years (SD = 2.07) (Table I).

Prevalence of depressive symptoms and anxiety among participants

A total of 121 (14.9%) students experienced mild anxiety, and another 84 (10.4%) and 15 (1.9%) reported moderate and severe anxiety, respectively. Similar to this, 91 (11.2%) students

had mild depression, while 41 (5.1%) and 4 (0.5%) had moderate and severe depression, respectively, as shown in Table II.

Table I: Participants' sociodemographic characteristics

		Frequency	Percentage
Sex	Male	323	39.9
	Female	487	60.1
Age Group	< 21	716	88.4
	≧ 21	94	11.6
Age	Mean (SD)	18.07 (2.07)	

Table II: Prevalence of depression and anxiety among participants

		Frequency	Percentage
Anxiety	Normal (0 – 7)	590	72.8
	Mild (8 – 10)	121	14.9
	Moderate (11- 15)	84	10.4
	Severe (16 – 21)	15	1.9
Depression	Normal (0 – 7)	674	83.2
	Mild (8 – 10)	91	11.2
	Moderate (11- 15)	41	5.1
	Severe (16 – 21)	4	0.5

Association between participants' sociodemographic characteristics and anxiety

Table III shows that 42 (13.0%), 24 (7.4%), and 3 (0.9%) male participants experienced mild, moderate, and severe anxiety, respectively. Seventy-nine (16.2%), 60 (12.3%), and 12 (2.5%) female participants experienced mild, moderate, and severe anxiety, respectively. There was a statistically significant association between sex and anxiety (p = 0.001).

Individuals older than 21 years (3, 3.2%) had slightly more severe anxiety than those younger than 21 years (12, 1.7%). Participants under 21 years (10.5%) had a higher prevalence of moderate anxiety. However, the association between age and anxiety levels was not statistically significant (p = 0.361), as shown in Table III.

Table III: Association between participants' sociodemographic characteristics and anxiety

		Normal	Mild	Moderate	Severe	X^2	Df	p-value
Gender	Male	254 (78.6)	42 (13.0)	24 (7.4)	3 (0.9)	10.776	3	0.001
	Female	336 (69.0)	79 (16.2)	60 (12.3)	12 (2.5)			
Age	< 21	526 (73.5)	103 (14.4)	75 (10.5)	12 (1.7)	2.688	3	0.361
	≥ 21	64 (68.1)	18 (19.1)	9 (9.6)	3 (3.2)			

Association between participants' sociodemographic characteristics and depression

In terms of depression, 268 (83.0%) male participants fell within the normal range, whereas 54 (11.1%), 24 (4.9%), and 1 (0.3%) had mild, moderate, and severe depression, respectively. On the depression scale, 406 (83.4%) female participants fell within the normal range, whereas 54 (11.1%), 24 (4.9%), and 3 (0.6%) had mild, moderate, and severe depression, respectively. However, there was no significant association between sex and depression ($p = 0.976$)

Participants under the age of 21 had greater rates of moderate and severe depression than those over that age (4.9% and 0.4%, respectively) (Table IV); however, there was no statistically significant relationship between age and depression level ($p = 0.274$).

Table IV: Association between participants' characteristics and depression

		Normal	Mild	Moderate	Severe	X^2	Df	p-value
Gender	Male	268 (83.0)	37 (11.5)	17 (5.3)	1 (0.3%)	0.439	3	0.976
	Female	406 (83.4)	54 (11.1)	24 (4.9)	3 (0.6)			
Age	< 21	599 (83.7)	79 (11.0)	35 (4.9)	3 (0.4)	1.438	3	0.274
	≥ 21	75 (79.8)	12 (12.8)	6 (6.4)	1 (1.1)			

Correlation between depression and anxiety

The association between depression and anxiety was evaluated using Pearson's correlation, which showed a positive correlation ($r = 0.532$, $p < 0.05$). The result is shown in Figure 1.

Discussion

This study provides evidence of depression and anxiety symptoms among Nigerian undergraduates: 14.9%, 10.4%, and 1.9% of the study participants had mild, moderate, and severe anxiety symptoms, respectively, whereas 11.2%, 5.1%, and 0.5% of the participants experienced mild, moderate, and severe depression, respectively. This study also observed a strong positive correlation between depression and anxiety disorders among undergraduate students.

In addition, a significant association existed between gender and anxiety but none between gender and depression. Failure to attend to mental health conditions in this category of individuals can linger into adulthood, causing significant impairment in both psychological and physical health, thereby reducing their quality of life and limiting their academic performance and occupational prospects. Therefore, it is essential to prioritize mental health issues among undergraduate students through early identification and intervention.

Remarkably, the prevalence of anxiety symptoms was 27.2 % (14.9%, 10.4%, and 1.9% for mild, moderate, and severe anxiety) among Nigerian undergraduates. This is similar to the findings of a study in Nigeria, which reported a prevalence of 28.1% for anxiety disorders.[16] Another study in Nigeria reported a prevalence of 16.4% for anxiety disorders. [17] The observed prevalence of 16.8 % (11.2%, 5.1%, and 0.5% for mild, moderate, and severe) depression among undergraduates in our study is also similar to the reported prevalence of 21.3% and 12.7% for depression in other studies among undergraduates in Nigeria. [16 17] As a result, this study demonstrates a considerable mental health distress among Nigerian undergraduates. Several other studies have shown that college students in many parts of the world suffer significant mental health problems. [22 - 24]

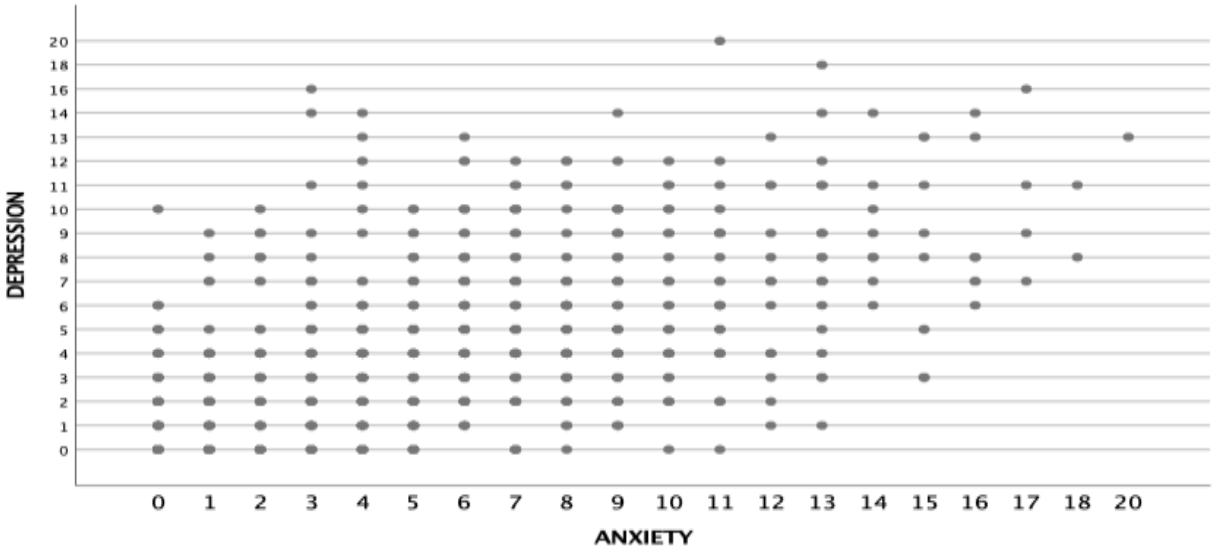

Figure 1: Correlation between depression and anxiety

According to the American College Health, depression and anxiety are the most frequently reported mental health problems among college students. [22]A study conducted by the World Health Organization (WHO) among university students in 21 countries showed that 20% had mental disorders [23] and 25% of students with mental health disorders experienced depression.

Furthermore, this study shows an important association between sex and anxiety. Similar epidemiological studies have also demonstrated a clear association between anxiety disorders and the gender of undergraduates. The findings of this study are similar to those of a longitudinal study among undergraduate students from 15 universities in China, where it was reported that there was no association gender difference in students' depression levels. [25] On the contrary, this study did not observe any important association between sex and depression. This is similar to the findings of Chen *et al.* in their research on the prevalence and sociodemographic correlates of depression among Chinese University students. [10] This can be attributed to the fact that both genders having equal access to rights and academic opportunities. Nevertheless, some studies contradict the findings in the present study having reported significant differences in depression symptoms between genders. [26, 27]

The present study also observed that there was a strong association between anxiety disorders and depression among Nigerian undergraduates. Anxiety disorders and depression are highly co-morbid and are viewed as falling under the more inclusive umbrella term of internalizing disorders. [28] According to a global estimate, 45.7% of people diagnosed with major depression also had a lifetime history of anxiety disorders. [24] Many academics have wondered whether depression and anxiety are symptoms of the same mental health condition because of the frequent linkage of these two variables with one another. Anxious people would be subjected to more social exclusion; as a result, they are more inclined to withdraw, which can cause loneliness, a negative self-image, and eventually depression. [29 - 31] This highlights the positive correlation observed in this study.

Study limitations and strength

The study's self-report nature, in which students may choose not to completely disclose any psychiatric symptoms or additional psychopathologies, is a limitation. Additionally, some students might be hesitant to divulge personal information. The omission

of the year of study of the undergraduates, which might also constitute a confounding effect, is another study limitation.

However, the use of a validated instrument (HAD Questionnaire) ensures data reliability and the appropriate statistical methods provide meaningful insights into these mental health challenges to improve campus-based mental health initiatives. Furthermore, the participants pool, comprising registered undergraduates at Bowen University, reflects Nigeria's geographic diversity, with students from all the six geopolitical zones.

Conclusion

There was a high prevalence rate of anxiety disorders and depression among undergraduates in Nigeria. Therefore, the present study serves as a clear clarion call to action, highlighting the critical need to prioritize Nigeria's future leaders' mental health and well-being. Based on the high prevalence of depression and anxiety among Nigerian undergraduates, as revealed in this study, it is recommended that the government and other constituted authorities should establish an effective support system, including counselling centres, campaigns to encourage people to seek help, policies to reduce stigma on the campuses and adequate training of health personnel at the University health centres.

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Authors' Contributions: ATO conceived and designed the study along with AOV. ASA analysed the data and interpreted it along with ATO. ATO wrote the draft of the manuscript. OOA and AOV critically revised the draft of the manuscript. RMM and SYA participated in data collection and critical revision of the manuscript for sound intellectual content. All the authors approved the final draft of the manuscript.

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List of abbreviations

HADS - Hospital Anxiety and Depression Scale.
HADS-A - Hospital Anxiety and Depression Scale for Anxiety Disorders.
HADS-D - Hospital Anxiety and Depression Scale for Depression.
WHO - World Health Organization.

References

1. Salleh MR. The burden of mental illness: An emerging global disaster. Journal of Clinical and Health Sciences. 2018;3(1):1-8. DOI:10.24191/jchs.v3i1.6150
2. Ibrahim MB, Abdelreheem MH. Prevalence of anxiety and depression among medical and pharmaceutical students in Alexandria University. Alexandria J Med 2015;51:167–173. https://doi.org/10.1016/j.ajme.2014.06.002
3. Bertuccio P, Amerio A, Grande E, La Vecchia C, Costanza A, Aguglia A, *et al.* Global trends in youth suicide from 1990 to 2020: an analysis of data from the WHO mortality database. EClinicalMedicine. 2024;70. https://doi.org/10.1016/j.eclinm.2024.102506.
4. Walkman S, Walker MEP, Rossebham EF. Abnorma Psychology. 4th Edition. New York.: W.W Norton & Company. 2020.
5. Bernard JE. Depression: A review of its definition. MOJ Addict Med Ther. 2018;5:6-7. https://doi.org/10.15406/mojamt.2018.05.00082.
6. Buchanan JL. Prevention of Depression in the College Student Population: A Review of the literature. Arch Psychiatric Nurs. 2012;26:21–42. https://doi.org/10.1016/j.apnu.2011.03.003.
7. Medforth N, Boyle C. Challenges, Complexity, and Developments in

Transition Services for Young People with Disabilities, Mental Health, and Long-Term Conditions: An Integrative Review. Comprehensive Child Adolesc Nurs 2023;46:180–200. https://doi.org/10.1080/24694193.2023.2245473.

8. Spiessl H, Hübner-Liebermann B, Hajak G. Depression, a widespread disease. Epidemiology, care situation, diagnosis, therapy and prevention]. Dutsch Med Wochenschr 2006;131:35-40. https://doi.org/10.1055/s-2006-924919.
9. Amin WM, Sankar R, Rakshantha P, Nivatha ALS, Sowparnika CE, Marak LDB. "Stress anxiety and depression among science and art students." Int J Educ Psychol 2016;5:48-51. https://doi.org/10.3617/2567498.
10. Chen L, Wang L, Qiu XH, Yang XX, Qiao ZX, Yang YJ. Depression among Chinese University Students: Prevalence and Sociodemographic Correlates. PLoSOne 2013;8:1–6. https://doi.org/10.1371/journal.pone.0058379.
11. Zhang H, Wang D. Commentary: The global prevalence of depression and anxiety symptoms among college students and its influencing factors. J Child Psychol Psychiatry Allied Discip 2022;63:1231–1233. https://doi.org/10.1111/jcpp.13660.
12. Paula W de, Breguez GS, Machado EL, Meireles AL. Prevalence of anxiety, depression, and suicidal ideation symptoms among university students: a systematic review. Brazilian J Health Rev. 2020;3:8739–8756. https://doi.org/10.34119/bjhrv3n4-119
13. Beiter R, Nash R, McCrady M, Rhoades D, Linscomb M, Clarahan M. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. J Affect Disord. 2015;173:90–96. https://doi.org/10.1016/j.jad.2014.10.054.
14. Shamsuddin K, Fadzil F, Ismail WSW, Shah SA, Omar K, Muhammad NA. Correlates of depression, anxiety, and stress among Malaysian university students. Asian J Psychiatry 2013;6:318–323. https://doi.org/10.1016/j.ajp.2013.01.014
15. Abdel Wahed WY, Hassan SK. Prevalence and associated factors of stress, anxiety, and depression among medical Fayoum University students. Alexandria J Med.2017;53:77–84. https://doi.org/10.1016/j.ajme.2016.01.005
16. Seun-Fadipe CT, Mosaku KS. Sleep quality and psychological distress among undergraduate students of a Nigerian university. Sleep Health 2017;3:190–194. https://doi.org/10.1016/j.sleh.2017.02.004
17. James BO, Thomas IF, Omoaregba JO, Okogbenin EO, Okonoda KM, Ibrahim AW, *et al.* Psychosocial correlates of perceived stress among undergraduate medical students in Nigeria. Int J Med Educ 2017;8:382–388. https://doi.org/10.5116/ijme.59c6.3075.
18. Brennan C, Worrall-Davies A, McMillan D, Gilbody S, House A. The Hospital Anxiety and Depression Scale: a diagnostic meta-analysis of case-finding ability. J Psychosom Res 2010;69:371-378. https://doi.org/10.1016/j.jpsychores.2010.04.006.
19. Vodermaier A, Millman RD. Accuracy of the Hospital Anxiety and Depression Scale as a screening tool in cancer patients: a systematic review and meta-analysis. Support Care 2011;19:1899-1908. https://doi.org/10.1007/s00520-011-1251-4.
20. Mitchell AJ, Meader N, Symonds P. Diagnostic validity of the Hospital Anxiety and Depression Scale (HADS) in cancer and palliative settings: a meta-analysis. J Affect Disord 2010;126:335-348. https://doi.org/10.1016/j.jad.2010.01.067.
21. Sale S, Gadanya M. Prevalence and factors associated with depression in HIV/AIDS patients aged 15-25 years at Aminu Kano Teaching Hospital, Nigeria. J Child Adolesc Ment Health 2008;20:95-99. https://doi.org/10.2989/JCAMH.2008.20.2.5.688.
22. American College Health Association. American College Health Association, National College Health Assessment II Reference Group Executive Summary Spring 2018. Silver Spring, MD American College Health Association.2018. https://doi.org/10.3200/JACH.57.5.477-488.
23. Auerbach RP, Alonso J, Axinn WG, Cuijpers P, Ebert DD, Green JG, *et al.* Mental disorders among college students in

the World Health Organization World Mental Health Surveys. Psychol Med 2016;46:2955–2970. https://doi.org/10.1017/S0033291716001665.

24. Gao W, Ping S, Liu X. Gender differences in depression, anxiety, and stress among college students: A longitudinal study from China. J Affect Disord. 2020;15:263:292-300. https://doi.org/10.1016/j.jad.2019.11.121.

25. Franko DL, Striegel-Moore RH, Bean J, Barton BA, Biro F, Kraemer HC, et al. Self-reported symptoms of depression in late adolescence to early adulthood: a comparison of African-American and Caucasian females. J Adolesc Health 2005;37(6):526–529. https://doi.org/10.1016/j.jadohealth.2004.08.028.
26. Wade TJ, Cairney J, Pevalin DJ. The emergence of gender differences in depression during adolescence: national panel results from three countries. J Am Acad Child Adolesc Psychiatry 2002;41:190–198. https://doi.org/10.1037/0033-2909.115.3.424.
27. Axelson DA, Birmaher B. Relation between anxiety and depressive disorders in childhood and adolescence. Depression Anxiety 2001;14:67-78. https://doi.org/10.1002/da.1048.
28. Kessler RC, Sampson NA, Berglund P, Gruber MJ, Al-Hamzawi A, Andrade L, *et al.* Anxious and non-anxious major depressive disorder in the World Health Organization World Mental Health Surveys. Epidemiol Psychiatr Sci 2015;24:210–226. https://doi.org/10.1017/S2045796015000189.
29. Groen RN, Ryan O, Wigman JTW, Riese H, Penninx BWJH, Giltay EJ, *et al.* Comorbidity between depression and anxiety: Assessing the role of bridge mental states in dynamic psychological networks. BMC Med 2020 29;18:308. https://doi.org/10.1186/s12916-020-01738-z.
30. Dou H, Lei Y, Cheng X, Wang J, Leppänen P. Social exclusion influences conditioned fear acquisition and generalization: A mediating effect from the medial prefrontal cortex. Neuroimage 2020;218:116735. https://doi.org/10.1016/j.neuroimage.2020.116735.
31. Chaplin TM, Gillham JE, Seligman ME. Gender, Anxiety, and Depressive Symptoms: Longitudinal Study of Early Adolescents. J Early Adolesc 2009;29:307-327. https://doi.org/10.1177/0272431608320125.