Original Research

The Burden of Depressive and Anxiety Disorders in Nepal, 1990-2017: An Analysis of Global Burden of Disease Data

Deepa Kumari Bhatta[1¶], Kreeti Budhathoki[2¶], Kiran Paudel[3,4], Shishir Paudel[5], Sujan Babu Marhatta[5,6], Smritee Mahat[7], Avinaya Banskota[8], Yadav Prasad Joshi[5,6*]

[1]Department of Public Health, Nobel College (affiliated to Pokhara University), Sinamangal, Kathmandu, Nepal; [2]Department of Psychology, Tri-Chandra Multiple Campus, Tribhuvan University, Kathmandu, Nepal; [3]Institute of Medicine, Tribhuvan University, Kathmandu, Nepal; [4]Nepal Health Frontiers, Tokha, Kathmandu, Nepal; [5]Department of Public Health, Manmohan Memorial Institute of Health Sciences, Kathmandu, Nepal; [6]Faculty of Science, Health & Technology, Nepal Open University, Lalitpur, Nepal; [7]Department of Pathology, Bir Hospital, Kathmandu, Nepal; [8]School of Arts (Disability Research Center), Kathmandu University, Hattiban, Lalitpur, Nepal

[¶]These authors have contributed equally.

***Corresponding Author:** Yadav Prasad Joshi; Email: yadavjoshi@gmail.com

Abstract

Background: Depressive disorders are frequent mental disorders that rank as top contributors of disability worldwide. Despite their burgeoning concerns, these are still one of the unheeded issues in developing nations. This study aims to describe the burden of major mental health disorders in Nepal in terms of Year Lived with Disability and Disability-Adjusted Life Year by age and sex standardization.

Methods: The publicly available Global Burden of Disease (GBD) data from 1990 to 2017 was used for this study. The age and sex-specific incidence, prevalence rate, YLDs, and DALYs were examined among 100,000 populations.

Results: It was noted that females had the higher prevalence of depressive [4094.4 (95% uncertainty interval [UI]: 3761.9-4470.3 per 100,000)] and anxiety [4496.8 (95% UI: 4171.9-4837.9 per 100,000)] disorders. The prevalence of major depressive disorders was comparatively higher in females (2766.7) than males (1822.9). Females also had higher YLDs for both depressive and anxiety disorders. In 2017, higher DALYs of anxiety disorder were found in the females of 45-49 years (630.1). Childhood sexual abuse was found to be the major risk factor for depressive disorder, contributing to 32.5 DALYs in both sexes. Bullying, victimization had contributed to 26.7 DALYs of anxiety.

Conclusion: There is a high burden of mental disorders in females of Nepal. This finding would support in identifying major mental health challenges of the country and in developing plans and interventions based on preventive, curative, and rehabilitative strategies.

Keywords: Mental disorders, depression, anxiety, prevalence, incidence, burden, Nepal

ARTICLE INFORMATION	Source of Support: Self	Conflict of Interest: None
Received: 5 December 2021	Accepted: 26 April 2022	Published Online: 30 April 2022

INTRODUCTION

Globally, depressive and anxiety disorders are the most frequent mental disorders and are ranked among the top conditions for disability.[1] Major depressive disorders (MDDs) are one of the most common and serious mental disorders linked with the diminished role, functioning and quality of life, medical morbidity, and mortality.[2] Dysthymia, as a persistent depressive disorder, is a chronic mood illness and often more disabling than major depression episodes. The serious consequences of dysthymia are increasing and characterized by severe functional impairment, increased morbidity from physical disease, and increased risk of suicide.[3] Anxiety disorders refer to a group of mental illnesses and their burden is increasing globally.[4,5]

The report from the global burden of disease study (GBD) ranked depression and anxiety disorders as the second and ninth-highest causes of Years Lived with Disability (YLDs) respectively in both developed and developing countries in the year 2013.[6] The burdens of these disorders have increased gradually in the past 27 years and ranked fourth in 1990 to third in 2017.[7] Globally, the number of incident cases of depression increased from 172 million in 1990 to 258 million in the year 2017.[8] In South Asia, depressive disorders remain a higher burden in females and older adults while Bangladesh had the highest (4.4%) age-standardized prevalence in 2016 followed by Nepal (4.0%), India (3.9%), Bhutan (3.7%), and least (3.0%) in Pakistan.[9]

In Nepal, the burden of depression and anxiety disorders in terms of morbidity and disability are overwhelmingly high and have the second-highest prevalence rate (301 per 1,000) of psychiatric morbidity compared to other South Asian countries.[10,11] Mental health problems including depressive and anxiety disorders have a higher prevalence in females and adults of age 40-49 years in the country.[10] Institute for Health Metrics and Evaluation (IHME) 2017 report had ranked depressive disorder as the fourth cause of YLDs.[12,13] This study aims to describe the burden of major mental health disorders in Nepal in terms of Year Lived with Disability and Disability-Adjusted Life Year by age and sex standardization.

MATERIALS AND METHODS

This was an ecological study on disease burden based on the publicly available secondary data taken from the Global Health website of the Health Metrics and Evaluation (IHME) repository. The IHME is a research institute working in global health statistics, disease burden, and impact evaluation at the University of Washington, USA. The GBD uses all accessible data sources, including national surveys, and other epidemiological studies to estimate the burden, quantify the disease-specific health loss, injuries, and risk factors.[14] In the GBD study, depressive and anxiety disorders were included under mental disorders and depressive disorder is further categorized as MDD and dysthymia.[12] The metrics, data sources, and statistical modeling for depressive and anxiety disorders were described comprehensively in GBD 2017. [7, 12, 13]

In the estimation of each depressive and anxiety disorder, epidemiological data were generated using a Bayesian meta-regression tool DisMod-MR 2.1. The different surveys and scientific publications from 1990 to 2017 were considered as the data source for the study. The YLDs were calculated by multiplying the prevalence and disability weight. The DALYs were estimated from the estimates of YLLs and YLDs. The YLDs were mainly used in the estimation of DALYs in anxiety and depressive disorders.[7,13] The estimation for exposure and attributable disease burden of risk factors was made from the comparative risk assessment framework. The distribution of risk exposure was estimated based on research methods such as randomized controlled trials, prospective cohorts, or case-control studies. Disease burden attributable to risk factors was estimated by comparing the present exposure distribution of the theoretical minimum risk exposure level. Population attributable fraction of uncertainty was calculated for each pair of disease risks. In the final estimates, exposure, relative risk, theoretical minimum risk distribution, and uncertainty in the first outcome rates were propagated. [13]

We selected the risk factors to which the burden of depressive and anxiety disorders could be attributed in GBD 2017 including intimate partner violence, childhood sexual abuse, and bullying victimization. The age-standardized and sex-specific prevalence and DALYs in 2017 for depressive and anxiety disorders along with annualized percentage change in DALYs of all ages and both sexes for Nepal were estimated. We also compared the incidence and DALYs of depressive and anxiety disorders from 1990 to 2017 in age-standardized and sex-specific populations. Finally, the DALYs for depressive and anxiety disorders attributable to selected risk factors in 2017 were also estimated. The analysis of data was performed using Microsoft Excel.

RESULTS

In 2017, the overall prevalence of the depressive disorder in females was 4094.4 (95% uncertainty interval [UI]: 3761.9- 4470.3) per 100,000 and in males was 2847.2 (95% UI: 2614.6-3118.4) per 100,000. Likewise, the prevalence of anxiety disorder in females was 4496.8 (95% UI: 4171.9-4837.9) and in males was 2966.2 (95% UI: 2764.7-3178.6). The prevalence of both disorders was found comparatively higher in females than males. Females also had higher YLDs for depressive disorder. Likewise, The MDD prevalence was also found higher in females (females: 2766.7, males: 1822.9). For depressive disorders, a marked variation was observed in the YLDs in both sexes. The annualized rates of change in DALYs from 1990 to 2017 for both sexes and all ages were observed at 0.8% and 0.6% in depressive and anxiety disorders, respectively (Table 1).

Table 1. Age-standardized prevalence and YLDs per 100,000 in 2017

Diseases	Total Prevalence (95% UI) per 100,000		Total YLDs (95% UI) per 100,000		Annualized % change in DALYs
	Male	Female	Male	Female	
Depressive disorders	2847.2 (2614.6-3118.4)	4094.4 (3761.9-4470.3)	468.5 (331.6-640.9)	683.3 (483.0-923.1)	0.8
MDD	1822.9 (1645.0-2028.5)	2766.7 (2487.1-3081.6)	365.3 (253.8-497.0)	547.4 (384.4-739.8)	0.8
Dysthymia	1074.5 (930.3-1246.1)	1428.3 (1238.3-1647.4)	103.1 (69.2-148.3)	135.9 (91.2-198.5)	0.8
Anxiety disorders	2966.2 (2764.7-3178.6)	4496.8 (4171.9-4837.9)	283.8 (201.7-378.5)	425.5 (300.6-564.5)	0.6

The highest incidence of depressive disorder and its DALYs was noted among females, between the years 1990 to 2017. In terms of males, the incidence of anxiety disorder remained stable after 2005 while the DALYs were found in increasing trend (Figure 1).

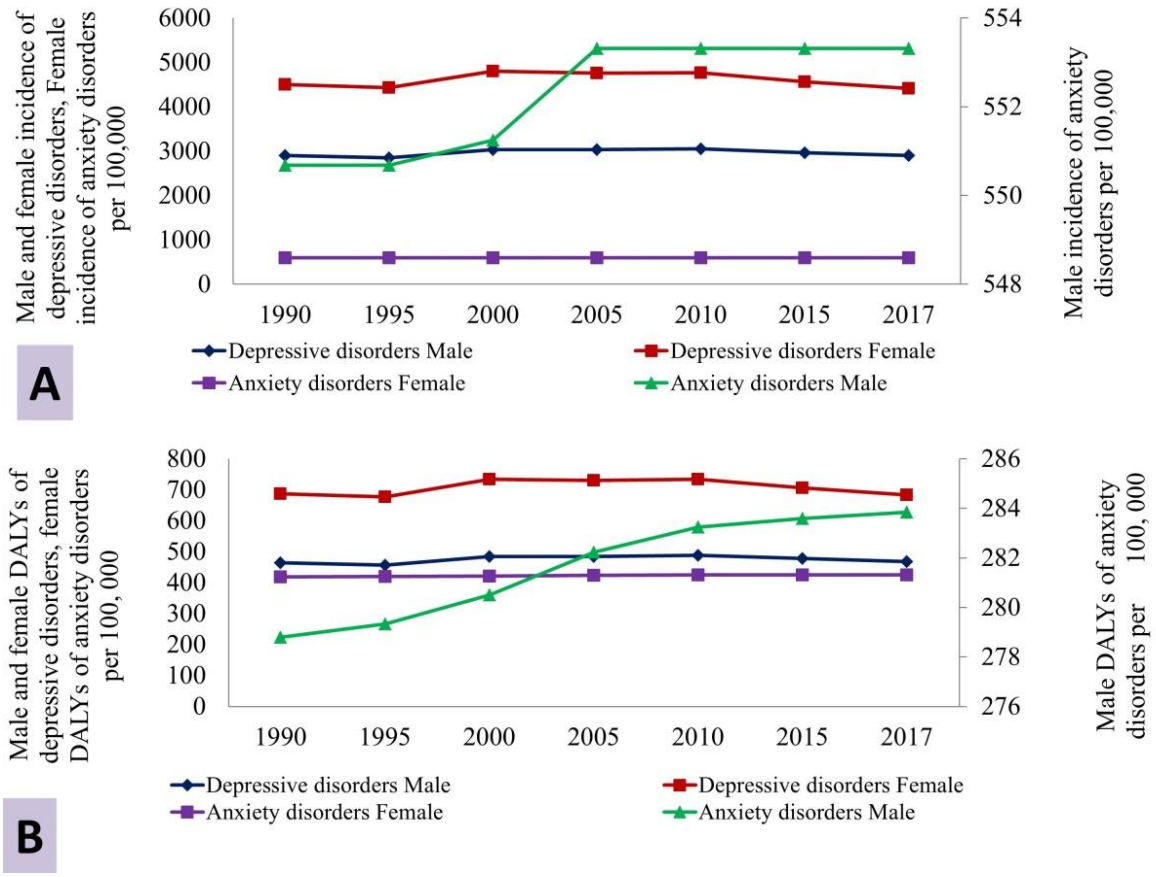

Figure 1: Age-standardized incidence (A) and DALYs (B) by sex from 1990-2017

Incidence and DALYs of depressive disorders showed a pattern of growth with age and peaks among the elderly population of 65 years and above in both sexes. But the cases of anxiety disorder were found to be highest among 30-49 years which seems to decline with increasing age in both sexes. Higher DALYs for anxiety disorders in both males (408.8 per 100,000) and females (630.1 per 100,000) were seen within the 45-49 years age group. In all age groups, females contributed more DALYs for both disorders than males (Figure 2). In 2017, childhood sexual abuse was the main risk factor contributing to 32.5 DALYs for depressive disorder among both sexes followed by intimate partner violence (26.8) and bullying victimization (20.7) in 100,000 populations. Bullying victimization was the only risk quantified for anxiety disorders in GBD, representing 26.7 DALYs (Figure 3).

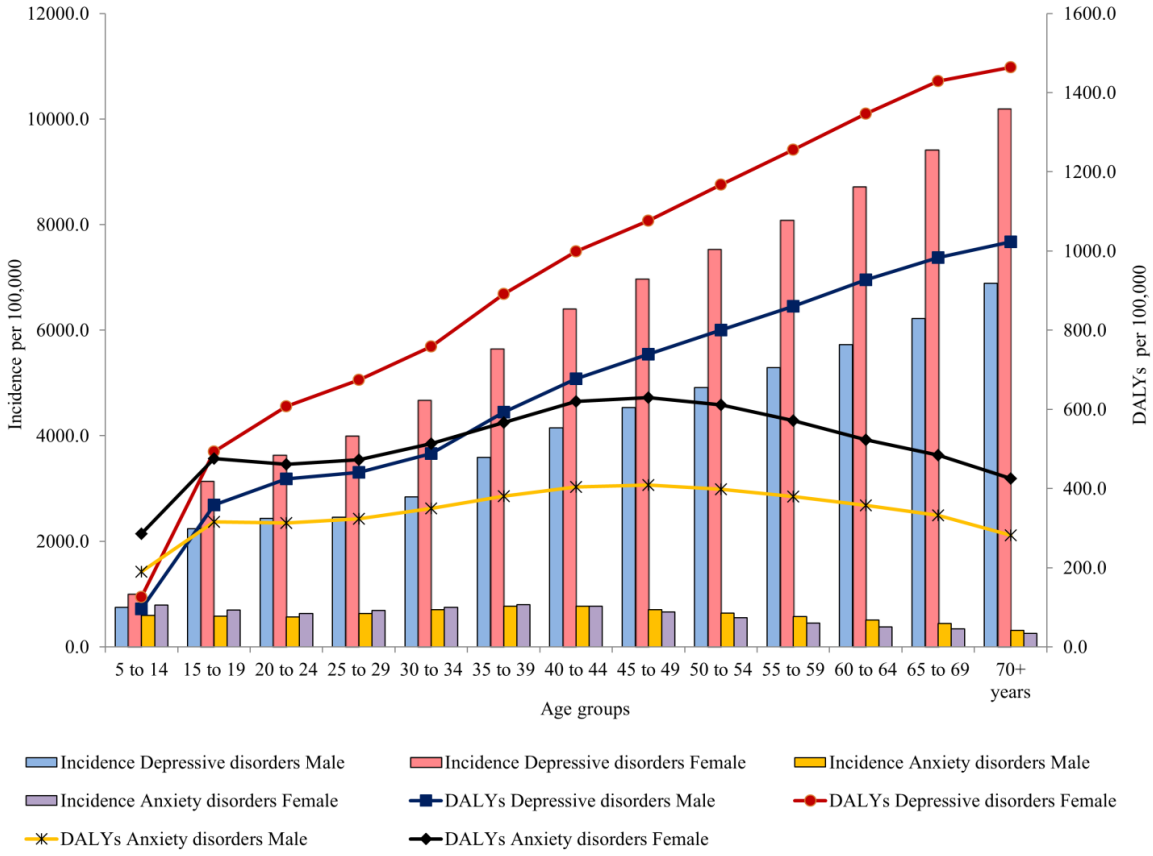

Figure 2: Age and sex-wise burden of depressive and anxiety disorder in 2017

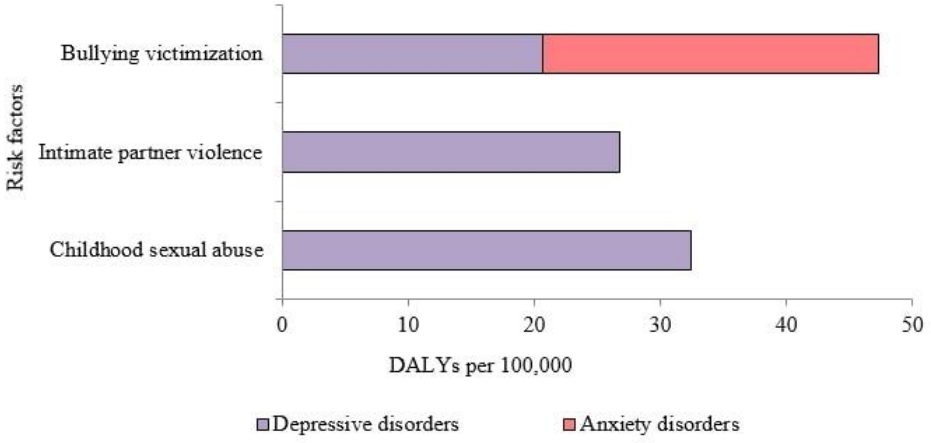

Figure 3: Age-standardized DALYs rate of depressive and anxiety disorders attributable to risk factors

DISCUSSION

Depression and anxiety disorders are among the major mental distress with utmost concern to public health as it significantly contributes to global disabilities.[4] In the 2004 estimates, MDD was considered as a leading cause of global disability by the year 2030,[15] whereas the study of 2018 reported that MDD had become the main cause of global disability.[12] These disabilities interfere with the

individual's economic and social productivity.[16] The burden of both disorders is higher in developing and least developed countries compared to most of the developed nations. In Nepal, depressive and anxiety disorders are of major health concern and contribute significantly to the loss of well-being, specifically in adults and older adults.[12] The impacts of mental health disease burden are found in the development and prosperity of nations. Nepal, being one of the developing nations with limited resources prioritized for mental health and wellbeing needs to realize depression and anxiety disorders as a serious public health issue.

Several previous studies conducted in the South Asian region including Nepal have reported a higher prevalence of depression and anxiety disorders in females.[10,17-20] The risks associated with higher mental disorders in females were linked to gender discrimination, widowhood, physical and sexual abuse, domestic and intimate partner violence, antenatal and postnatal stress, and adverse cultural norms including child marriages and the dowry system.[21] Furthermore, armed conflict and political instability, low financial status, and high vulnerability of the country for natural disasters such as earthquakes, floods, and landslides have contributed to increased risk of mental disorders in the country.[17,18,22] Similarly, studies from other high-income countries such as China and Singapore have also found a higher prevalence of depressive and anxiety disorders in females.[23, 24]

Globally, the cases of depressive symptoms were increased by 49.9% between the year 1990 to 2017.[8] Our study revealed an increase in incidence and DALYs of depressive disorders in Nepal until 2010 and a gradual decrease thereafter. The armed conflict and political instability of the country which lasted for almost 10-years remain as one of the major causes of mental distress in Nepal.[17,18,22] When segregated according to age, incidence, and DALYs for depression increases in the elderly population. The finding is consistent with other studies in Nepal, India, and Pakistan.[19,20,22] The possible association of mental disorders with the age might be distorted by traditional family structures, loneliness, and co-morbidities. Depressive and anxiety disorders were the predominant mental health problems with higher occurrence among adults of 40-49 years.[10] Inadequate education, low income, personality traits, reduced social functioning, unhealthy lifestyle, and poor health are some reasons for mental health issues.[25] In contrast to our findings, the pattern of increased depressive disorder burden with increasing age is not followed in high-income countries.[26,27] Difference forms of social security programs and support systems for the aging population exist in countries of high economies which might be the major contributors to this contradiction. In young and adolescents, anxiety disorder has been increasing in Nepal and India.[20,24,28] The risk factors were reported as low household income, gender discrimination, bullying, social media, family history, temperament, and personality.[25]

In various countries, childhood sexual abuse, intimate partner violence, and bullying victimization have increased the burden of depressive disorders in both sexes.[29,30] In our study, bullying victimization was reported as the major risk factor for anxiety disorders. The finding is consistent with the GBD study of India.[20] Besides, low self-esteem, family history of depression, female sex, number of traumatic experiences, and disturbing family environment are also associated risk factors for depressive and anxiety disorders. [28,31-33]

Although this study is one of the few studies that have provided the burden of depressive and anxiety disorders in developing nations using the data based on the GBD studies which utilize exhaustive information sources and comprehensive investigations, this study has its limitations. The secondary data and information might be based on data derived from publicly available sources that might not represent the whole nation. Estimation of the burden of diseases was restricted to standard epidemiological measures and other financial and social burdens were not considered. Additionally, risk factors of depressive and anxiety disorders were

not evaluated. Avoiding major estimators of the disease burden might risk genuine representation.

CONCLUSION

The persistent burden of depressive and anxiety disorders from 1990 to 2017 remains one of the topmost causes of disabilities in the Nepalese population predominantly among females. The burden varies by age, peaking in older adults for depressive disorders and middle-aged for anxiety disorders. A comprehensive integrated social, environmental and behavioral approach along with investment in mental health services to provide affordable treatment, care, and rehabilitation is urgent and essential to address the escalating problem of depressive and anxiety disorders.

REFERENCES

1. Friedrich MJ. Depression is the leading cause of disability around the world. JAMA. 2017;317(15):1517. DOI: 10.1001/jama.2017.3826, [PubMed] [CrossRef] [Google Scholar]
2. Kessler RC, Bromet EJ. The epidemiology of depression across cultures. Annu Rev Public Health. 2013;34:119–38. DOI:10.1146/annurev-publhealth-031912-114409, [PubMed] [CrossRef] [Google Scholar]
3. Schramm E, Klein DN, Elsaesser M, Furukawa TA, Domschke K. Review of dysthymia and persistent depressive disorder: history, correlates, and clinical implications. Lancet Psychiat. 2020;7(9):801-12. DOI: 10.1016/S2215-0366(20)30099-7, [PubMed] [CrossRef] [Google Scholar]
4. WHO. Mental disorders. World Health Organization, Geneva. 2019. Available from: https://www.who.int/news-room/fact-sheets/detail/mental-disorders Cited on: 10/23/2020.
5. Wittchen HU, Hoyer J. Generalized anxiety disorder: nature and course. J Clin Psychiatry. 2001; 62 Suppl 11:15-9; discussion 20-1. PMID: 11414546, [PubMed] [CrossRef] [Google Scholar]
6. Vos T, Barber RM, Bell B, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: A systematic analysis for the Global Burden of Disease Study 2013. The Lancet. 2015;386(9995):743–800. DOI: 10.1016/S0140-6736(15)60692-4, [PubMed] [CrossRef] [Google Scholar]
7. Kyu HH, Abate D, Abate KH, et al. Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990-2017: A systematic analysis for the global burden of disease study 2017. The Lancet. 2018; 392(10159):1859–1922. DOI: 10.1016/S0140-6736(18)32335-3, [CrossRef] [Google Scholar]
8. Liu Q, He H, Yang J, Feng X, Zhao F, Lyu J. Changes in the global burden of depression from 1990 to 2017: Findings from the global burden of disease study. J Psychiatr Res 2020; 126:134-40. DOI:10.1016/j.jpsychires.2019.08.002, [PubMed] [CrossRef] [Google Scholar]
9. Ogbo FA, Mathsyaraja S, Koti RK, Perz J, Page A. The burden of depressive disorders in South Asia, 1990–2016: Findings from the global burden of disease study. BMC Psychiatry.2018;18:333. DOI:10.1186/s12888-018-1918-1, [PubMed] [CrossRef] [Google Scholar]
10. Jha AK, Ojha SP, Dahal S, Sharma P, Pant SB, Labh S, et al. Prevalence of Mental Disorders in Nepal: Findings from the Pilot Study. J Nepal Health Res Counc.2019;17(2). DOI:10.33314/jnhrc.v0i0.1960, [PubMed] [Report] [CrossRef] [Google Scholar]
11. Ranjan JK, Asthana HS. Prevalence of mental disorders in India and other South Asian countries. Asian J. Epidemiol. 2017;10(2):45–53. DOI:10.3923/aje.2017.45.53, [CrossRef] [Google Scholar]
12. James SL, Abate D, Abate K, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: A systematic analysis for the global burden of disease study 2017. The Lancet. 2018;392(10159):1789–1858 DOI:10.1016/S0140-6736(18)32279-7,[CrossRef] [Google Scholar]
13. Stanaway JD, Afshin A, Gakidou E, et al. Global, regional, and national comparative risk assessment of 84 behavioral, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990-2017: A

systematic analysis for the global burden of disease study 2017. The Lancet.2018 ; 392 (10159): 1923–94. DOI: 10.1016/S0140-6736(18)32225-6,[CrossRef] [Google Scholar]

14. Global burden of diseases. Institute of Health Matrices and Evaluation (IHME), Washington, USA. 2020 Available from: http://www.healthdata.org/gbd/2019 Cited on: 10/23/2020.
15. Mathers C, Boerma T, Doris Ma F.The global burden of disease 2004. Update, World Health Organization.[CrossRef] [Google Scholar]
16. Rijal A. Mental health situation in Nepal and priorities for interventions. Health Prospect. 2018;17(1):1–3.DOI:10.3126/hprospect.v17i1.19662, [CrossRef] [Google Scholar]
17. Risal A, Manandhar K, Linde M, Steiner TJ, Holen A. Anxiety and depression in Nepal: Prevalence, comorbidity and associations. BMC Psychiatry. 2016;16(1):1–9. DOI: 10.1186/s12888-016-0810-0 ,[CrossRef] [Google Scholar]
18. Kane JC, Luitel NP, Jordans MJD, Kohrt BA, et al. Mental health and psychosocial problems in the aftermath of the Nepal earthquakes: Findings from a representative cluster sample survey. Epidemiol Psychiatr Sci. 2018;27(3):301–10. DOI:10.1017/S2045796016001104, [PubMed] [CrossRef] [Google Scholar]
19. Bhamani MA, Karim MS, Khan MM. Depression in the elderly in Karachi, Pakistan: A cross-sectional study. BMC Psychiatry. 2013;13:1–8. DOI: 10.1186/1471-244X-13-181, [PubMed] [CrossRef] [Google Scholar]
20. Sagar R, Dandona R, Gururaj G, et al.The burden of mental disorders across the states of India: the global burden of disease study 1990–2017. Lancet Psychiat. 2020;7(2):148–61. DOI: 10.1016/S2215-0366(19)30475-4, [CrossRef] [Google Scholar]
21. Lamichhane KB, De A, Chakraborty P, Sathian B et al. Psychosocial study of depression amongst women in western region of Nepal. Asian J. Med. Sci. 2013;3(4):39–6. DOI: 10.3126/ajms.v3i4.7777, [CrossRef] [Google Scholar]
22. Kohrt BA, Hruschka DJ, Worthman CM, et al. Political violence and mental health in Nepal: Prospective study. Br J Psychiatry. 2012;201(4):268–75. DOI: 10.1192/bjp.bp.111.096222,[PubMed] [CrossRef] [Google Scholar]
23. Picco L, Subramaniam M, Abdin E, Vaingankar JA, et al. Gender differences in major depressive disorder: Findings from the Singapore mental health study. Singapore Med J. 2017;58(11):649–55. DOI:10.11622/smedj.2016144,[PubMed] [CrossRef] [Google Scholar]
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;263: 292–300. DOI: 10.1016/j.jad.2019.11.121, [PubMed] [CrossRef] [Google Scholar]
25. Kennedy M. As people age, the factors that drive depression may shift. Healthcare and Pharma. 2017. Available from: https://www.reuters.com/article/us-health-depression-risk-trajectory-iduskbn17f1v5. Cited on: 10/28/2020.
26. Global burden of diseases. Institute of Health Matrices and Evaluation (IHME), Washington, USA. 2019 Available from: http://www.healthdata.org/gbd/2019. Cited on: 10/23/2020.
27. Cheng HG, Shidhaye R, Charlson F, et al. Social correlates of mental, neurological, and substance use disorders in China and India: A review. Lancet Psychiat. 2016;3(9): 882–99. DOI:10.1016/S2215-0366(16)30166-3, [PubMed] [CrossRef] [Google Scholar]
28. Paudel S, Gautam H, Adhikari C, Yadav DK. Depression, Anxiety and Stress among the Undergraduate Students of Pokhara Metropolitan, Nepal. J Nepal Health Res Counc. 2020; 18(1), 27-34. DOI:10.33314/jnhrc.v18i1.2189, [PubMed] [CrossRef] [Google Scholar]
29. Bauer NS, Herrenkohl TI, Lozano P, Rivara FP, Hill KG, Hawkins JD. Childhood bullying involvement and exposure to intimate partner violence. Pediatrics. 2006;118(2): e235-e242. DOI:10.1542/peds.2005-2509, [PubMed] [CrossRef] [Google Scholar]
30. Barrios YV, Gelaye B, Zhong Q, et al. Association of childhood physical and sexual abuse with intimate partner violence, poor general health and depressive symptoms among pregnant women. PLoS One. 2015;10(3):e0122573. DOI: 10.1371/journal.pone.0116609, [PubMed] [CrossRef] [Google Scholar]
31. Chalise A, Bhandari TR. Postpartum Depression and its Associated Factors: A Community-based Study in Nepal. J Nepal Health Res Counc. 2019;17(2):200-5.DOI:10.33314/jnhrc.v0i0.1635, [PubMed] [CrossRef] [Google Scholar]

32. Bhattarai D, Shrestha N, Paudel S. Prevalence and factors associated with depression among higher secondary school adolescents of Pokhara Metropolitan, Nepal: a cross-sectional study. BMJ Open. 2020;10:e044042. DOI:10.1136/bmjopen-2020-044042, [PubMed] [CrossRef] [Google Scholar]
33. Blanco C, Rubio J, et al. Risk factors for Anxiety Disorders: common and specific effects in a national sample. Depress Anxiety. 2014;31(9):756–64. DOI: 10.1002/da.22247, [PubMed] [CrossRef] [Google Scholar]