International Journal of Health Sciences and Research
[Indexed, Peer-Reviewed Journal]
Volume 16; Issue: 11; November 2026
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

Prevalence and Correlates of Depression, Anxiety and Stress among Youth (15-24 years) in Rural Varanasi: A Community Based Cross-Sectional Study

Siddharth Singh[1], Hari Shankar[2]

[1]Assistant Professor, Department of Community Medicine,
Chirayu Medical College and Hospital, Chirayu University, Bhopal, India.
[2]Professor, Department of Community Medicine, Institute of Medical Sciences,
Banaras Hindu University, Varanasi, India.

Corresponding Author: Dr. Siddharth Singh

DOI: https://doi.org/10.52403/ijhsr.20261103

Received: 25/05/2026; Revised: 06/09/2026; Accepted: 29/10/2026

ABSTRACT

Background: Most mental disorders begin before age 25, but community-based data on young people in rural India are limited. We estimated the prevalence of depression, anxiety and stress among rural youth and identified their correlates.
Methods: We conducted a community-based cross-sectional study among 385 youth aged 15-24 years in Chiraigaon block, Varanasi, Uttar Pradesh, selected by multistage random sampling. Depression, anxiety and stress were assessed with the DASS-21. Sociodemographic details, anthropometry, blood pressure, haemoglobin and physical activity (IPAQ short form) were recorded. Associations were examined using chi-square tests and multivariable binary logistic regression, reported as adjusted odds ratios (aOR).
Results: The prevalence of depression was 13.0% (95% CI 10.0–16.7), anxiety 5.7% (3.8–8.5) and stress 6.2% (4.2–9.1). Overall, 23.1% had at least one condition. Depression was independently associated with female sex (aOR 3.48, 1.18–10.20), underweight (aOR 3.59, 1.62–7.98) and sitting ≥6 h/day (aOR 4.62, 1.77–12.05). It was less likely in those aged 20–24 years (aOR 0.18, 0.08–0.42) and in those with high physical activity (aOR 0.16, 0.07–0.36). Anxiety was associated with age 20–24 years (aOR 15.94, 3.45–73.64), sitting ≥6 h/day (aOR 44.10, 5.58–348.43) and raised blood pressure (aOR 6.08, 1.15–32.22). Stress was less likely among youth in joint families (aOR 0.16, 0.06–0.40) and students (aOR 0.21, 0.07–0.66).
Conclusions: About one in four rural youth had depression, anxiety or stress. Adolescent girls, underweight youth and those with sedentary lifestyles should be prioritised for screening, and youth mental health services should be strengthened through existing adolescent and primary care platforms.

Keywords: depression; anxiety; psychological stress; DASS-21; youth; rural health; India

INTRODUCTION

Depression and anxiety are among the leading causes of disability in young people worldwide. Nearly two-thirds of all mental disorders begin before the age of 25 years [1,2]. Untreated problems at this age affect education, employment, relationships and physical health, and often continue into adulthood [3]. India has the largest youth population in the world. Depressive and anxiety disorders are the commonest mental disorders in every Indian state, and their burden has risen since 1990 [4].

The National Mental Health Survey of India (2015–16) found that most people with common mental disorders received no treatment, and that the gap was wider in rural areas [5,6]. Most Indian studies of depression, anxiety and stress in young people have been done in schools, colleges and medical institutions [7–10]. These report widely varying prevalence, from about 10% to more than 50%, depending on the population and tool used. Community-based studies covering the whole 15–24 year age group, including youth who are out of school or working, are few, especially from eastern Uttar Pradesh. The role of physical health factors such as nutritional status, anaemia and physical activity has also been examined rarely in this group.

This information is needed to plan services under national programmes such as the Rashtriya Kishor Swasthya Karyakram and the National Mental Health Programme, and at Ayushman Arogya Mandirs [11]. We therefore conducted this study to estimate the prevalence of depression, anxiety and stress among youth aged 15–24 years in rural Varanasi, and to identify the sociodemographic, nutritional and lifestyle factors associated with them.

MATERIALS & METHODS

This community-based cross-sectional study was conducted in Chiraigaon block of Varanasi district, Uttar Pradesh, the field practice area of the Rural Health Training Centre of the Department of Community Medicine, Institute of Medical Sciences, Banaras Hindu University. Data were collected from June 2023 to June 2024. The study is reported according to the STROBE guidelines [12].

Study population and sample size

Youth aged 15–24 years residing in the study area who gave consent were included. Pregnant women and women up to six weeks after delivery, severely ill individuals and those with a known psychiatric illness were excluded.

The sample size was calculated with the formula $n = Z^2pq/d^2$, taking the prevalence of stress as 26% from an earlier Indian community study [13], $Z = 1.96$ and absolute precision $d = 7.5\%$. This gave 132. After applying a design effect of 2 and adding 10% for non-response, the minimum sample size was 300. A total of 385 participants were enrolled.

Sampling

Multistage random sampling was used. Gram panchayats in Chiraigaon block were divided into three strata by population (>5,000; 2,000–5,000; <2,000). One panchayat was selected randomly from each stratum, and one village was selected randomly from each selected panchayat. Households were selected by systematic random sampling from the village household list, and all eligible youth in selected households were interviewed.

Data collection

Data were collected by house-to-house interview using a pretested semi-structured schedule in Hindi. It recorded age, sex, caste, religion, education, occupation, marital status, type of family, family size and income. Socioeconomic status was classified by the Modified B.G. Prasad scale.

Depression, anxiety and stress were assessed with the Depression Anxiety Stress Scales-21 (DASS-21) [14,15]. Each subscale has seven items scored 0–3 for the past week, and subscale scores were multiplied by two. Scores above the normal

range (depression >9, anxiety >7, stress >14) were considered positive for that condition.

Physical activity and weekday sitting time were assessed with the International Physical Activity Questionnaire short form (IPAQ-SF) [16]. Activity was categorised as high or moderate per the IPAQ scoring protocol [17]. Sitting time was dichotomised at 6 h/day.

Height and weight were measured by standard methods, and BMI was classified by WHO Asia-Pacific cut-offs, with underweight defined as BMI <18.5 kg/m² [18]. Blood pressure was measured with the participant seated. It was classified by ACC/AHA 2017 categories (and the equivalent AAP 2017 categories for those aged 15–17 years), and any value ≥120/80 mmHg was considered raised [19,20]. Haemoglobin was estimated and anaemia defined by WHO cut-offs (<13 g/dL in males, <12 g/dL in non-pregnant females) [21].

Statistical Analysis

Data were entered in Microsoft Excel and analysed using Python (SciPy). Categorical data are presented as frequencies and percentages. Prevalence is reported with 95% confidence intervals (Wilson method). The chi-square test, or Fisher's exact test where expected cell counts were small, was used to test associations. Binary logistic regression was used to estimate crude odds ratios (cOR) and adjusted odds ratios (aOR) with 95% CI. Variables with p <0.20 in bivariate analysis were entered into the multivariable model for each outcome, together with age group and sex. A p-value <0.05 was considered significant.

Ethical considerations

The study was approved by the Institutional Ethics Committee, Institute of Medical Sciences, BHU *(2022/EC/3777, dated 15.04.2023)*. Written informed consent was taken from participants aged ≥18 years. Assent along with parental consent was taken for those aged 15–17 years. Confidentiality was maintained, and participants who screened positive were counselled and referred to the Department of Psychiatry, Sir Sunderlal Hospital, BHU, Varanasi (U.P).

RESULT

Of the 385 participants, 202 (52.5%) were males and 183 (47.5%) females, and 205 (53.2%) were aged 15–19 years (Table 1). The median age was 19 years (IQR 17–22). Most were Hindu (94.8%), and 48.1% belonged to Other Backward Classes. More than half (53.5%) were students, 91.2% were unmarried and 66.8% lived in joint families. Most families (62.9%) belonged to SES classes IV and V. One-third (33.0%) of participants were underweight and 36.6% were anaemic. Anaemia was found mainly in females (76.0% vs 1.0% in males). Over half (57.4%) sat for 6 hours or more per day.

Table 1. Sociodemographic and health profile of participants by sex (N = 385)

Variable	Male (n = 202) n (%)	Female (n = 183) n (%)	Total (N = 385) n (%)	p
Age group				0.768
15–19 years	109 (54.0)	96 (52.5)	205 (53.2)	
20–24 years	93 (46.0)	87 (47.5)	180 (46.8)	
Caste				0.773
Scheduled Caste	47 (23.3)	42 (23.0)	89 (23.1)	
Scheduled Tribe	4 (2.0)	3 (1.6)	7 (1.8)	
Other Backward Class	101 (50.0)	84 (45.9)	185 (48.1)	
Others	50 (24.8)	54 (29.5)	104 (27.0)	
Religion				0.492
Hindu	193 (95.5)	172 (94.0)	365 (94.8)	
Muslim	9 (4.5)	11 (6.0)	20 (5.2)	
Education				0.189

Variable	Male (n = 202) n (%)	Female (n = 183) n (%)	Total (N = 385) n (%)	p
Middle school	50 (24.8)	49 (26.8)	99 (25.7)	
Secondary	41 (20.3)	38 (20.8)	79 (20.5)	
Higher secondary	75 (37.1)	51 (27.9)	126 (32.7)	
Graduate and above	36 (17.8)	45 (24.6)	81 (21.0)	
Occupation				**<0.05**
Student	122 (60.4)	84 (45.9)	206 (53.5)	
Labourer	26 (12.9)	52 (28.4)	78 (20.3)	
Service	35 (17.3)	29 (15.8)	64 (16.6)	
Unemployed	10 (5.0)	18 (9.8)	28 (7.3)	
Business	9 (4.5)	0 (0.0)	9 (2.3)	
Marital status				**<0.05**
Unmarried	195 (96.5)	156 (85.2)	351 (91.2)	
Married	7 (3.5)	27 (14.8)	34 (8.8)	
Type of family				0.802
Nuclear	66 (32.7)	62 (33.9)	128 (33.2)	
Joint	136 (67.3)	121 (66.1)	257 (66.8)	
Family size				**<0.05**
≤5	62 (30.7)	68 (37.2)	130 (33.8)	
6–7	107 (53.0)	70 (38.3)	177 (46.0)	
≥8	33 (16.3)	45 (24.6)	78 (20.3)	
SES (Modified B.G. Prasad)				0.203
Class II	8 (4.0)	2 (1.1)	10 (2.6)	
Class III	73 (36.1)	60 (32.8)	133 (34.5)	
Class IV	95 (47.0)	100 (54.6)	195 (50.6)	
Class V	26 (12.9)	21 (11.5)	47 (12.2)	
Underweight (BMI <18.5)	30 (14.9)	97 (53.0)	127 (33.0)	**<0.05**
Anaemia (WHO)	2 (1.0)	139 (76.0)	141 (36.6)	**<0.05**
Raised BP (≥120/80 mmHg)	155 (76.7)	65 (35.5)	220 (57.1)	**<0.05**
High physical activity (IPAQ)	160 (79.2)	156 (85.2)	316 (82.1)	0.123
Sitting ≥6 h/day	113 (55.9)	108 (59.0)	221 (57.4)	0.542

Prevalence of depression, anxiety and stress

The prevalence of depression was 13.0% (95% CI 10.0–16.7), anxiety 5.7% (3.8–8.5) and stress 6.2% (4.2–9.1) (Table 2). In all, 89 participants (23.1%) had at least one of the three conditions. Depression was more than twice as common in females as in males (18.6% vs 7.9%, p = 0.002). Anxiety (males 6.9% vs females 4.4%) and stress (males 5.4% vs females 7.1%) did not differ significantly by sex. Seven participants had two conditions together: five had depression with stress and two had anxiety with stress.

Table 2. Prevalence of depression, anxiety and stress by sex (DASS-21)

Condition	Male (n = 202) n (%) [95% CI]	Female (n = 183) n (%) [95% CI]	Total (N = 385) n (%) [95% CI]	p
Depression	16 (7.9) [4.9–12.5]	34 (18.6) [13.6–24.8]	50 (13.0) [10.0–16.7]	**<0.05**
Anxiety	14 (6.9) [4.2–11.3]	8 (4.4) [2.2–8.4]	22 (5.7) [3.8–8.5]	0.280
Stress	11 (5.4) [3.1–9.5]	13 (7.1) [4.2–11.8]	24 (6.2) [4.2–9.1]	0.502
Any of the three	40 (19.8) [14.9–25.8]	49 (26.8) [20.9–33.6]	89 (23.1) [19.2–27.6]	0.105

95% CI by Wilson method; p from chi-square test.

Factors associated in bivariate analysis

Depression was more common among those aged 15–19 years (20.5% vs 4.4%), peaking at 18 years (41.5%) (Figure 1), females, underweight participants (21.3% vs 8.9%), those with moderate rather than high physical activity (31.9% vs 8.9%) and those sitting ≥6 h/day (19.9% vs 3.7%) (Table 3).

It also varied by education, peaking among those studying at higher-secondary level (20.6%). No married participant had depression (0/34).

Anxiety was more common among those aged 20–24 years (11.1% vs 1.0%), peaking at 20 years (25.0%), those with raised blood pressure (9.1% vs 1.2%), those with moderate physical activity and those sitting ≥6 h/day (9.5% vs 0.6%). Stress was more common in nuclear than joint families (12.5% vs 3.1%) and varied by occupation, being lowest among students (2.9%) and highest among those in service (15.6%).

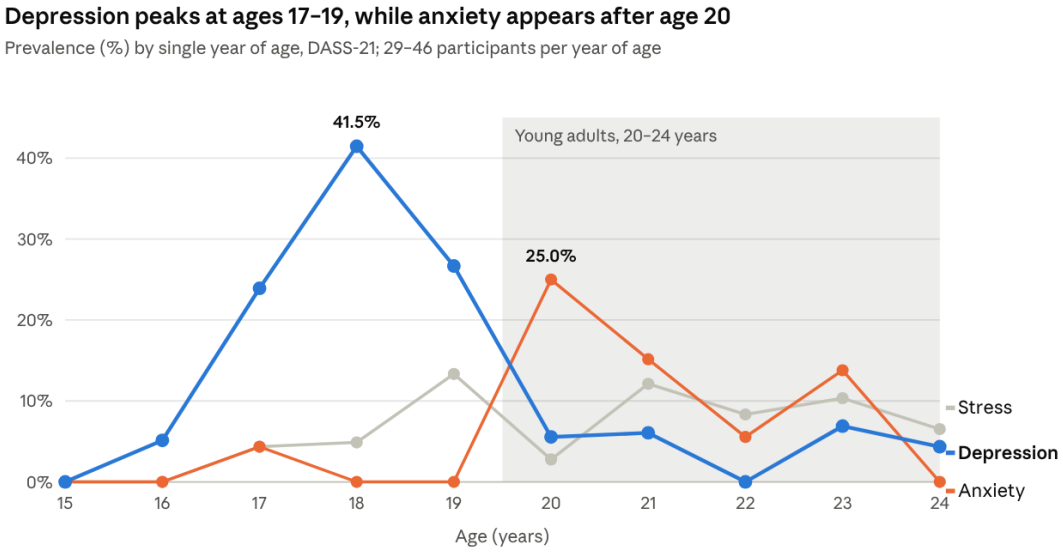


Figure 1. Prevalence of depression, anxiety and stress by age

Depression was concentrated at ages 17–19 years and anxiety at 20–24 years; stress was low across all ages. Estimates for single years rest on 29–46 participants each.

Multivariable analysis

In multivariable logistic regression (Table 4), depression remained independently associated with female sex (aOR 3.48, 95% CI 1.18–10.20), underweight (aOR 3.59, 1.62–7.98) and sitting ≥6 h/day (aOR 4.62, 1.77–12.05). Odds of depression were lower among those aged 20–24 years (aOR 0.18, 0.08–0.42) and those with high physical activity (aOR 0.16, 0.07–0.36). The model fitted well (Hosmer–Lemeshow p = 0.751) and discriminated well (AUC 0.862).

Anxiety was associated with age 20–24 years (aOR 15.94, 3.45–73.64), sitting ≥6 h/day (aOR 44.10, 5.58–348.43) and raised blood pressure (aOR 6.08, 1.15–32.22) (Hosmer–Lemeshow p = 0.919; AUC 0.929). The very wide confidence intervals reflect the small number of anxiety cases (n = 22). Stress was less likely among youth living in joint families (aOR 0.16, 0.06–0.40) and among students (aOR 0.21, 0.07–0.66), and more likely among Muslim participants (aOR 4.97, 1.21–20.35; n = 20) (Hosmer–Lemeshow p = 0.166; AUC 0.803) [22].

All three models were statistically significant (likelihood-ratio test p <0.001).

Table 4. Factors associated with depression, anxiety and stress: crude and adjusted odds ratios from binary logistic regression.

Factor	cOR (95% CI)	p	aOR (95% CI)	p
Depression (n = 50)				
Age 20–24 vs 15–19 years	0.18 (0.08–0.40)	**<0.05**	0.18 (0.08–0.42)	**<0.05**
Female vs male	2.65 (1.41–4.99)	**<0.05**	3.48 (1.18–10.20)	**<0.05**
SES class IV–V vs II–III	1.61 (0.84–3.10)	0.154	1.79 (0.79–4.08)	0.165

Factor	cOR (95% CI)	p	aOR (95% CI)	p
Scheduled Caste vs others	1.88 (0.99–3.57)	0.053	1.60 (0.71–3.60)	0.261
Underweight (BMI <18.5)	2.76 (1.51–5.04)	**<0.05**	3.59 (1.62–7.98)	**<0.05**
Anaemia	1.72 (0.95–3.13)	0.076	0.49 (0.16–1.50)	0.211
High vs moderate physical activity	0.21 (0.11–0.39)	**<0.05**	0.16 (0.07–0.36)	**<0.05**
Sitting ≥6 vs <6 h/day	6.55 (2.72–15.77)	**<0.05**	4.62 (1.77–12.05)	**<0.05**
Anxiety (n = 22)				
Age 20–24 vs 15–19 years	12.69 (2.92–55.09)	**<0.05**	15.94 (3.45–73.64)	**<0.05**
Female vs male	0.61 (0.25–1.50)	0.284	0.86 (0.27–2.74)	0.802
Joint vs nuclear family	2.33 (0.77–7.05)	0.133	2.91 (0.81–10.47)	0.102
High vs moderate physical activity	0.29 (0.12–0.70)	**<0.05**	0.43 (0.14–1.32)	0.139
Sitting ≥6 vs <6 h/day	17.11 (2.28–128.60)	**<0.05**	44.10 (5.58–348.43)	**<0.05**
Raised BP	8.15 (1.88–35.38)	**<0.05**	6.08 (1.15–32.22)	**<0.05**
Stress (n = 24)				
Age 20–24 vs 15–19 years	1.64 (0.71–3.80)	0.244	0.85 (0.32–2.28)	0.748
Female vs male	1.33 (0.58–3.04)	0.503	1.36 (0.52–3.60)	0.530
Joint vs nuclear family	0.22 (0.09–0.54)	**<0.05**	0.16 (0.06–0.40)	**<0.05**
Student vs other occupations	0.27 (0.10–0.69)	**<0.05**	0.21 (0.07–0.66)	**<0.05**
Muslim vs Hindu	2.89 (0.78–10.65)	0.111	4.97 (1.21–20.35)	**<0.05**
Raised BP	1.89 (0.77–4.67)	0.168	1.71 (0.57–5.12)	0.339

cOR, crude odds ratio; aOR, adjusted odds ratio (binary logistic regression). Each model includes age group, sex and the variables with p <0.20 in bivariate analysis that are listed under that outcome. Marital status was not modelled for depression because no married participant had depression. Model fit: depression LR χ^2 = 87.1 (df 8), Hosmer–Lemeshow p = 0.751, AUC 0.862, McFadden R^2 0.29; anxiety LR χ^2 = 64.3 (df 6), Hosmer–Lemeshow p = 0.919, AUC 0.929; stress LR χ^2 = 28.4 (df 6), Hosmer–Lemeshow p = 0.166, AUC 0.803. All models p <0.001.

DISCUSSION

In this community-based study of rural youth in Varanasi, about one in eight had depression and nearly one in four had depression, anxiety or stress. Depression was more common in females, adolescents aged 15–19 years, underweight youth and those with a sedentary lifestyle. Anxiety was concentrated among those aged 20–24 years. Living in a joint family and being a student were associated with less stress.

The prevalence of depression in our study (13.0%) is lower than the 20.6% reported among rural adolescents in Haryana using the PHQ-9 [7]. It is much lower than the 50–65% found with DASS among medical students and among adolescents in rural Jharkhand [8,9], and the 28.5% psychological distress reported among college students in Karnataka [10]. Such differences reflect the populations studied (students under academic pressure vs a general community sample), the tools and cut-offs used, and our exclusion of people with known psychiatric illness. Our estimates are closer to those expected for the general youth population and are useful for planning community services.

The higher prevalence of depression among females is consistent with national and global estimates [4,6]. In rural India, restricted mobility, early domestic responsibilities, gender discrimination and limited control over decisions about education and marriage may contribute. In our study, three in four females were also anaemic, and fatigue from anaemia may overlap with depressive symptoms. Anaemia was not independently associated with depression after adjusting for sex, however.

Age showed contrasting patterns. Depression peaked at 17–19 years, a period that coincides with board examinations, decisions about higher education and, for many girls, pressure towards marriage. Anxiety, in contrast, was almost entirely confined to those aged 20–24 years. This may reflect worries about employment, income and family responsibilities as young people leave education in a setting with limited job opportunities. The absence of depression among married participants

should be interpreted cautiously because of small numbers (n = 34).

Underweight youth had more than twice the prevalence of depression. Undernutrition and depression may influence each other: poor appetite and self-neglect in depression can reduce weight, while chronic undernutrition, poor body image and associated illness may worsen mood. Youth who sat for 6 hours or more a day and those with lower physical activity had more depression and anxiety. This agrees with meta-analyses linking physical activity with lower risk, and sedentary behaviour with higher risk, of depression and anxiety **[23–25]**, and with an Indian study of college students **[26]**. These associations may run in both directions, as depressed or anxious youth are likely to be less active.

Living in a joint family was associated with 84% lower odds of stress (aOR 0.16). Joint families may provide emotional and practical support, sharing of financial and household burdens, and a buffer against adverse events. Students had less stress than working or unemployed youth, while those in service had the highest stress. This suggests that work and economic pressures are important sources of stress for rural young adults. The association of stress with Muslim religion is based on only 20 participants and needs confirmation in larger samples.

The association between raised blood pressure and anxiety may reflect sympathetic activation in anxious individuals. Anxiety about measurement itself (the white-coat effect) could also raise single readings. Because blood pressure was measured on one occasion, this finding should be confirmed with repeated readings.

CONCLUSION

Nearly one in four youth in rural Varanasi had depression, anxiety or stress, and depression affected about one in eight. Female sex, adolescence, underweight and a sedentary lifestyle were associated with depression. Older youth were more affected by anxiety, while joint family living was protective against stress. Mental health screening and support should be integrated into existing adolescent and primary health care services in rural areas, with attention to these high-risk groups.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

Creative Commons Attribution License 4.0

This is an open-access article published under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0).

https://creativecommons.org/licenses/by/4.0

REFERENCES

1. Solmi M, Radua J, Olivola M, Croce E, Soardo L, Salazar de Pablo G, et al. Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies. Mol Psychiatry. 2022;27(1):281-295. doi:10.1038/s41380-021-01161-7
2. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2005;62(6):593-602. doi:10.1001/archpsyc.62.6.593
3. Patel V, Flisher AJ, Hetrick S, McGorry P. Mental health of young people: a global public-health challenge. Lancet. 2007;369(9569):1302-1313. doi:10.1016/S0140-6736(07)60368-7
4. India State-Level Disease Burden Initiative Mental Disorders Collaborators. The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990-2017. Lancet Psychiatry. 2020;7(2):148-161. doi:10.1016/S2215-0366(19)30475-4
5. Pradeep BS, Gururaj G, Varghese M, Benegal V, Rao GN, Sukumar GM, et al. National Mental Health Survey of India, 2016: rationale, design and methods. PLoS One. 2018;13(10): e0205096. doi: 10.1371/journal.pone.0205096
6. Gururaj G, Varghese M, Benegal V, Rao GN, Pathak K, Singh LK, et al. National Mental Health Survey of India, 2015-16:

prevalence, patterns and outcomes. Bengaluru: National Institute of Mental Health and Neuro Sciences; 2016. (NIMHANS Publication No. 129). Available from: https://indianmhs.nimhans.ac.in/phase1/Docs/Report2.pdf

7. Mohta A, Malhotra S, Gupta SK, Mani K, Patra BN, Nongkynrih B. Depression among adolescents in a rural area of Haryana, India: a community-based study using Patient Health Questionnaire-9. Cureus. 2021;13(9): e18388. doi:10.7759/cureus.18388
8. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates. Indian J Med Res. 2015;141(3):354-7. doi:10.4103/0971-5916.156571
9. Mazumdar R, Sagar V, Kujur A, Sunderam S. Prevalence and severity of depression, anxiety, and stress among tribal and nontribal adolescents in a rural block of Jharkhand: a cross-sectional study. Cureus. 2026;18(8): e114694. doi:10.7759/cureus.114694
10. Bhat US, Amaresha AC, Kodancha P, John S, Kumar S, Aiman A, et al. Psychological distress among college students of coastal district of Karnataka: a community-based cross-sectional survey. Asian J Psychiatr. 2018; 38:20-4. doi: 10.1016/j.ajp.2018.10.006
11. Ministry of Health and Family Welfare. Rashtriya Kishor Swasthya Karyakram: strategy handbook. New Delhi: Government of India; 2014.
12. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet. 2007;370(9596):1453-7. doi:10.1016/S0140-6736(07)61602-X
13. Singh A, Arora M, Sharma V, Kotwal A. Stress: prevalence and correlates among residents of a suburban area. Ind Psychiatry J. 2019;28(1):98-102. doi: 10.4103/ipj.ipj_33_18
14. Lovibond SH, Lovibond PF. Manual for the Depression Anxiety Stress Scales. 2nd ed. Sydney: Psychology Foundation of Australia; 1995. 4-42. doi: 10.1037/t01004-000
15. Henry JD, Crawford JR. The short-form version of the Depression Anxiety Stress Scales (DASS-21): construct validity and normative data in a large non-clinical sample. Br J Clin Psychol. 2005;44(Pt 2):227-39. doi:10.1348/014466505X29657
16. Craig CL, Marshall AL, Sjöström M, Bauman AE, Booth ML, Ainsworth BE, et al. International physical activity questionnaire: 12-country reliability and validity. Med Sci Sports Exerc. 2003;35(8):1381-95. doi: 10.1249/01.MSS.0000078924. 61453.FB
17. IPAQ Research Committee. Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ): short and long forms. Revised November 2005. Available from: GuidelinesforDataProcessingandAnalysisoftheInternationalPhysicalActivityQuestionnaireIPAQShortandLongForms.pdf
18. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet. 2004;363(9403):157-63. doi:10.1016/S0140-6736(03)15268-3
19. Whelton PK, Carey RM, Aronow WS, Casey DE Jr, Collins KJ, Dennison Himmelfarb C, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Hypertension. 2018;71(6): e13-115. doi:10.1161/HYP.0000000000000065
20. Flynn JT, Kaelber DC, Baker-Smith CM, Blowey D, Carroll AE, Daniels SR, et al. Clinical practice guideline for screening and management of high blood pressure in children and adolescents. Pediatrics. 2017;140(3): e20171904. doi:10.1542/peds.2017-1904
21. World Health Organization. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Geneva: World Health Organization; 2011. (WHO/NMH/NHD/MNM/11.1). Available from: https://www.who.int/en/publications/i/item/WHO-NMH-NHD-MNM-11.1

22. Hosmer DW Jr, Lemeshow S, Sturdivant RX. Applied logistic regression. 3rd ed. Hoboken (NJ): Wiley; 2013.
23. Schuch FB, Vancampfort D, Firth J, Rosenbaum S, Ward PB, Silva ES, et al. Physical activity and incident depression: a meta-analysis of prospective cohort studies. Am J Psychiatry. 2018;175(7):631-648. doi: 10.1176/appi.ajp.2018.17111194
24. Zhai L, Zhang Y, Zhang D. Sedentary behaviour and the risk of depression: a meta-analysis. Br J Sports Med. 2015;49(11):705-9. doi:10.1136/bjsports-2014-093613
25. Teychenne M, Costigan SA, Parker K. The association between sedentary behaviour and risk of anxiety: a systematic review. BMC Public Health. 2015; 15:513. doi:10.1186/s12889-015-1843-x
26. Ghrouz AK, Noohu MM, Manzar MD, Spence DW, BaHammam AS, Pandi-Perumal SR. Physical activity and sleep quality in relation to mental health among college students. Sleep Breath. 2019;23(2):627-34. doi:10.1007/s11325-019-01780-z

How to cite this article: Singh S, Shankar H. Prevalence and correlates of depression, anxiety and stress among youth (15-24 years) in Rural Varanasi: a community based cross-sectional study. *Int J Health Sci Res.* 2026; 16(11):20-28. doi: *https://doi.org/10.52403/ijhsr.20261103*

******