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Prevalence and Sociodemographic Correlates of Depression, Anxiety, and Stress among Women of Reproductive Age in Kandahar, Afghanistan: A Cross-Sectional Study

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Title

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Short Title

DASS among women in Kandahar.

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Abstract

Background: Women in Afghanistan face substantial social, economic, and healthcare challenges that may adversely affect psychological well-being. This study assessed the prevalence and sociodemographic correlates of depression, anxiety, and stress among women in Kandahar, Afghanistan.

Methods: A community-based cross-sectional study was conducted in District 9 of Kandahar City from 15 September 2025 to 18 April 2026. Of 1,827 women screened, 470 eligible women aged 20–49 years were enrolled. Depression, anxiety, and stress were assessed using the DASS-21.

Results: The prevalences of depression, anxiety, and stress among the study participants were 94.7% (445/470), 98.5% (463/470), and 86.4% (406/470), respectively. Among them, 88.7%, 65.1%, and 57.2% had severe/extremely severe symptoms of anxiety, depression, and stress, respectively. Illiterate women had significantly higher adjusted odds of severe/extremely severe anxiety (AOR 8.29, 95% CI 3.73–18.40), depression (AOR 6.13, 95% CI 2.99–12.54), and stress (AOR 3.63, 95% CI 1.86–7.09). Older age was associated with depression, while teachers had lower odds of severe depression and stress than housewives. Women who were neither pregnant nor lactating had lower odds of severe depression than pregnant women. Women with unemployed husbands and smaller household size were associated with stress. However, larger household size was associated with higher odds of severe anxiety.

Conclusion: Psychological distress was highly prevalent among women of reproductive age in Kandahar. Illiteracy emerged as the most consistent correlate across all three outcomes. Integrating culturally appropriate mental-health screening and psychosocial support into primary and maternal healthcare services may help identify and support women at greatest risk.

Keywords

Women of reproductive age; depression; anxiety; stress; DASS-21; mental health; Kandahar.

Introduction

Mental disorders are a major contributor to disability worldwide, with depressive and anxiety disorders accounting for a substantial proportion of the non-fatal burden of disease across diverse populations and settings. Global epidemiological evidence indicates that these disorders are not distributed evenly across populations; rather, their occurrence and consequences are shaped by sex, socioeconomic position, exposure to adversity, and the broader political and social environment [1–4]. Women consistently experience a greater burden of depression and several anxiety disorders than men, a disparity that becomes particularly evident from adolescence onwards and persists throughout much of adult life [5,6]. This difference cannot be explained by biological factors alone. Contemporary evidence points to a complex interaction between reproductive transitions, socioeconomic disadvantage, unequal gender roles, limited autonomy, interpersonal violence, unpaid caring responsibilities, and differential exposure to chronic stressors [4–8].

Women of reproductive age represent an especially important population in mental-health research because this stage of life encompasses substantial biological, familial, and social transitions. Pregnancy, childbirth, breastfeeding, child-rearing, changes in family responsibilities, and economic dependency may coincide with or intensify existing psychosocial pressures. Recent global analyses have highlighted the considerable burden of mental disorders among women of reproductive age. In contrast, research on reproductive mental health increasingly emphasises that women's psychological wellbeing should be

understood across the life course rather than being confined to pregnancy and the postpartum period [6,9]. Perinatal studies have nevertheless demonstrated the scale of vulnerability during reproductive transitions. In low- and middle-income countries, pooled estimates suggest that anxiety symptoms affect approximately one-quarter to one-third of women during pregnancy and the postnatal period, with marked variation according to social and economic circumstances [10]. Depression, anxiety, and psychological stress during reproductive years are therefore closely connected to the social contexts in which women live, rather than being solely individual clinical phenomena [6,10–12].

Social and demographic circumstances are particularly relevant to common mental-health problems. Poverty and mental ill-health have a bidirectional relationship: financial hardship, unemployment, economic shocks, food insecurity, and uncertainty can increase psychological distress, whereas depression and anxiety may themselves impair occupational functioning and household productivity [13,14]. Educational disadvantage can similarly influence mental health through restricted employment opportunities, poorer access to information and health services, and reduced social and economic autonomy. Studies among women in resource-constrained settings have further identified low household income, limited education, reduced decision-making power, inadequate family support, and gender disadvantage as important correlates of common mental disorders [7,15]. Household composition and caregiving responsibilities may introduce additional pressures, particularly where women have limited economic resources or few opportunities for social participation. These relationships are unlikely to operate independently, underscoring the importance of examining multiple sociodemographic characteristics simultaneously rather than interpreting individual factors in isolation [3,4,13].

The mental-health consequences of such disadvantages are amplified in settings affected by prolonged conflict, displacement, political instability, and fragile health systems. A major systematic review commissioned to update World Health Organization estimates found that approximately one in five people living in conflict-affected settings experience a mental disorder, with depression and anxiety among the most prominent conditions [16]. Subsequent evidence has similarly shown substantially elevated levels of depressive and anxiety symptoms among civilians exposed to war and conflict [17]. Women may face overlapping forms of vulnerability in these contexts through bereavement, displacement, economic insecurity, restrictions on mobility, loss of social support, and exposure to interpersonal or gender-based violence. Intimate partner violence is itself strongly associated with adverse mental-health outcomes among women, including depression, anxiety, post-traumatic stress symptoms, and suicidality [18,19]. Mental-health and psychosocial interventions can be effective in conflict-affected and low-resource settings, but access and coverage remain highly uneven, particularly for women and other socially marginalised populations [20–22].

These concerns are especially pertinent in Afghanistan, where decades of armed conflict, recurrent displacement, poverty, and disruption of public institutions have created persistent threats to population mental health. For Afghan women, these pressures intersect with longstanding gender inequalities and more recent restrictions affecting education, employment, mobility, participation in public life, and access to health services [23–25]. Concerns about the deterioration of women's health and psychological wellbeing in Afghanistan have therefore been raised in several leading medical and psychiatric journals [23–26]. Empirical evidence also points to a substantial burden. A cross-sectional study of 438 Afghan women living in several urban provinces reported depressive symptoms in 80.4% of

participants, and mild-to-extremely-severe anxiety symptoms in 81.0%; older age, lower educational attainment, number of children, adverse recent experiences, and poor health were among the factors associated with poorer mental health [27]. The same study identified low household income as an independent correlate of depression, reinforcing the relevance of material and social circumstances to women's psychological wellbeing in Afghanistan.

Despite these indications, important gaps remain. Much of the available evidence on Afghan women's mental health has either focused primarily on depression, combined women across very wide age ranges, included participants from multiple regions, or concentrated on particular circumstances such as political transition, quality of life, or access to care [23–27]. Evidence specifically characterising depression, anxiety, and stress together among women of reproductive age remains limited, and data from southern Afghanistan are particularly sparse. Kandahar has a distinct social, economic, and demographic context and has experienced prolonged conflict and health-system constraints, making extrapolation from studies conducted in other urban regions of Afghanistan uncertain [27]. . Moreover, identifying the prevalence of psychological symptoms without examining their sociodemographic patterning provides limited guidance for targeted public-health responses. Factors such as age, educational attainment, occupation, household income, reproductive status, family structure, and the employment status of the husband may help identify groups facing disproportionate psychological distress and inform locally relevant screening and support strategies.

The Depression Anxiety Stress Scales-21 (DASS-21) provides a brief approach for assessing three related dimensions of psychological distress and has demonstrated acceptable psychometric performance across culturally diverse populations [28–30]. Importantly, its subscales measure symptom severity rather than establishing psychiatric diagnoses;

consequently, epidemiological findings based on the DASS-21 should be interpreted as levels of depressive, anxiety, and stress symptoms rather than confirmed clinical disorders. Using this framework, the present study aimed to estimate the prevalence and severity of depression, anxiety, and stress and to examine their sociodemographic correlates among women of reproductive age in Kandahar, Afghanistan. By generating evidence from an under-researched population in southern Afghanistan, the study seeks to contribute to a more geographically representative understanding of women's mental health and to identify population groups that may warrant greater attention in future mental-health screening, prevention, and service planning.

Materials and Methods

Study design and setting

A community-based cross-sectional study was conducted from 15 September 2025 to 18 April 2026 in District 9 of Kandahar City, Kandahar Province, Afghanistan. The study was designed to estimate the prevalence and severity of symptoms of depression, anxiety, and stress and to examine their sociodemographic correlates among women of reproductive age. District 9 was selected as the study setting, and women residing in the district constituted the source population. The final analytic sample included women aged 20–49 years, all of whom fell within the conventional reproductive-age range of 15–49 years.

Study population, screening, and participant recruitment

The source population comprised women of reproductive age residing in District 9 of Kandahar City. A screening-based recruitment approach was used. During the study period, 1,827 women were screened for eligibility. Screening was undertaken before enrolment to minimise the influence of recent major medical or psychosocial events that could

substantially affect short-term psychological distress and thereby obscure the study's intended assessment of depression, anxiety, and stress in the target population.

Eligibility criteria

Women were eligible for inclusion if they met all of the following conditions:

- Were aged 15–49 years;
- Were resident in District 9 of Kandahar City;
- Were able to understand and respond to the study questionnaire;
- Were willing to participate and provided informed consent; and
- Did not meet any of the predefined exclusion criteria.

Women were excluded if any one of the following conditions applied:

- A burn injury affecting any part of the body during the preceding six months;
- The death of a close family member or relative during the preceding six months;
- Any surgical procedure during the preceding six months, including exposure to anaesthetic medication during that period; or
- Use of psychotropic or other medication for a neurological or psychiatric condition during the preceding 12 months.

Only women who satisfied all eligibility requirements were enrolled. Of the 1,827 women screened, 470 met the predefined eligibility criteria and entered the study, corresponding to an enrolment proportion of 25.7%. The remaining 1,357 women were not enrolled because they did not meet one or more eligibility criteria. All 470 enrolled participants completed the DASS-21 and were included in the final analysis.

Data collection and study variables

Data were collected using a structured questionnaire administered to eligible participants after enrolment. The questionnaire contained two principal components: sociodemographic

characteristics and the DASS-21. The sociodemographic variables available for analysis included age, occupation, monthly family income, educational attainment, current maternal condition, husband's occupation, number of children, and household size.

Age was examined as a continuous variable and was also categorised as 20–24, 25–34, 35–44, and 45–49 years for group-based analyses. Occupation was classified as teacher or housewife. Educational attainment was recorded as illiterate, primary, secondary, high school, or bachelor's-level education. Current maternal condition was classified as pregnant, lactating, or neither pregnant nor lactating. Husband's occupation was recorded as unemployed, labourer, private-sector employee, or government employee.

Assessment of depression, anxiety, and stress

Psychological symptoms were assessed using the DASS-21, a 21-item self-report instrument comprising three seven-item subscales measuring depressive symptoms, anxiety symptoms, and stress. In the study dataset, each item was recorded using four response categories: 1 = none, 2 = sometimes, 3 = often, and 4 = very often.

For scoring, the recorded values were recoded to the conventional 0–3 scale by subtracting one from each response. The seven items belonging to each subscale were summed, and the resulting subscale total was multiplied by two to obtain scores comparable with the full DASS scoring convention [31].

For participant i, the three DASS-21 subscale scores were calculated as:

$$D_i = 2 \sum_{j=1}^{7} d_{ij}$$

$$A_i = 2 \sum_{j=1}^{7} a_{ij}$$

$$S_i = 2 \sum_{j=1}^{7} s_{ij}$$

where D_i, A_i, and S_i denote the depression, anxiety, and stress scores for participant i, respectively, and d_{ij}, a_{ij}, and s_{ij} represent the recoded item scores ranging from 0 to 3.

Classification of DASS-21 symptom severity

The multiplied DASS-21 subscale scores were classified into five severity categories. For depression, scores of 0–9 were classified as normal, 10–13 as mild, 14–20 as moderate, 21–27 as severe, and ≥28 as extremely severe. For anxiety, scores of 0–7 were classified as normal, 8–9 as mild, 10–14 as moderate, 15–19 as severe, and ≥20 as extremely severe. For stress, scores of 0–14 were classified as normal, 15–18 as mild, 19–25 as moderate, 26–33 as severe, and ≥ 34 as extremely severe.

Because the DASS-21 is a symptom-severity instrument rather than a diagnostic interview, the resulting categories were interpreted as levels of depressive, anxiety, and stress symptoms rather than as confirmed psychiatric diagnoses [28–31].

Outcome definition

The three principal study outcomes were depression, anxiety, and stress. For descriptive analyses, each outcome was retained in its conventional five-level DASS-21 severity classification [31]. For multivariable modelling, a study-specific binary outcome was created by grouping severe and extremely severe symptoms together and comparing them with normal, mild, and moderate symptoms. This analytical grouping was used to identify factors associated with the highest levels of psychological symptom severity and should not be interpreted as an additional diagnostic threshold of the DASS-21.

$Y_i = 1$, if severe or extremely severe symptoms; $Y_i = 0$, if normal, mild, or moderate symptoms.

Internal consistency of the DASS-21

Internal consistency of each DASS-21 subscale was assessed using Cronbach's alpha. For a subscale containing k items, Cronbach's alpha was calculated as:

$$\alpha = [k/(k-1)] \times [1 - (\Sigma \sigma_j^2 / \sigma_t^2)]$$

where k is the number of items, σ_j^2 is the variance of item j, and σ_t^2 is the variance of the total subscale score. In the analysed dataset, Cronbach's alpha was 0.748 for depression, 0.726 for anxiety, and 0.685 for stress. The depression and anxiety subscales therefore demonstrated acceptable internal consistency, while the stress subscale showed slightly lower reliability and was interpreted with appropriate caution.

Statistical analysis

Statistical analyses were conducted in Python 3.13.5 using SciPy 1.17.0 and statsmodels 0.14.6. Before analysis, the dataset was checked for completeness, consistency of category coding, and out-of-range values. Categorical variables were summarised using frequencies and percentages. Continuous variables were summarised using means and standard deviations and, where informative, medians and interquartile ranges.

The prevalence of each DASS-21 severity category was estimated as:

$$P = (x / N) \times 100$$

where x denotes the number of participants in a given severity category and N denotes the total number of participants. Associations between categorical sociodemographic characteristics and severe/extremely severe depression, anxiety, or stress were initially examined using Pearson's chi-square test. Where expected cell counts were too small for the assumptions of the chi-square test, exact procedures were considered. Pearson's correlation coefficient was used to quantify relationships among continuous depression, anxiety, and stress scores.

All statistical tests were two-sided, and a *p*-value < 0.05 was considered statistically significant. Effect estimates from regression models were reported as adjusted odds ratios (AORs) with 95% confidence intervals.

Multivariable logistic regression modelling

Three separate multivariable binary logistic regression models were fitted to identify sociodemographic factors independently associated with severe/extremely severe depression, severe/extremely severe anxiety, and severe/extremely severe stress.

For participant i, the general logistic regression model was expressed as:

$$\log[p_i/(1-p_i)] = \beta_o + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_k X_{ki}$$

where p_i represents the probability that participant i had severe or extremely severe symptoms, β_o is the model intercept, $X_{1i} \ldots X_{ki}$ are sociodemographic explanatory variables, and $\beta_1 \ldots \beta_k$ are their corresponding regression coefficients.

The predicted probability of the outcome was therefore:

$$p_i = \exp(\eta_i) / [1 + \exp(\eta_i)]$$

$$\eta_i = \beta_o + \Sigma_{j=1}^{k} \beta_j X_{ji}$$

For each predictor, the adjusted odds ratio was obtained as:

$$AOR_j = \exp(\beta_j)$$

The candidate predictors were selected on the basis of their conceptual relevance to women's psychological well-being and their availability in the dataset. The final models included age group, occupation, monthly family income, educational attainment, current maternal condition, husband's occupation, and household size.

To reduce sparse-data instability, closely related categories were combined where necessary. Monthly family income was analysed as <10,000 versus ≥10,000 Afghanis, and the husband's occupation was consolidated where required. Household size was entered as a continuous predictor after standardisation, so that its AOR represented the change in odds associated with a one-standard-deviation increase in household size.

$$Z_i = (X_i - \bar{X}) / SD_x$$

Model diagnostics and interpretation

Potential multicollinearity among explanatory variables was assessed before interpretation of the final models. The overall contribution of each model was evaluated using the likelihood-ratio test, and model explanatory performance was summarised using McFadden's pseudo-R^2. Adjusted odds ratios, 95% confidence intervals, and p-values were used to evaluate the direction, magnitude, and precision of associations. Estimates from sparsely populated categories were interpreted cautiously because small cell sizes may produce unstable estimates and wide confidence intervals.

Because the study was cross-sectional, all regression findings were interpreted as associations rather than causal effects. Terms such as 'associated with', 'correlates', and 'adjusted odds' were therefore preferred over causal terminology.

Missing data and data-quality procedures

All 470 enrolled participants had complete responses to the 21 DASS-21 items, allowing calculation of all three subscale scores without imputation. Categorical sociodemographic variables were checked against the study codebook before analysis. No DASS-21 values were imputed.

Ethical considerations

The research protocol was submitted to the Institutional Review Board of Kandahar University on 13 August 2025. Ethical approval was granted on 27 August 2025 under registration number KDRU-IRB-00019. Data collection commenced only after ethical approval had been obtained. The study was conducted in accordance with the Declaration of Helsinki.

Participation was voluntary, and informed consent was obtained from all participants before enrolment. Participants were informed about the purpose of the study, the voluntary nature of participation, the confidentiality of the information provided, and their right to decline participation or withdraw without penalty. Participant information was handled

confidentially, and no personally identifying information was included in the analytic dataset or manuscript.

Methodological rationale for screening exclusions

The predefined screening criteria were applied to reduce the influence of recent major medical and psychosocial events that could independently alter levels of depression, anxiety, and stress and thereby confound the associations of interest. Women who had experienced a burn injury, the recent death of a close family member or relative, surgery or exposure to anaesthesia, or recent use of psychotropic or neurological medication were therefore excluded before enrolment.

These conditions were considered potential sources of acute or subacute psychological distress that could substantially affect DASS-21 scores independently of the sociodemographic characteristics being examined. For example, a recent burn injury may be followed by pain, functional impairment, body-image concerns, and emotional distress; bereavement may independently precipitate depressive, anxiety, or stress symptoms; recent surgery and anaesthesia may be associated with postoperative physical and psychological effects; and recent psychotropic or neurological medication use may indicate a pre-existing mental or neurological condition or may directly modify psychological symptoms.

Accordingly, these exclusions were introduced at the design stage to improve internal validity by reducing potential confounding from recent major events or treatments that could distort the relationship between sociodemographic characteristics and depression, anxiety, and stress. The prevalence estimates should therefore be interpreted as applying to women of reproductive age who met the study's predefined eligibility criteria.

Results

Participant characteristics

A total of 470 women of reproductive age were included in the final analysis. Participants ranged in age from 20 to 49 years, with a mean age of 32.08 years (SD = 6.80). Nearly half of the participants were aged 25–34 years (46.8%), followed by those aged 35–44 years (33.2%). The majority were housewives (87.9%), while 12.1% were teachers. Most women were illiterate (83.0%), and 70.0% of those with valid income data reported a monthly family income below 10,000 Afghanis. Regarding current maternal condition, 48.7% were lactating, 36.8% were pregnant, and 14.5% were neither pregnant nor lactating. More than half of the participants' husbands were unemployed (52.3%), while 38.1% were labourers. The mean number of children was 4.42 (SD = 2.12, range = 1–10), and the mean household size was 10.22 persons (SD = 4.38, range = 3–22) (Table 1).

Depression, anxiety, and stress symptoms

The DASS-21 findings indicated a substantial burden of psychological symptoms in the study population. Mean (SD) subscale scores for depression, anxiety, and stress were 24.39 (8.42), 26.32 (8.37), and 24.88 (7.48), respectively. Internal consistency was acceptable for the depression (Cronbach's $\alpha = 0.748$) and anxiety (Cronbach's $\alpha = 0.726$) subscales, while slightly lower for the stress subscale (Cronbach's $\alpha = 0.685$) (Table 2).

The prevalences of depression, anxiety, and stress among the study participants were 94.7% (445/470), 98.5% (463/470), and 86.4% (406/470), respectively. Severity distributions differed across the three psychological domains. For depression, 46.2% of participants were classified as having extremely severe symptoms and 18.9% as having severe symptoms, giving a combined severe/extremely severe prevalence of 65.1% (95% CI 60.7–69.3). Anxiety showed the greatest symptom burden: 78.5% of women were in the extremely severe category, and a further 10.2% were classified as severe, resulting in a combined prevalence

of 88.7% (95% CI 85.5–91.3). Severe stress symptoms were observed in 44.5% of participants and extremely severe symptoms in 12.8%, giving an overall severe/extremely severe prevalence of 57.2% (95% CI 52.7–61.6) (Table 2).

Psychological symptoms according to maternal condition

DASS-21 scores varied across current maternal-condition groups (Figure 1). Women who were neither pregnant nor lactating generally showed lower depression scores than pregnant and lactating women, whereas anxiety scores remained comparatively high among both pregnant and lactating participants. Stress scores were also visually higher among lactating women, although considerable within-group variability was evident.

After adjustment for other sociodemographic characteristics, maternal condition was independently associated with severe/extremely severe depression but not with severe/extremely severe anxiety or stress. Women who were neither pregnant nor lactating had 63% lower adjusted odds of severe/extremely severe depression than pregnant women (AOR = 0.37, 95% CI 0.18–0.77, *p*-value = 0.008; Table 4). Lactating women did not differ significantly from pregnant women in the adjusted depression model (AOR = 1.25, 95% CI 0.76–2.07, *p*-value = 0.377).

Psychological symptoms according to occupation

Clear differences in DASS-21 scores were observed by occupation (Figure 2). Housewives showed consistently higher anxiety, depression, and stress scores than teachers, with the largest visual separation observed for depression.

In the adjusted anxiety model, however, occupation was no longer statistically significant (teacher vs housewife: AOR = 0.57, 95% CI 0.22–1.46, *p*-value = 0.240; Table 3). In contrast, teachers had substantially lower adjusted odds of severe/extremely severe depression than housewives (AOR = 0.10, 95% CI 0.04–0.27, *p*-value < 0.001; Table 4). A similar, although less

pronounced, association was observed for stress, with teachers having lower adjusted odds than housewives (AOR = 0.44, 95% CI 0.20–1.00, *p*-value = 0.049; Table 5).

Psychological symptoms according to educational attainment

Educational attainment showed one of the clearest gradients in psychological symptom scores (Figure 3). Illiterate women had comparatively high scores across all three DASS-21 domains, whereas lower depression, anxiety, and stress scores were generally observed among women with secondary and high school education. Estimates for the smaller educational categories, particularly bachelor-level education, showed greater variability because relatively few participants were represented in these groups.

The multivariable analyses confirmed educational attainment as the most consistent sociodemographic correlate across the three outcomes. Illiterate women had more than eightfold higher adjusted odds of severe/extremely severe anxiety compared with women with any formal education (AOR = 8.29, 95% CI 3.73–18.40, *p*-value < 0.001; Table 3). They also had more than sixfold higher adjusted odds of severe/extremely severe depression (AOR = 6.13, 95% CI 2.99–12.54, *p*-value < 0.001; Table 4) and more than threefold higher adjusted odds of severe/extremely severe stress (AOR = 3.63, 95% CI 1.86–7.09, *p*-value < 0.001; Table 5).

Sociodemographic correlates of severe or extremely severe anxiety

In the multivariable logistic regression model for anxiety, three factors were independently associated with severe/extremely severe symptoms (Table 3). Women aged 45–49 years had markedly higher adjusted odds than those aged 20–24 years (AOR = 10.62, 95% CI 1.04–108.23, *p*-value = 0.046), although the wide confidence interval indicates substantial imprecision associated with the small number of participants in the oldest age category. Lack of formal education was strongly associated with severe/extremely severe anxiety (AOR =

8.29, 95% CI 3.73–18.40, *p*-value <0.001). In addition, each one-standard-deviation increase in household size was associated with more than a twofold increase in the adjusted odds of severe/extremely severe anxiety (AOR = 2.18, 95% CI 1.27–3.76, *p*-value = 0.005).

Occupation, household income, maternal condition, and husband's occupation were not independently associated with severe/extremely severe anxiety after adjustment. The anxiety model included 467 women and showed an overall McFadden pseudo-R2 of 0.305, with the likelihood-ratio test indicating that the fitted model performed significantly better than the intercept-only model (*p*-value < 0.001; Table 3).

Sociodemographic correlates of severe or extremely severe depression

Several independent associations were identified in the adjusted depression model (Table 4). Compared with women aged 20–24 years, those aged 35–44 years had more than twice the adjusted odds of severe/extremely severe depression (AOR = 2.40, 95% CI 1.22–4.72, *p*-value = 0.011), while the odds were substantially greater among women aged 45–49 years (AOR = 8.60, 95% CI 2.16–34.25, *p*-value = 0.002).

Educational attainment and occupation were also strongly associated with depressive symptom severity. Illiterate women had 6.13 times the adjusted odds of severe/extremely severe depression compared with those who had received some formal education (95% CI 2.99–12.54, *p*-value < 0.001). Conversely, teachers had substantially lower odds than housewives (AOR = 0.10, 95% CI 0.04–0.27, *p*-value < 0.001). Women who were neither pregnant nor lactating also had lower adjusted odds than pregnant women (AOR = 0.37, 95% CI 0.18–0.77, *p*-value = 0.008). Monthly family income, husband's occupation, lactating status, and household size were not independently associated with severe/extremely severe depression (Table 4).

The depression model included 467 participants and had a McFadden pseudo-R2 of .218, with an overall likelihood-ratio test *p*-value < 0.001 (Table 4).

Sociodemographic correlates of severe or extremely severe stress

The adjusted stress model identified educational attainment, occupation, husband's employment, and household size as significant correlates (Table 5). Illiterate women had 3.63 times the adjusted odds of severe/extremely severe stress compared with those with formal education (95% CI 1.86–7.09, *p*-value < 0.001). Teachers had lower adjusted odds than housewives (AOR = 0.44, 95% CI 0.20–1.00, *p*-value = 0.049).

Women whose husbands were employed in private or government positions had markedly lower odds of severe/extremely severe stress than women whose husbands were unemployed (AOR = 0.19, 95% CI 0.08–0.45, *p*-value < 0.001). Household size also showed an inverse association: each one-standard-deviation increase in household size was associated with 25% lower adjusted odds of severe/extremely severe stress (AOR = 0.75, 95% CI 0.61–0.94, *p*-value = 0.011). Age group, monthly family income, maternal condition, and having a husband employed as a labourer were not independently associated with stress severity (Table 5). The final stress model was based on 467 participants, with a McFadden pseudo-R2 of 0.130 and an overall likelihood-ratio test with a *p*-value < 0.001 (Table 5).

Discussion

This study found a substantial burden of depressive, anxiety, and stress symptoms among women of reproductive age in District 9 of Kandahar City. Severe or extremely severe symptoms were present in 88.7% for anxiety, 65.1% for depression, and 57.2% for stress, indicating that psychological distress was common even within a study population from which women with selected recent major medical and psychosocial stressors had been excluded.

Several sociodemographic characteristics were independently associated with symptom severity. Most notably, lack of formal education was consistently associated with all three outcomes, while older age was particularly important for depression. Occupation, current maternal condition, husband's employment status, and household size also showed outcome-specific associations. Together, these findings suggest that psychological distress among women in this setting is not distributed uniformly but is closely patterned by social position and household circumstances.

The high levels of psychological symptoms observed in this study are broadly consistent with concerns about the mental-health burden among Afghan women, although direct comparison across studies requires caution because of differences in study populations, measurement instruments, sampling strategies, and symptom thresholds. Neyazi et al. reported a high frequency of depressive and anxiety symptoms among Afghan women living in urban areas and identified socioeconomic and health-related characteristics as important correlates [27]. The present findings extend this evidence to women of reproductive age in southern Afghanistan and, importantly, examine depression, anxiety, and stress simultaneously. The particularly high anxiety burden observed here is also consistent with wider evidence showing that populations exposed to prolonged instability, uncertainty, and conflict can experience substantial levels of anxiety and other common mental-health problems [16,17]. Afghanistan's prolonged political, economic, and humanitarian difficulties provide an important background for interpreting these findings, particularly for women whose opportunities for education, employment, mobility, and participation in public life have become increasingly constrained [23–26].

Nevertheless, the prevalence estimates in the present study should not be interpreted as directly representing all women of reproductive age in Kandahar. The study deliberately

excluded women who had recently experienced burn injury, bereavement, surgery or anaesthesia, or recent psychotropic or neurological medication use. These criteria were introduced at the design stage to reduce the influence of recent events or treatments that could independently elevate depression, anxiety, or stress scores. Thus, the high symptom levels observed despite these exclusions are noteworthy. At the same time, the screening strategy means that the estimates apply most directly to women who met the predefined eligibility criteria rather than to the entire female population of District 9.

One of the clearest findings was the strong and consistent association between educational disadvantage and psychological distress. Illiterate women had approximately eightfold higher adjusted odds of severe or extremely severe anxiety, sixfold higher odds of severe or extremely severe depression, and more than threefold higher odds of severe or extremely severe stress compared with women who had received some formal education. The consistency of this pattern across all three outcomes strengthens the likelihood that education represents an important social marker of vulnerability in this population. Previous research has similarly linked lower educational attainment with poorer mental health, particularly among women in disadvantaged settings [3,4,7,15]. Education may influence psychological wellbeing through several pathways, including access to employment, financial independence, health literacy, social participation, problem-solving resources, and decision-making autonomy. These mechanisms are especially relevant in contexts where women have restricted economic and social opportunities. The present data cannot determine which of these pathways is responsible, but they support the broader view that women's mental health is inseparable from their social and structural circumstances [3,4].

Occupation showed another important pattern. Teachers had markedly lower adjusted odds of severe or extremely severe depression than housewives and also had lower odds of severe

or extremely severe stress. The association with anxiety was weaker and no longer statistically significant after adjustment. The graphical comparisons likewise showed consistently higher DASS-21 scores among housewives than teachers. Employment may confer several potential advantages, including regular social interaction, greater economic participation, structured daily activity, and a degree of personal autonomy. Conversely, women whose activities are largely confined to the household may experience greater social isolation, financial dependence, or cumulative caregiving responsibilities. Similar pathways have been discussed within the wider literature on social determinants of mental health and gender disadvantage [3,4,7,13]. However, occupation in the present study was represented by only two categories, and being a teacher may also capture several other advantages, particularly higher educational attainment. Although both variables were included in the adjusted models, residual confounding remains possible and the occupational finding should therefore be interpreted cautiously.

Age was most strongly related to depression. Compared with women aged 20–24 years, those aged 35–44 years had more than twice the adjusted odds of severe or extremely severe depression, while women aged 45–49 years had considerably higher odds. The oldest age group also showed elevated odds of severe or extremely severe anxiety, although the confidence interval was extremely wide, indicating imprecision because relatively few participants were aged 45–49 years. Previous research among Afghan women has also identified older age as a correlate of poorer psychological wellbeing [27]. Accumulated household responsibilities, repeated exposure to socioeconomic hardship, reproductive and caregiving demands, chronic health concerns, and longer exposure to adverse social conditions may contribute to this age-related pattern. However, because the study was cross-

554 sectional, it is not possible to determine whether the observed differences reflect ageing
555 itself, cumulative exposure to adversity, cohort effects, or other unmeasured characteristics.
556 Current maternal condition was independently associated with depression but not with
557 anxiety or stress after adjustment. Women who were neither pregnant nor lactating had
558 substantially lower odds of severe or extremely severe depression than pregnant women.
559 Pregnancy and the postnatal period are recognised as psychologically vulnerable stages,
560 particularly in settings where women face financial hardship, limited access to health services,
561 and restricted social support [6,10–12]. The graphical findings also suggested higher
562 depressive scores among pregnant and lactating women than among those who were neither
563 pregnant nor lactating. These findings should not, however, be interpreted as evidence that
564 pregnancy itself causes depression. Maternal condition may coexist with other pressures,
565 including childcare demands, concerns about maternal and infant health, economic
566 dependency, and household responsibilities that were not comprehensively measured in this
567 study. Nevertheless, the association suggests that antenatal and postnatal healthcare
568 contacts may represent important opportunities for integrating basic mental-health
569 screening and referral.
570 Household circumstances showed more complex relationships with psychological distress.
571 Larger household size was associated with higher adjusted odds of severe or extremely severe
572 anxiety, but with lower odds of severe or extremely severe stress. These apparently divergent
573 findings warrant careful interpretation rather than a simple protective or harmful
574 explanation. In large households, greater crowding, financial obligations, caregiving demands,
575 and uncertainty over resources may contribute to anxiety. Conversely, larger households may
576 also provide practical assistance, companionship, childcare support, or broader family
577 networks that reduce some dimensions of perceived stress. The bidirectional relationship

between economic and social circumstances and psychological wellbeing has been documented widely [3,13,14]. Because the present study did not directly measure perceived social support, household crowding, intra-household relationships, or individual economic contribution, the mechanisms underlying these opposing associations cannot be established. Husband's employment status was independently associated with stress. Women whose husbands were employed in private or government positions had markedly lower odds of severe or extremely severe stress than women whose husbands were unemployed. This finding is plausible in a setting where household economic security is closely linked to the employment of male family members. Stable employment may reduce uncertainty surrounding household income, food expenditure, healthcare costs, and other essential needs. Poverty and economic insecurity are well-established contributors to depression, anxiety, and psychological distress, with evidence suggesting a reciprocal relationship between poverty and mental ill-health [13,14]. Interestingly, monthly family income itself was not independently associated with the three outcomes after adjustment. This may reflect the relatively limited variation in income within the study population, the broad income categories used, measurement error in self-reported income, or the possibility that employment stability captures dimensions of economic security that are not represented adequately by monthly income alone.

The overlap among depression, anxiety, and stress should also be recognised when interpreting the findings. Although analysed as separate outcomes, these constructs are related dimensions of psychological distress rather than completely independent conditions. The DASS-21 was specifically developed to distinguish related symptom domains, but substantial correlations between its subscales are commonly observed [28–30]. In the present study, the high burden across all three domains therefore suggests pervasive psychological

distress rather than three entirely separate epidemics. This distinction is clinically important because the DASS-21 is a screening and symptom-severity instrument rather than a diagnostic interview. The reported categories should consequently be interpreted as depressive, anxiety, and stress symptoms, not as confirmed psychiatric disorders [28–30].

From a public-health perspective, the findings support a stronger focus on women's mental health within primary, maternal, and community health services in Kandahar. The consistency of the association with education suggests that women with little or no schooling may warrant particular attention, while the findings concerning pregnancy, household circumstances, and occupation indicate additional groups that may benefit from targeted screening. In resource-constrained or conflict-affected settings, specialist psychiatric services alone are unlikely to meet population needs. Evidence from low-resource and conflict-affected settings suggests that appropriately adapted psychological and psychosocial interventions can be delivered through non-specialist or community-based platforms [20–22]. Integration of brief mental-health screening, counselling, referral pathways, and psychosocial support into maternal and primary healthcare may therefore offer a more feasible approach than relying exclusively on specialist services.

This study has several strengths. It provides data from 470 women of reproductive age in Kandahar, a population for which empirical mental-health evidence remains limited. Depression, anxiety, and stress were assessed simultaneously using a structured instrument, and multivariable models were used to distinguish independent sociodemographic associations. The predefined screening criteria also reduced the influence of selected recent medical and psychosocial exposures that could have acutely altered DASS-21 scores.

Several limitations should be considered. First, the cross-sectional design precludes conclusions about temporality or causality; the identified factors should therefore be

regarded as correlates rather than determinants. Second, participants were drawn from a single district of Kandahar City, which may limit the generalisability of the findings to women in other districts, rural areas, or other parts of Afghanistan. Although the screening criteria were intended to reduce confounding from recent major medical and psychosocial events, they also restrict the generalisability of the findings to women who met these eligibility criteria. Third, the DASS-21 assesses symptom severity rather than psychiatric diagnoses, and self-reported responses may be affected by recall or reporting bias [28–30]. Fourth, some analytically relevant exposures—including intimate partner violence, food insecurity, displacement history, social support, household decision-making autonomy, and previous traumatic experiences—were not included in the final models, although these factors are known to influence women's mental health [3,7,18,19]. Fifth, several subgroups were small, particularly women aged 45–49 years and those with higher educational attainment, resulting in wide confidence intervals for some estimates. Finally, the internal consistency of the stress subscale was somewhat lower than that of the depression and anxiety subscales, and findings relating to stress should therefore be interpreted with slightly greater caution.

Conclusion

This study identified a substantial burden of depressive, anxiety, and stress symptoms among eligible women of reproductive age in District 9 of Kandahar City. Severe or extremely severe anxiety was the most common outcome, followed by depression and stress. Educational disadvantage emerged as the most consistent sociodemographic correlate across all three psychological outcomes, while older age was particularly associated with severe depressive

symptoms. Occupation, current maternal condition, husband's employment status, and household size also showed important, although outcome-specific, associations.

These findings indicate that psychological distress among women in this setting is closely intertwined with social, educational, reproductive, and household circumstances. Illiterate women, housewives, older women, and those experiencing particular household or reproductive conditions may represent groups requiring greater attention within mental-health and primary-care services. However, because the study was cross-sectional and the DASS-21 measures symptom severity rather than clinical psychiatric diagnoses, the observed relationships should be interpreted as associations rather than causal effects. The findings provide locally generated evidence from an under-researched population in southern Afghanistan and highlight the need to integrate women's mental health more systematically into public-health planning and healthcare delivery.

Recommendations

The findings support the integration of routine, culturally appropriate mental-health screening into existing primary healthcare, maternal health, antenatal, postnatal, and community-based services in Kandahar. Particular attention should be given to illiterate women and those whose social or household circumstances may place them at increased risk of severe psychological distress.

Mental-health services should not rely exclusively on specialist psychiatric care. Given the limited availability of specialised services, appropriately trained primary-care providers, midwives, nurses, community health workers, and other non-specialist personnel could play an important role in early identification, brief psychosocial support, referral, and follow-up.

Screening should be accompanied by clear referral pathways so that women identified with severe symptoms can receive appropriate assessment and care.

Educational and psychosocial interventions should also be adapted for women with low literacy. Information about depression, anxiety, stress, coping strategies, available support services, and when to seek professional help should be delivered through accessible formats, including verbal counselling and community-based health education rather than relying solely on written materials.

The observed associations with occupation and household circumstances suggest that mental-health strategies should also recognise the broader social determinants of psychological wellbeing. Interventions that strengthen social support, opportunities for meaningful participation, household economic stability, and women's access to education may have relevance beyond conventional clinical care.

Maternal-health services represent an especially important point of contact. Because pregnant and lactating women showed comparatively high psychological symptom levels, mental-health screening and basic psychosocial support should be considered within antenatal and postnatal services, with appropriate referral for women presenting with severe symptoms.

Future research should use larger, population-based and preferably longitudinal designs across multiple districts and both urban and rural areas of Kandahar. Such studies should include variables that were not available in the present analysis, particularly food insecurity, displacement history, intimate partner violence, social support, household decision-making autonomy, previous trauma, physical health conditions, and access to healthcare. Longitudinal studies would also help clarify the temporal relationships between sociodemographic disadvantage and subsequent psychological distress.

Further research should additionally examine the cultural and linguistic performance of the DASS-21 among Afghan women and, where feasible, complement screening instruments with structured clinical assessment. This would help distinguish high symptom scores from clinically diagnosed mental disorders and improve the interpretation of future epidemiological estimates.

Finally, the present findings may provide a useful baseline for developing and evaluating locally appropriate mental-health interventions for women in Kandahar. Future intervention studies should assess not only changes in depression, anxiety, and stress symptoms, but also feasibility, acceptability, service uptake, and sustainability within Afghanistan's existing primary and maternal healthcare system.

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Institutional Review Board of Kandahar University prior to data collection (code number KDRU-EC-2025.21). All participants were fully informed about the purpose and procedures of the study, and written informed consent was obtained from each student before participation.

Consent for publication

Not applicable.

Availability of data and materials

The authors confirm that all data generated or analyzed during this study are included in this article. If any further information about the data is needed, we can provide it.

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Authors' contributions

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Formal analysis: BAR, WML

Funding acquisition:

Investigation: NL, DS

Methodology: BAR, WML

Project administration: BAR, WML

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Visualization: BAR, WML, NL, DS

Writing – original draft: BAR, WML

Writing – review & editing: BAR, WML, NL, DS

All authors have read and approved the manuscript.

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858 # Tables

859 **Table 1.** Sociodemographic characteristics of reproductive-age women in the study (n=470).

Characteristic	Category	Frequency, n	Percentage, %
Age group (years)	20–24	74	15.7
	25–34	220	46.8
	35–44	156	33.2
	45–49	20	4.3
Occupation	Housewife	413	87.9
	Teacher	57	12.1
Monthly family income (in Afghanis)	<10,000	329	70.0
	10,000–30,000	130	27.6
	>30,000	11	2.3
Education level	Illiterate	390	83.0
	Primary	16	3.4
	Secondary	38	8.1
	High school	15	3.2
	Bachelor	11	2.3
Current maternal condition	Pregnant	173	36.8
	Lactating	229	48.7
	Neither pregnant nor lactating	68	14.5
Husband's occupation	Unemployed	246	52.3
	Labourer	179	38.1
	Private-sector employee	34	7.2

	Government employee	11	2.3

Table 2. DASS-21 subscale scores and symptoms' severity among the reproductive-age women (n=470).

Subscale	Absent, n (%)	Present, n (%)			
		Mild	Moderate	Severe	Extremely severe
Depression	25 (5.3)	22 (4.7)	117 (24.9)	89 (18.9)	217 (46.2)
Anxiety	7 (1.5)	8 (1.7)	38 (8.1)	48 (10.2)	369 (78.5)
Stress	64 (13.6)	44 (9.4)	93 (19.8)	209 (44.4)	60 (12.8)

Note. DASS-21 severity categories represent symptom severity rather than confirmed psychiatric diagnoses.

Table 3. Multivariable logistic regression for severe or extremely severe anxiety in reproductive-age women (n=470).

Predictor	AOR	95% CI	*p*-value
Age 25–34 vs 20–24	0.83	0.29–2.39	0.732
Age 35–44 vs 20–24	0.65	0.21–1.99	0.451
Age 45–49 vs 20–24	10.62	1.04–108.23	0.046
Teacher vs housewife	0.57	0.22–1.46	0.240
Income <10,000 vs ≥10,000 Afghanis	1.48	0.63–3.47	0.366
No formal vs any formal education	8.29	3.73–18.40	<0.001
Lactating vs pregnant	1.58	0.69–3.62	0.279
Neither vs pregnant	0.59	0.23–1.54	0.283

Predictor	AOR	95% CI	*p*-value
Husband labourer vs unemployed	1.58	0.68–3.71	0.289
Husband private/government vs unemployed	0.73	0.23–2.30	0.591
Household size, per 1-SD increase	2.18	1.27–3.76	0.005

Note. Model n = 467. McFadden pseudo-R^2 = 0.305; likelihood-ratio test p-value < 0.001. AOR = adjusted odds ratio; CI = confidence interval. Reference categories are shown in the predictor labels.

Table 4. Multivariable logistic regression for severe or extremely severe depression in reproductive-age women (n=470).

Predictor	AOR	95% CI	*p*-value
Age 25–34 vs 20–24	1.55	0.82–2.96	0.179
Age 35–44 vs 20–24	2.40	1.22–4.72	0.011
Age 45–49 vs 20–24	8.60	2.16–34.25	0.002
Teacher vs housewife	0.10	0.04–0.27	< 0.001
Income <10,000 vs ≥10,000 Afghanis	0.97	0.56–1.66	0.906
No formal vs any formal education	6.13	2.99–12.54	< 0.001
Lactating vs pregnant	1.25	0.76–2.07	0.377
Neither vs pregnant	0.37	0.18–0.77	0.008
Husband labourer vs unemployed	0.83	0.51–1.35	0.444
Husband private/government vs unemployed	0.55	0.23–1.29	0.170
Household size, per 1-SD increase	0.83	0.66–1.06	0.132

Note. Model n = 467. McFadden pseudo-R^2 = 0.218; likelihood-ratio test p-value <0.001. AOR = adjusted odds ratio; CI = confidence interval. Reference categories are shown in the predictor labels.

Table 5. Multivariable logistic regression for severe or extremely severe stress among reproductive-age women (n=470).

Predictor	AOR	95% CI	*p*-value
Age 25–34 vs 20–24	0.87	0.47–1.59	0.646
Age 35–44 vs 20–24	1.47	0.79–2.73	0.227
Age 45–49 vs 20–24	1.18	0.35–3.96	0.786
Teacher vs housewife	0.44	0.20–1.00	0.049
Income <10,000 vs ≥10,000 Afghanis	1.27	0.79–2.06	0.326
No formal vs any formal education	3.63	1.86–7.09	< 0.001
Lactating vs pregnant	1.39	0.89–2.17	0.153
Neither vs pregnant	0.62	0.31–1.25	0.181
Husband labourer vs unemployed	0.79	0.51–1.21	0.272
Husband private/government vs unemployed	0.19	0.08–0.45	< 0.001
Household size, per 1-SD increase	0.75	0.61–0.94	0.011

Note. Model n = 467. McFadden pseudo-R^2 = 0.130; likelihood-ratio test p-value < 0.001. AOR = adjusted odds ratio; CI = confidence interval. Reference categories are shown in the predictor labels.

Figures

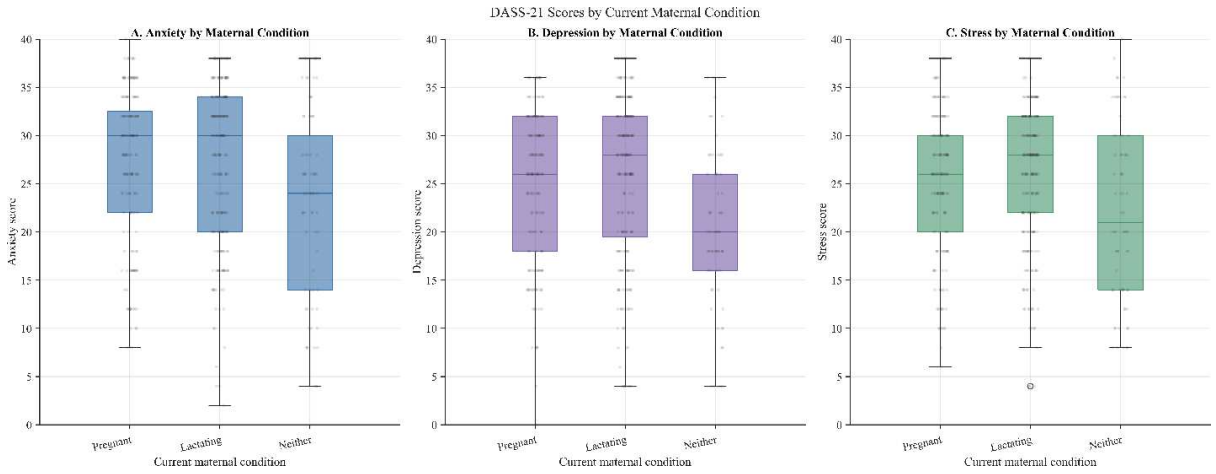


Figure 1. DASS-21 scores based on the current maternal condition of the study participants.

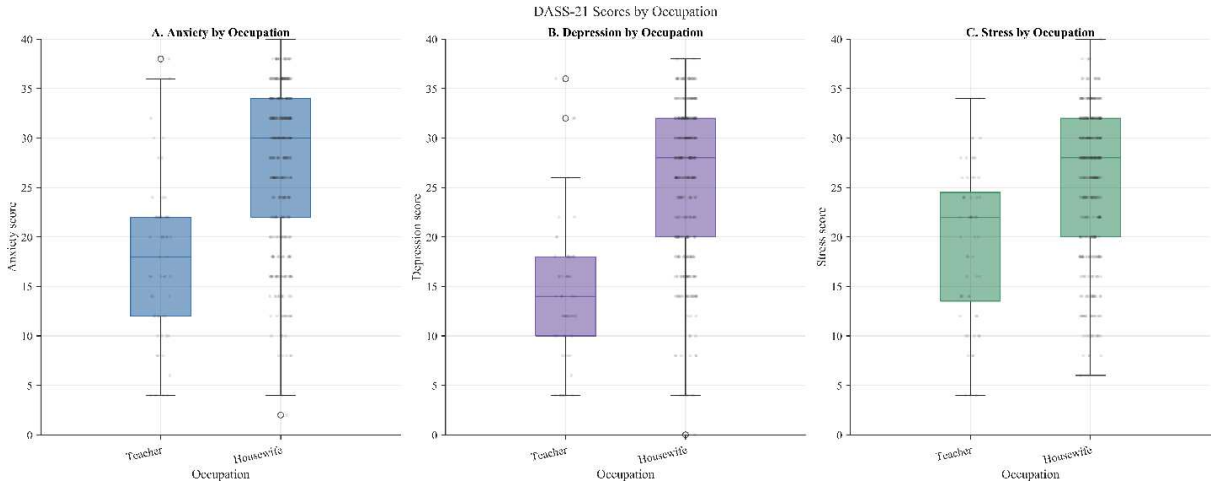
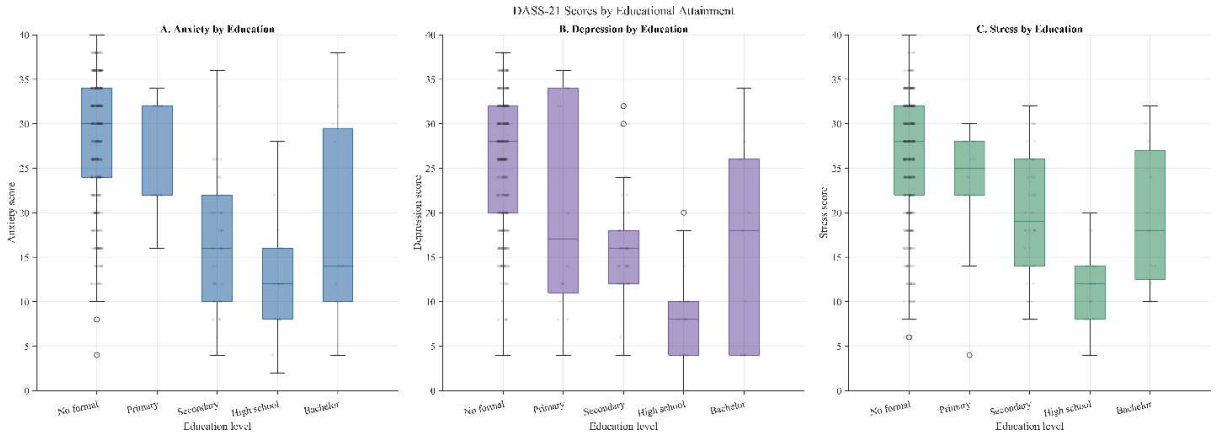


Figure 2. DASS-21 scores based on the occupation of study participants.



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904 **Figure 3.** DASS-21 scores based on the educational attainment of the study participants.

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