Correlates of Generalized Anxiety Disorder and Depression among Adults in Northwest Nigeria

Background: Mental health services including anxiety disorders and depression are neglected public health areas despite the emerging trend and potential negative consequences. **Materials and Methods:** A cross-sectional survey assessed the prevalence and factors associated with anxiety disorders and depression amongst 405 adults in Jigawa state. The Generalized Anxiety Disorders (GAD-7), Patient Health Questionnaire-9 (PHQ-9 questionnaires and a multi-stage sampling technique were employed and data were analysed using IBM SPSS version 22.0 with statistical significance set at a P≤5% **Results:** The minimum age of the respondents was 18 and the maximum was 82 with a Mean± SD of 39.2±14.9 years. About a quarter of respondents (24.7%) had a chronic medical condition and were on regular follow-ups to health facilities. In comparison, more than a quarter of them (26.7%) reported having a prior adverse life event. More than half (52.1%) of respondents reported knowing someone with a mental health disorder. The commonest medical condition reported by the respondents with chronic medical conditions was hypertension (11.6%), while flooding (12.3%) was the commonest adverse life event. The prevalence of anxiety disorders and depression were (29.1%), and (5.7%) respectively A significantly higher proportion of respondents (47.0%, p<0.001) who were on regular follow-ups to the health facility for chronic health conditions, those who smoked cigarettes (68.2%, p<0.001†), and those who used substances other than cigarettes and alcohol (69.2%, p<0.001) had an anxiety disorder. The odds of developing anxiety disorders were significantly lower amongst those with no family history of mental disorders, those without a family history of mental disorders were 30% less likely to develop anxiety disorders compared with those who reported a family history of mental disorders (adjusted odds ratio [aOR] = 0.3, 95% CI = [0.2–0.4]). In addition, a significantly higher proportion (10.0%, <0.04†) of those who were on follow-up to the health facility for chronic medical condition were depressed. The odds of being depressed were significantly lower among respondents who were not on follow-up to the health facility for a medical condition, those who were not on follow-up for medical condition were 20% less likely to have depression compared to those who were not on follow-up for chronic medical condition (Adjusted odds ratio [aOR] = 0.2, 95% CI = [0.1–0.8]).

Conclusions: The anxiety disorders and depression were associated with substance use, chronic medical conditions, and adverse life events including conditions linked to climate change and global warming and a family history of mental health conditions. There is a general lack of access to mental health services. The government and all relevant stakeholders should escalate the provision of mental health services including awareness campaigns, preventive interventions of the identified risk factors and prompt identification and appropriate treatment of cases.

Keywords: Factors, prevalence, anxiety, mental health, Jigawa, Nigeria

INTRODUCTION

Mental health disorders are associated with debilitating symptoms, [1-10] with anxiety disorders commencing in childhood, adolescence, and early adulthood.[1] Anxiety disorders incorporate disability caused by experiences of intense fear and distress in combination with other symptoms.[2] Meanwhile, Major Depressive Disorder (MDD) involves the experience of depressed mood or loss of interest or pleasure almost all day, every day for two weeks. Dysthymia symptoms are less severe but chronic.[3] The conditions vary from developmentally normative or stress-induced condition, and could impair day-to-day activities, [4] they are a leading cause of suffering, loss of productivity and Disability Adjusted Life Years (DALYs), and making up the 25 leading cause of illness and disability worldwide. For example, globally, anxiety disorders resulted in 28.7 million DALYs in 2019, equivalent to 1.1% of DALYs, [2] this is 22.9% of DALYs for the aggregate of mental health disorders. [2] While depressive disorders resulted in 48.9 million global DALYs in 2019 equivalent to 1.8% of DALYs.[3]

Depressive disorders contributed to 37.7% of DALYs for the aggregate of mental health disorders.[3] Combined, anxiety and depression are the commonest mental disorder (s), contributing to about 60.2% of DALYs for the aggregate of mental disorders in 2019. [3] They are mostly seen more among females compared to males, and in most cases, females are twice more at risk of developing the disease.[4-10] It can occur concurrently with severe depression, alcohol and other drug use-related disorders, and in some cases, with personality disorders.[4-8] Some reported risk factors like age, sex, marital status, education, etc, for example, females who were divorced or widowed, and people from lower socio-economic class, are associated with increased likelihood of having anxiety and depression. [4-10] Others risk factors are genetic predisposition, adverse life events,

coping strategies, presence of chronic diseases, personality types, spiritual and religious beliefs of a person, and positive family history.[8-12]

The health conditions do not affect only the individual, but the larger society in which the affected individual is residing.[10-12] It could result in poor performance in school, school dropouts, substance use, unemployment, poverty, depression, suicidal tendencies and eventually suicide. This problem is confounded by a lack of self-awareness or health-seeking behavior, level of mental health literacy, and socio-cultural acceptance of anxiety and depression as mental health conditions that require medical attention.[13] The identified factors associated with anxiety and depression could be in keeping with what is obtainable in Jigawa State due to existing major structural economic challenges in the country, existing man-made and natural disasters like kidnapping, banditry, and flooding which have a link with climate change and global warming. This is particularly worthy of investigation looking at the inadequate number of trained healthcare workers who can provide mental health services across the country, with an existing inadequate number of facilities capable of providing essential mental health services both of which could significantly serve as critical barriers to access and utilization of the mental health services. Similarly, local data on the prevalence and risk factors associated with anxiety and depression in the State are lacking, signifying the non-availability of information that could serve as a guide to the State government to formulate relevant policies in keeping with the emerging economic challenges and disasters in the state, targeted towards prevention, early identification, and prompt management of patients with the mental health conditions. The findings of this study therefore will provide relevant information that could influence behavior change towards positive mental health at the community level, high index of suspicion and early identification of potential cases at the facility levels, and informed policies by government and other stakeholders.

METHODS

Ethical approval

Permission to conduct this research was obtained from the Health Research Ethics Committee of the Jigawa State Ministry of Health with approval number: MOH/SEC/L.S/7074/V1/3V/I dated 24th June, 2024. All the principles of Helsinki Declaration were adhered to throughout the research process.

Study design and population

A descriptive cross-sectional study design was used to study the community members across the three senatorial zones of Jigawa State. All adults' ≥18 years of age were included in the study, while temporary residents, visitors to the selected areas, seriously sick individuals, and permanent residents temporarily away during data collection were excluded from the study.

Study area

Jigawa state is one of the states in the northwestern Nigeria, with an estimated projected population of over 7 million in 2024 based on the projection from 2006 National Population Commission Census.[14] There are over 700 primary health centres in the state manned by primary healthcare workers providing essential primary healthcare services using a standing order, a standardized national tool that guides primary healthcare workers in the diagnosis, treatment, and referral of suspected cases.[14] In addition, 18 health facilities owned by the state and federal government are providing secondary health services. Regarding human resources for health, the state has 182 Medical Doctors, 1827 Nurses, and over 3000 Community Health Extension Workers.[14] There is a state-owned psychiatric hospital providing services for patients with mental health disease, and specialized care for mental health at the federal health facilities within the State.

Sample size estimation

The minimum sample size (n) was determined using the Fishers formula for a single proportion.[14]

$$\frac{Z^2\,pq}{d^2}$$

Where, n = minimum sample size, using, Z = standard normal deviation corresponding to 95% confidence interval (CI) of 1.96, proportion of community members who were aware of mental disorders of (31%% = 0.1) from a previous study conducted in in south-west Nigeria, [15] q that is (1 − p) = (1 − 0.31 = 0.69), d = degree of precision = 5% =0.05 and 23% non-response rate. Substituting these values in to the formula:

$$n= \frac{(1.96)^2\times 0.31\times 0.69}{(0.05)^2}$$

$$= 329 +76$$

$$n=405$$

Sampling technique

A multistage sampling technique consisting of 5 stages will be used to study eligible respondents

Stage one: Selection of the LGA

The list of all the LGAs from each of the three senatorial districts of the state was obtained from which one LGA will be randomly selected by simple balloting.

Stage two: Selection of the political wards

The list of all political wards in each of the selected LGA was obtained from which one rural and one urban political ward were randomly selected by balloting

Stage three: Selection of settlement

From each of the selected political wards, the list of all the settlements was obtained from which one settlement was selected from each settlement by simple balloting.

Stage four: Selection of the households

Household census and numbering were conducted across the selected settlements starting centrally and moving to the right of each of the selected settlements. The total number of households in each settlement was obtained as served the sampling frame. The total number of respondents studied was proportionately allocated based on the total number of eligible respondents in the selected settlements. The sampling interval in each selected settlement was obtained as the ratio of the sampling frame to the proportionately allocated sample size. The first household to be studied was obtained within the calculated sampling interval of each settlement by simple balloting, thereafter, subsequent households were obtained by adding the calculated sampling interval until the proportionately allocated sample size in each settlement was obtained.

Stage five: Selection of Respondents

In each of the selected households, a line list of eligible individuals was generated, and one eligible respondent was randomly selected by balloting.

Procedure for data collection

An adapted interviewer-administered questionnaire (The GAD-7, and PHQ-9) were used for data collection, [14, 15] the questionnaire consists of three sections: Section one of the questionnaire elicited information on the socio-demographic characteristics of respondents, section two asked questions on anxiety disorders while section three asked questions related to depression. Forty questionnaires were pre-tested in another LGA far away from the LGAs selected for the study after training of the research assistants Twelve (12) trained healthcare workers were recruited and trained to serve as research assistants and the data were collected using Google form. They were trained on the objective of the research, community entry, advocacy, and ethical issues in research. The data quality was ensured by the supervision of the data collectors and real-time data monitoring submitted through the Google form.

Data management

Data collected from the field were entered into a Microsoft Excel spreadsheet and analysed using IBM SPSS Statistics for Windows, version 22.0. Armonk, NY, USA: IBM Corporation. The quantitative data were presented using mean and standard deviation (SD) or median and interquartile range as appropriate, while qualitative variables were presented using frequency and percentages.

The Generalized Anxiety Disorder 7-item (GAD-7) had 7 different questions eliciting information from the respondents. Response from the respondent for each question signifying not at all had a score of 0, several days had a score of 1, more than half the days had a score of 2, and nearly every day had a score of 3. The total scores of each respondent were summed up. A total score of 0-4 (no anxiety disorders) while >4 represents anxiety disorder. The GAD-7 score was also represented with clinical categorizations of anxiety levels as follows: GAD-7 score of 0–4 (none), 5–9 (mild), 10–14 (moderate), and 15–21 (severe).[16] The Patient Health Questionnaire-9 (PHQ-9) had 9 questions, each of the nine questions of the PHQ-9 was evaluated on a 4-point rating scale, ranging from 0 (not at all) to 3 (nearly every day), that was sum up to a total PHQ-9 score per patient. Major depressive disorder was considered present if the score was >= 10. For the categorical algorithm, the answers on the questions were dichotomized: 0 (not at all) and 1 (several days) are coded as 0 (symptom absent) and the answers 2 (more than half the days) and 3 (nearly every day) are coded as 1 (symptom present).[17]

The outcome variable was anxiety (present or absent), and depression (present or absent), while the socio-demographics, social, and lifestyle factors were the independent variables. The Chi-squared test was used to identify the factors associated with the outcomes at a 5% level of

significance. Binary logistic regression was used to identify the independent predictors of anxiety disorders and depression.

RESULTS

Socio-demographic, Social, and Lifestyle Characteristics of Respondents

All the eligible respondents participated in the study with a response rate of 100%. The minimum age of the respondents was 18 and the maximum was 82 with a Mean± SD of 39.2±14.9 years. More than one-third (43.5%) of respondents were between 25 to 40 years of age. The minimum monthly income (Naira) of the respondents was 0 and the maximum was #300,000 with a median of #5000 (interquartile range = 0–22,500) naira. The majority of respondents (76.3%) had a monthly income of less than #30,000 and (73.6%) were married. Up to a quarter of respondents (25.5%) had only a Quranic level of education, while about one-third were in polygamous families (Table 1).

Few respondents had smoked cigarettes (0.2%), drunk alcohol (0.5%), or previously used other substances (6.4%). Some respondents (9.4%) were previously diagnosed to have a mental health challenge, while less than a quarter (16.8%) of respondents had access to mental health services, or mental health education (14.8%). About a quarter of respondents (24.7%) had a chronic medical condition, and were on regular follow-up to health facilities, while more than a quarter of them (26.7%) reported having a prior adverse life event. More than half (52.1%) of respondents reported knowing someone with a mental health disorder (Table 2). The commonest medical condition reported by the respondents with chronic medical conditions was hypertension (11.6%), followed by diabetes mellitus (2.2%), while flooding (12.3%), and road traffic accident (4.7%), were the commonest adverse life event reported among respondents (Table 3).

Prevalence of Anxiety Disorders and Depression

More than a quarter of respondents reported not being able to stop or control worrying (27.9%) and worrying too much about different things (33.8%). While less than a quarter (20.2%) reported feeling nervous, anxious, or on edge, and also having trouble relaxing (22.7%) (Table 4). Little interest or pleasure in doing things nearly every day was reported by (2.0%) respondents, feeling down, depressed, or hopeless nearly every day was reported by (3.0%) respondents, while feeling tired or having little energy nearly every day was reported by was reported by (3.7%) (Table 4).

The prevalence of anxiety disorders and depression were (29.1%), and (5.7%) respectively (Figure 1). The majority of the affected respondents had a mild anxiety disorder (20.5%) while a few had a severe anxiety disorder (0.5%) (Figure 2). A significantly higher proportion of cases (44.3%, $p<0.001$) were from the southwest senatorial zone of the state (Figure 3).

Socio-demographic Risk Factors of Anxiety Disorders

Table 5 showed that a significantly higher proportion of respondents (43.7%, $p=0.01$) with only Quranic education, and those with no occupation (53.1%, $p=0.03$) had anxiety disorders. The odds of developing anxiety disorders were significantly higher among those with no occupation, those without occupation were 5 times more likely to develop anxiety disorders compared with students (adjusted odds ratio [aOR] = 5.0, 95% CI = [2.6–88.6]). A significantly higher proportion of divorced respondents (57.1%, <0.001†) were depressed. The odds of being depressed were significantly lower among widowed respondents compared to divorced respondents, with those who were divorced found to be 8.4 times more likely to be depressed than the widowed respondents (Adjusted odds ratio [aOR] = 8.4, 95% CI = [1.0–68.04]). Similarly, a significantly higher proportion of respondents who had no occupation (28.1%, <0.001†) were depressed. The odds of being depressed were significantly lower among students compared to respondents who

had no occupation, those who had no occupation were 12 times more likely to be depressed compared to students (Adjusted odds ratio [aOR] = 12.2, 95% CI = [1.3–114.4]).(Table 6).

Social and Lifestyle Risk Factors of Anxiety Disorders

A significantly higher proportion of respondents who were aware of someone with a mental disorder (33.6%, p=0.04) had anxiety disorders. The respondents who reported a family history of mental disorders had a significantly higher proportion (51.0%, p<0.001†) of anxiety disorders. Anxiety disorders were significantly higher amongst respondents who had previous mental health education (53.3%, p<0.001), those who had access to mental health services (42.6%, p=0.01†).

The odds of developing anxiety disorders were significantly lower amongst those with no family history of mental disorders, those without a family history of mental disorders were 30% less likely to develop anxiety disorders compared with those who reported a family history of mental disorders (adjusted odds ratio [aOR] = 0.3, 95% CI = [0.2–0.4]) (Table 6).

A significantly higher proportion of respondents (47.0%, p<0.001) who were on regular follow-ups to the health facility for managing chronic health conditions, and those who smoked cigarettes (68.2%, p<0.001†), those who used other substances other than cigarettes and alcohol (69.2%, p<0.001) had anxiety disorder had anxiety disorder. The odds of developing anxiety disorders were significantly lower amongst those with no chronic medical condition. Those with no chronic medical conditions were 20% less likely to develop anxiety disorders compared with those having chronic medical conditions (adjusted odds ratio [aOR] = 0.2, 95% CI = [0.1–0.6]). Similarly, the odds of developing anxiety disorders were significantly lower amongst those who do not smoke cigarettes, the respondents who did not smoke cigarettes were 20% less likely to develop anxiety disorders compared with those who smoked cigarettes (adjusted odds ratio [aOR] = 0.2, 95% CI = [0.1–0.4]). In addition, the odds of developing anxiety disorders were significantly lower amongst

those who do not use other substances. The respondents who did not use other substances were 20% less likely to develop anxiety disorders compared with those who used other substances (adjusted odds ratio [aOR] = 0.2, 95% CI = [0.05–0.9]) (Table 6).

Socio-demographic Risk Factors of Depression

A significantly higher proportion of divorced respondents (57.1%, <0.001†) were depressed. The odds of being depressed were significantly lower among widowed respondents compared to divorced respondents, with those who were divorced found to be 8.4 times more likely to be depressed than the widowed respondents (Adjusted odds ratio [aOR] = 8.4, 95% CI = [1.0–68.04]). Similarly, a significantly higher proportion of respondents who had no occupation (28.1%, <0.001†) were depressed. The odds of being depressed were significantly lower among students compared to respondents who had no occupation, those who had no occupation were 12 times more likely to be depressed compared to students (Adjusted odds ratio [aOR] = 12.2, 95% CI = [1.3–114.4]).(Table 7).

Social and Lifestyle Risk Factors of Depression

A significantly higher proportion of respondents (16.5%, <0.004†) who had previous health education on mental health were depressed. The odds of being depressed were significantly lower among respondents who had not received health education on mental health. The respondents who had who had no previous mental health education were 10% less likely to be depressed compared to those who had previous health education on mental health (Adjusted odds ratio [aOR] = 0.1, 95% CI = [0.004–0.5]). In addition, a significantly higher proportion (10.0%, <0.04†) of those who were on follow-up to the health facility for chronic medical condition were depressed. The odds of being depressed were significantly lower among respondents who were not on follow-up to the health facility for a medical condition, those who were not on follow-up for medical

condition were 20% less likely to have depression compared to those who were not on follow-up for chronic medical condition (Adjusted odds ratio [aOR] = 0.2, 95% CI = [0.1–0.8]).

Similarly, a significantly higher of proportion of respondents (19.2%, 0.01†) who used other substances were depressed. The odds of being depressed were significantly lower among respondents who do not use any substance. The respondents who do not used substances were 10% less likely to be depressed compared to those who used other substances (Adjusted odds ratio [aOR] = 0.1, 95% CI = [0.02–0.4]) (Table 8).

DISCUSSION

There are 3.4% and 3.8% of the global population with depression and anxiety disorders, respectively. [9] Anxiety disorders and depression are known to be associated with adverse life events like man-made or natural disasters. They could also be linked to a major economic shift related to a significant decrease in the purchasing power of the general population. We found a prevalence of anxiety disorder to be 29% with a severe condition of 0.5% among our study population, and the prevalence of depression was 5.7%, which was lower than a prevalence of 35% and 45.9% reported by a study conducted in southwest Nigeria with a severe condition of 1.7%.[18] The higher finding compared to our find may not be unconnected with the study population used which was among patients on follow-up to the health facility for medical condition in keeping with our finding of higher proportion of anxiety and depression among patients on follow-up to the health facility for various medical conditions. This implies the need for a multi-sectoral approach in managing all patients on follow-up, with psychologists and psychiatrist assuming a significant position.

However, we found a higher prevalence compared to 10.1% reported by a study conducted in south-east Nigeria among school adolescents, [19] and 25.4% among healthcare workers in south-south Nigeria during the Covid-19 pandemic, [20] up to 50.0% among newly posted for National Youth Service Corps members in northwest Nigeria.[21] The variable findings across different geo-political zones of Nigeria could be linked to various life events occurring that could facilitate the development of generalized anxiety disorders. For example, some security challenges like kidnappings were more popular in the southern part of the country and are gradually becoming an emerging event in our study area. While the corps members were coming from different states and geo-political zones for a year of mandatory services with different mindsets, fears, and expectations which could potentially be the reason for a higher proportion compared with our result. Similarly, the lower finding compared with our results among adolescents may be due to the non-disaggregation of our data to compare the findings only among the group, while our study possibly engaged the healthcare workers only at the community level. It is noteworthy that, this health condition among different subsets of the communities signifies it is an emerging and important condition in Nigeria, as such different cohorts of community members should be targeted for preventive and treatment services.

A study conducted in Ghana reported a prevalence of generalized anxiety disorder of 53.3% and depression to be 25.2% respectively, [22] this finding is significantly higher than what we reported despite the similarities in terms of the nature of the study designs and the study population. The variable findings signified increasing burden of the health condition between the two countries and presumably in Africa at large. It is also important to consider comorbid chronic medical conditions and generalized anxiety disorders and depression which was reported to have poor health outcomes among the affected patients.[23] For example, we found more cases of anxiety disorders and

depression among respondents on follow-up for a known medical condition, with hypertension as the most identified health condition. This could be related to level of education, direct and indirect cost of managing the chronic medical conditions, potential fear of associated complications of the condition, or lack of social support at the family level, community or health facility levels respectively. The role of lack of education, low income and no employment were corroborated by studies conducted in Ghana [22] and the United States of America, [24] providing insight into the potential link.

Similarly, in line with previous studies on adverse life events and anxiety disorders, and depression we also identified the roles of adverse life events, [25] like fire outbreaks, flooding, and security concerns which have direct and indirect link to climate change and global warming.[26] More so, it could also be linked to higher proportion of anxiety disorders and depression in the south-west senatorial zone in our study area which was faced by a number of massive flooding episodes across many local government areas of the zone over the last couple of years This implies that, prevention of this disorder requires a holistic approach including effort to address the man-made, and mitigate the natural processes facilitating climate change and global warming.

This study also identified higher proportion of anxiety disorders and depression among those with family history of mental health challenge, [27, 28] and those smoking cigarette and other substances use similar to what were reported by previous studies, [29, 30] in a similar development, it was established that substance use and family history of mental disorder could modify the clinical presentation and course of anxiety, depression, and other mental disorders.[27-30] Therefore, preventive interventions should focus on high risk individuals with facility history of mental disorders.

This study is limited by using GAD-7 and PHQ-9 in data collection, which was used because the survey was a community based and targeted to provide insight in to the burden of the disorders in the targeted study area, however, the quality of information was ensured by training, supervision of the data collectors and conduct of robust pilot study.

Conclusion and Recommendations

The anxiety disorders and depression were associated with substance use, chronic medical conditions, and adverse life events including conditions linked to climate change and global warming and a family history of mental health conditions. There is a general lack of access to mental health services. The government and all the relevant stakeholders should ensure the provision of mental health services and preventive interventions of the identified risk factors across the state.

Conflicts of interest

There are no conflicts of interest

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Table 1: Socio-demographic Characteristics of Respondents

Variable (s)	Frequency(n=405)	Percentage (%)
Age years		
18-24	66	16.3
25-40	176	43.5
41-60	123	30.4
>60	40	9.9
Monthly income (Naira)		
<30,000	309	76.3
≥30,000	96	23.7
Type of settlement		
Rural	216	53.3
Urban	189	46.7
Sex		
Female	202	49.9
Male	203	50.1
Marital Status		
Divorced	7	1.7
Married	298	73.6
Single	76	18.8
Widow	24	5.9
Ethnicity		
Fulani	3	0.7
Hausa	389	96
Others	13	3.2
Highest level of education		
Junior secondary school	13	3.2
No education	97	24
Primary school	36	8.9
Quranic	103	25.4
Senior secondary school	96	23.7
Tertiary	60	14.8
Religion		
Christianity	1	0.2
Islam	404	99.8
Occupation		
Farmer	142	35.1
Government employee	19	4.7
Housewife	100	24.7
Merchant	21	5.2
None	32	7.9
Others	57	14.1
Student	34	8.4
Type of family		
Monogamous	209	51.6
Not applicable	46	11.4
Polygamous	150	37
Nature of family		
Extended	148	36.5
Not Applicable	43	10.6
Nuclear	214	52.8

Table 2: Social and Lifestyle Characteristics of Respondents

Variable (s)	Frequency (n=405)	Percentage (%)
Smoked		
Maybe	1	0.2
No	382	94.3
Yes	22	5.4
Drunk alcohol		
No	403	99.5
Yes	2	0.5
Received health education on mental health		
Maybe	2	0.5
No	343	84.7
Yes	60	14.8
Had mental health challenge /s		
Maybe	1	0.2
No	366	90.4
Yes	38	9.4
Access to mental health services		
Maybe	8	2
No	329	81.2
Yes	68	16.8
Use of substances other than cigarette or alcohol		
Maybe	12	3
No	367	90.6
Yes	26	6.4
Presence of chronic disease		
No	305	75.3
Yes	100	24.7
Previous history of adverse life event		
May be	1	0.2
No	296	73.1
Yes	108	26.7
Knew someone with a mental disorders		
No	194	47.9
Yes	211	52.1
Family history of mental disorders		
Maybe	1	0.2
No	308	76
Yes	96	23.7

Table 3: Chronic Medical Conditions and Adverse Life Events Reported by Respondents

Variable	Frequency (n=405)	Percentage, (%)
Arthritis	6	1.5
Asthma	4	1
Back pain	3	0.7
Breast cancer	1	0.2
Calcium problem	2	0.5
Dental problem	2	0.5
Diabetes	9	2.2
Haemarrhoid	1	0.2
Heart Failure	3	0.7
Hepatitis	4	1
Hypertension	47	11.6
Kidney disease	5	1.2
Liver Disease	1	0.2
Mental disorders	2	0.5
Not applicable	305	75.3
Sickle cell anaemia	9	2.2
Skin infection	1	0.2
Adverse Life Events Variables	Frequency (n=405)	Percentage (%)
Accident	19	4.7
Divorced	2	0.5
Fire outbreak	11	2.7
Flooding	50	12.3
Kidnapping	2	0.5
Loss of animals	4	1
Loss of love ones	11	2.7
Loss of wealth	1	0.2
Not applicable	297	73.3
Robbery	8	2
Divorced	2	0.5
Fire outbreak	11	2.7
Kidnapping	2	0.5
Loss of animals	4	1
Loss of love ones	11	2.7
Loss of wealth	1	0.2
Robbery	8	2

Table 4: Responses to Questions assessing Anxiety and Depression Using GAD-7 and PHQ-9

GAD 7 Items	Not at all	Several Days	More than half the days	Nearly everyday
Feeling nervous, anxious or on edge	310 (76.5)	82 (20.2)	5 (1.2)	8 (2.0)
Not being able to stop or control worrying	261 (64.4)	133 (27.9)	2 5 (6.2)	6 (1.5)
Worrying too much about different things	215 (53.1)	137 (33.8)	30 (7.4)	23 (5.7)
Trouble relaxing	285 (70.4)	92 (22.7)	15 (3.7)	13 (3.2)
Being so restless that it is hard to sit still	310 (76.5)	63 (15.6)	18 (4.4)	14 (3.5)
Becoming easily annoyed or irritable	310 (76.5)	63 (15.6)	18 (4.4)	14 (3.5)
Feeling afraid as if something awful might happen	261 (64.4)	91 (22.5)	35 (8.6)	18 (4.4)
PHQ-9 Items	Not at all	Several Days	More than half the days	Nearly everyday
Little interest or pleasure in doing things	283 (69.9)	104 (25.7)	10 (2.5)	8 (2.0)
Feeling down, depressed, or hopeless	289 (71.4)	89 (22.0)	15 (3.7)	12 (3.0)
Trouble falling or staying asleep, or sleeping too much	273 (67.4)	95 (23.5)	24 (5.9)	13 (3.2)
Feeling tired or having little energy	228 (56.3)	149 (36.8)	13 (3.2)	15 (3.7)
Poor appetite or overeating	284 (70.1)	106 (26.2)	13 (3.2)	2 (0.5)
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	309 (76.3)	80 (19.8)	9 (2.2)	7 (1.7)
Trouble concentrating on things, such as reading the newspaper or watching television	322 (79.5)	73 (18.0)	8 (2.0)	2 (0.5)
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	334 (82.5)	64 (15.8)	5 (1.2)	2 (0.5)
Thoughts that you would be better off dead or of hurting yourself in some way	335 (82.7)	53(13.1)	15 (3.7)	2 (0.5)

Prevalence of Anxiety Disorders

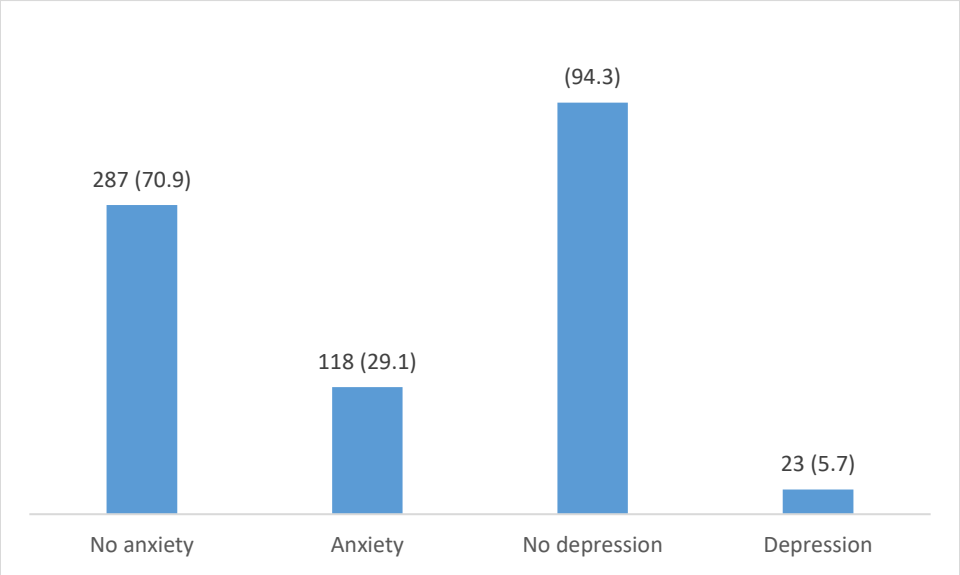
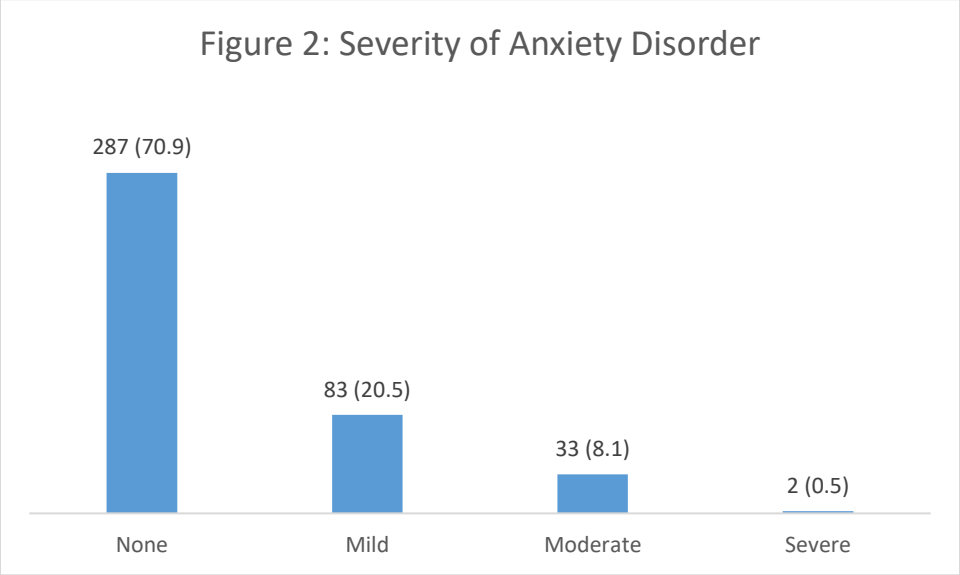
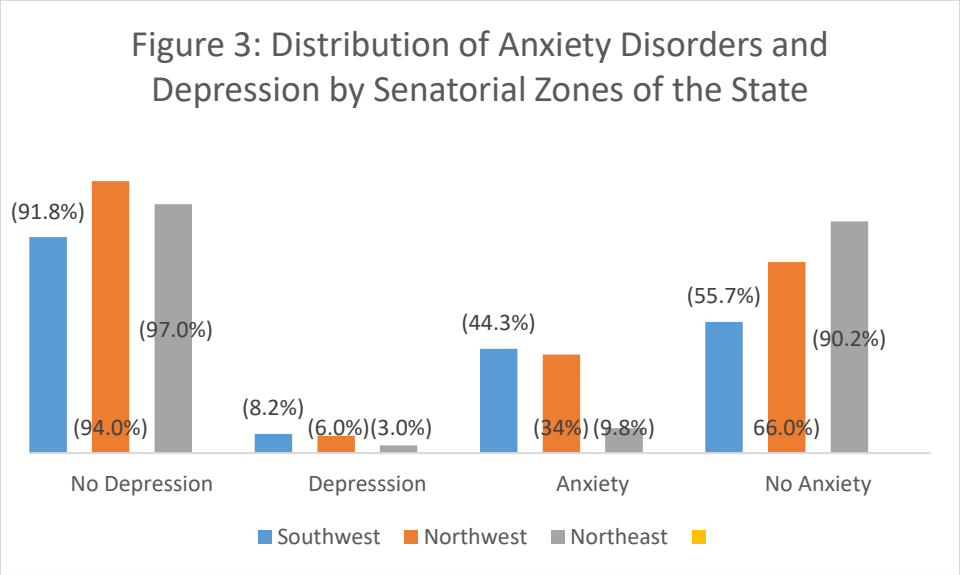


Figure 1: Prevalence of Anxiety and Depression





Anxiety Disorders: χ^2=39.4 P<0.001*

Depression: χ^2=3.40 P=0.1

Table 5: Socio-demographic Risk Factors of Anxiety Disorders in Jigawa State

Variable (s)	Anxiety	No anxiety	χ^2	P	aOR (95% CI)	P
Type of settlement						
Rural	58 (26.9)	158 (73.1)	1.2	0.3	0.8 (0.4-1.3)	0.3
Urban (Reference)	60 (31.7)	129 68.3)			1	
Monthly income (Naira)						
<30,000	92 (29.8)	217 (70.2)	0.3	0.6	0.9 (0.5-1.5)	0.6
≥30,000 (Reference)	26 (27.1)	70 (72.9)			1	
Sex						
Female	57 (28.2)	145 (71.8)	0.2	0.7	0.9 (0.6-1.6)	0.9
Male (Reference)	61 (30.0)	142 (70.0)			1	
Marital Status						
Divorced	4 (57.1)	3 (42.9)	2.7	0.4 †	1.9 (0.3-13.9)	0.5
Married	85 (28.5)	213 (71.5)				
Single	22 (28.9)	54 (71.1)				
Widow (Reference)	7 (29.2)	17 (70.8)			1	
Ethnicity						
Fulani	2 (66.7)	1 (33.3)	2.1	0.4 †	12.6 (0.6 247.5)	0.1
Hausa	112 (28.8)	277 (71.2)				
Others (Reference)	4 (30.8)	9 (69.2)			1	

Highest level of education						
Junior secondary school	4 (30.8)	9 (69.2)	16.5	0.01*	0.6 (0.3-1.4)	0.2
No education	20 (20.6)	77 (79.4)				
Primary school	11 (30.6)	25 (69.4)				
Quranic	45 (43.7)	58 (56.3)				
Senior secondary school	21 (21.9)	75 (78.1)				
Tertiary (Reference)	17 (28.3)	43 (71.7)			1	
Religion						
Christianity	1 (100.0)	0 (0.0)		0.1 †		
Islam	117 (29.0)	287 (71.0)				
Occupation						
Farmer	43 (30.3)	99 (69.7)	14.3	0.03*	5 (2.6-88.6)	0.03*
Government employee	8 (42.1)	11 (57.9)				
Housewife	24 (24.0)	76 (76.0)				
Merchant	4 (19.0)	17 (81.0)				
None	17 (53.1)	15 (46.9)				
Others	15 (26.3)	42 (73.7)				
Student (Reference)	7 (20.6)	27 (79.4)			1	
Type of family						
Monogamous	50 (23.9)	159 (76.1)	7	0.03*	1.2 (0.4-3.1)	0.8
Not applicable	19 (41.3)	27 (58.7)				
Polygamous (Reference)	49 (32.7)	101 (67.3)			1	
Nature of family						
Extended	50 (33.8)	98 (66.2)	10	0.01*	1.5 (0.4-5.1)	0.6
Not Applicable	19 (44.2)	24 (55.8)				
Nuclear (Reference)	49 (22.9)	165 (77.1)		1		

†=Fishers, * statistically significant, χ^2= Chi square, aOR= Adjusted odds Ratio, CI=Confidence Interval

Table 6: Social and Lifestyle Risk Factors of Anxiety Disorders in Jigawa State

Variable (s)	Anxiety	No anxiety	χ^2	P	aOR (95% CI)	P
Aware of someone with a mental disorders						
No	47 (24.2)	147 (75.8)	4.3	0.04*	0.8 (0.4-1.3)	0.2
Yes (Reference)	71 (33.6)	140 (66.4)			1	
Family history of mental disorders						
Maybe	0 (0.0)	1 (100.0)		<0.001*†	0.3 (0.2-0.4)	<0.001*
No	69 (22.4)	239 (77.6)				
Yes (Reference)	49 (51.0)	47 (49.0)			1	
Had health education on mental health						
Maybe	1 (50.0)	1 (50.0)		<0.001*†	0.6 (0.2-1.4)	0.2
No	85 (24.8)	258 (75.2)				
Yes (Reference)	32 (53.3)	28 (46.7)		1		
Had previous mental health challenge						
Maybe	0 (0.0)	1 (100.0)		0.4†	0.8 (0.5-1.2)	0.3
No	103 (28.1)	263 (71.9)				
Yes (Reference)	15 (39.5)	23 (60.5)			1	
Access to mental health services						

Maybe	0 (0.0)	8 (100.0)		0.01*†	0.8 (0.3-2.0)	0.6
No	89 (27.1)	240 (72.9)				
Yes (Reference)	29 (42.6)	39 (57.4)			1	
On follow-up for a chronic medical condition						
No	71 (23.3)	234 (76.7)	20.5	<0.001	0.2 (0.1-0.6)	0.001*
Yes (Reference)	47 (47.0)	53 (53.0)			1	
Adverse Life event						
Maybe	0(0)	1 (100)		0.4†	1.5 (0.6-3.9)	0.4
No	82 (27.7)	214 (72.3)				
Yes (Reference)	36 (33.3)	72 (66.7)			1	
Smoked cigarette						
Maybe	0 (0.0)	1 (100.0)		<0.001* †	0.2 (0.1-0.4)	<0.001*
No	103 (27.0)	279 (73.0)				
Yes (Reference)	15 (68.2)	7 (31.8)			1	
Drunk alcohol						
No	117 (29.0)	286 (71.0)		1.0 †	0.4 (0.02-6.6)	0.5
Yes (Reference)	1 (50.0)	1 (50.0)			1	
Use of other substances						
Maybe	5 (41.7)	7 (58.3)	23	<0.001*	0.2 (0.05-0.9)	0.04*
No	95 (25.9)	272 (74.1)				
Yes (Reference)	18 (69.2)	8 (30.8)			1	

†=Fishers, * statistically significant, χ^2= Chi square, aOR= Adjusted odds Ratio, CI=Confidence Interval

Table 7: Socio-demographic Risk Factors of Depression in Jigawa State

Variable (s)	Not depressed	Depressed	χ^2	P		aOR (95% CI)	P	
Type of settlement								
Rural	203 (94.0)	13 (6.0)	0.1		0.8	1.4 (0.5-4.0)	0.5	
Urban (Reference)	179 (94.7)	10 (5.3)				1		
Monthly income (Naira)								
<30,000	130 (89.7)	15 (10.3)	3		0.1	0.1 (0.03-0.6)	0.01*	
≥30,000 (Reference)	92(95.8)	4(4.2)				1		
Sex								
Female	188 (93.1)	14 (6.9)	1.2	0.3		0.8 (0.3-2.4)	0.7	
Male (Reference)	194 (95.6)	9 (4.4)				1		
Marital Status								
Divorced	3 (42.9)	4 (57.1)		<0.001*†		8.4 (1.0-68.0)	0.05*	
Married	285 (95.6)	13 (4.4)						
Single	73(96.1)	3 (3.9)						
Widow (Reference)	21 (87.5)	3 (12.5)				1		
Ethnicity								
Fulani	2 (66.7)	1 (33.3)	4.4	0.1		8.8 (0.3-257.0)	0.2	
Hausa	368 (94.6)	21 (5.4)						
Others (Reference)	12 (92.3)	1 (7.7)				1		
Highest level of education								
Junior secondary school	12 (92.3)	1 (7.7)	9.4	0.1		0.9 (0.1-11.2)	1.0	
No education	92 (94.8)	5 (5.2)						
Primary school	32(88.9)	4 (11.1)						
Quranic	93 (90.3)	10 (9.7)						
Senior secondary school	94 (97.9)	2 (2.1)						
Tertiary (Reference)	59 (98.3)	1 (1.7)				1		
Religion								
Christianity	1 (100)	0 (0)		0.8†				
Islam	381 (94.3)	23 (5.7)						
Occupation								
Farmer	135 (95.1)	7 (4.9)		<0.0001*†		12.2 (1.3-114.4)	0.03*	
Government employee	18 (94.7)	1 (5.3)						
Housewife	97 (97.0)	3 (3.0)						
Merchant	21 (100)	0 (0)						
None	23 (71.9)	9 (28.1)						
Others	55 (96.5)	2 (3.5)						
Student (Reference)	33 (97.1)	1 (2.9)				1		
Type of family								
Monogamous	203 (97.1)	6 (2.9)	11.2	0.004*		0.8 (0.1-5.5)		0.8
Not applicable	39(84.8)	7(15.2)						
Polygamous (Reference)	140(93.3)	10(6.7)				1		
Nature of family								
Extended	138 (93.2)	10(6.8)	12.6	0.002*		2.5 (0.4-16.7)		0.4
Not Applicable	36(83.7)	7(16.3)						
Nuclear (Reference)	208(97.2)	6(2.8)				1		

†=Fishers, * statistically significant, χ^2= Chi square, aOR= Adjusted odds Ratio, CI=Confidence Interval

Table 8: Social and Lifestyle Risk Factors associated with Depression in Jigawa State

Variable (s)	Not-Depressed	Depression	χ^2	P	aOR (95% CI)	P
Aware of someone with a mental disorders						
No	184 (94.8)	10 (5.2)	0.2	0.7	1.2 (0.4-3.7)	0.3
Yes (Reference)	198 (93.8)	13 (6.2)			1	
Family history of mental disorders						
Maybe	1 (100)	0 ())	14.5	0.1†	0.3 (0.1-1.1)	0.1
No	298(96.8)	10(3.2)				
Yes (Reference)	83 (86.5)	13 (13.5)			1	
Had health education on mental health						
Maybe	2(100)	0(0)		0.004*†	0.1 (0.04-0.5)	0.002*
No	330(96.2)	13(3.8)				
Yes (Reference)	50 (83.3)	10 (16.5)			1	
Had previous mental health challenge						
Maybe	1 (100)	0(0)		0.1†	0.4 (0.1-1.6)	0.2
No	349 (95.4)	17(4.6)				
Yes (Reference)	32 (84.2)	6(15.8)			1	
Access to mental health services						
Maybe	8(100)	0 (0)		0.8†	5.7 (1.1-28.6)	0.03*
No	309 (93.9)	20 (6.1)				
Yes (Reference)	65 (95.6)	3 (4.4)			1	
On follow-up for a chronic medical condition						
No	292 (95.7)	13(4.3)	4.6	0.04*†	0.2 (0.1-0.8)	0.02*
Yes (Reference)	90 (90.0)	10(10.0)			1	
Adverse Life event						
Maybe	1(100)	0(0)		0.6†	0.8 (0.2-3.1)	0.7
No	281(94.9)	15(5.1)				
Yes (Reference)	100 (92.6)	8(7.4)			1	
Smoked cigarette						
Maybe	1 (100)	0 (0)		1.0†	2.1 (0.1-32.4)	0.6
No	360 (94.2)	22(5.8)				
Yes (Reference)	21(95.5)	1 (4.5)			1	
Drunk alcohol						
No	380 (94.3)	23 (5.7)		1.0*†		
Yes (Reference)	2 (100)	0 (0)				
Use of other substances						
Maybe	10(83.3)	2(16.7)		0.01*†	0.1 (0.02-0.4)	0.001*
No	351 (95.6)	16(4.4)				
Yes (Reference)	21 (80.8)	5 (19.2)			1	

†=Fishers, * statistically significant, χ^2= Chi square, aOR= Adjusted odds Ratio, CI=Confidence Interval