

# Analyses of Prevalence of Mental Illness and Associated Characteristics in Anambra State

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**Abstract:** This study on the prevalence of mental illness and associated characteristics in Anambra State was aimed at determining the prevalence of mental illness by age, sex and period of the year. It was also aimed at determining the relationship between mental illness diagnosis and the studied characteristics. Descriptive statistics, chi-square test of association and the ordinal logistic regression were employed in the study. The results presented show that a significant association exist between mental illness and sex. Also a significant association was found to exist between mental illness and age of patients. This was also visible in the pattern of manifestation of mental illness as mental illness was found to reduce as age increases. On the average, the second quarter of the year was found to have the highest prevalence of mental illness in the study area. On the other hand, even when the first and second quarter proved to be significantly related with mental illness diagnosis, the chi-square test of association shows that there is no significant association between mental illness diagnosis and the period of the years the diagnosis was made. In conclusion, mental illness was found to have significant effect on demographic characteristics but partially with seasonal variations.

**Keywords:** Schizophrenia, Psychosis, Ordinal Logistic Regression, Mental Illness Diagnosis

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## 1. Introduction

Mental health is an important part of a person's life besides physical, spiritual and financial wellbeing. Mental illness is considered a silent epidemic throughout most parts of Africa, owing to structural and systemic barriers such as inadequate health care infrastructure, insufficient number of mental health specialists, and lack of access to all levels of care [1]. The World Health Organization defines mental health as an individual's state of well-being when he realizes his abilities, has the ability to cope with the normal stresses of life, able to work productively and fruitfully and can contribute to his community [2].

Many people suffer in silence and fail to reach their full potential due to stigma and discrimination, [3]. Furthermore, a considerable segment of the population in African countries is vulnerable to mental illness due to psychosocial and socioeconomic stressors such as poverty, migration, war, conflict and disasters [4].

Chukwuma (2014) in The Guardian newspaper said that unconfirmed reports suggested that every Nigerian is a potential mental health patient. Most Nigerians are daily exposed to chronic stress from multiple sources which include work, money, heavy traffic, fear of diseases, terrorists' attacks,

relationship worries, media overload and many more.

According to Monteiro [5], research findings indicate that 30 percent of the global population each year has a mental disorder and up to 2/3 of them will not get adequate treatment. Mental disorders are associated with marginalization, social vulnerability and a range of social problems, such as homelessness, imprisonment and drug use. There is substantial evidence that mental health is an essential component of overall health and linked to progress on other indicators such as the U. N. Millennium Development. Hence the need for this study aimed at analysing the seasonal variation of the prevalence of mental illness in Nigeria using Anambra State Neuro-psychiatric Hospital, Nawfia as case study.

### *Aims and Objectives of The Study*

The aim of this study is to determine the effect of season on the reported cases of mental illness in Anambra State Neuropsychiatric Hospital, Nawfia. The objectives of the study include:

- i To determine the prevalence of reported cases of mental illness by age
- ii To determine the prevalence of reported cases of mental illness by sex
- iii To determine the quarterly prevalence of reported cases of mental illness in the study area

iv To fit the a model of mental illness on age, sex and season

## 2. Review of Literature

Several studies on mental illness and related characteristics have been conducted, some of such studies are reviewed.

Aguocha et al [6] assessed the prevalence, socio-demographic determinants and phenomenology of depressive disorder among HIV patients attending HIV clinic in Imo State University Teaching Hospital Orlu, Imo State, Nigeria. They found that about 39.1% of the participants were found to be depressed, out of which 24.5% were mildly depressed, 50% moderately depressed and 24.5% severely depressed. More female participants, (28.0%) were found to be depressed than their male counterparts, (11.1%) although this difference was not statistically significant, ( $\chi^2=0.21$ ,  $p=0.65$ ). The rate ( $\chi^2=4.14$ ,  $p=0.04$ ) and severity ( $\chi^2=8.64$ ,  $p=0.04$ ) of concentration impairment was significantly higher in females compared to males.

Bromet et al [7] examined the association between early-onset mental disorder and subsequent termination of education. Sixteen countries taking part in the World Health Organization World Mental Health Survey Initiative were surveyed with the Composite International Diagnostic Interview ( $n=41688$ ). Survival models were used to estimate associations between DSM-IV mental disorders and subsequent non-attainment of educational milestones. The result showed that in high-income countries, prior substance use disorders were associated with non-completion at all stages of education (OR 1.4–15.2). Anxiety disorders (OR=1.3), mood disorders (OR=1.4) and impulse control disorders (OR=2.2) were associated with early termination of secondary education. In LAMI countries, impulse control disorders (OR=1.3) and substance use disorders (OR=1.5) were associated with early termination of secondary education. They concluded that the onset of mental disorder and subsequent non-completion of education are consistently associated in both high-income and LAMI countries.

Burke-Miller et al [8] on their study on “Demographic Characteristics and Employment Among People with Severe Mental Illness in a Multisite Study” analysed data from a multisite research and demonstration program to identify demographic characteristics associated with employment outcomes, after adjusting for the effects of program, services, and study site. Longitudinal analyses found that people with more recent work history, younger age, and higher education were more likely to achieve competitive employment and to work more hours per month, while race and gender effects varied by employment outcome. Their results provide strong evidence of demographic subgroup variation and need.

Herman et al [9] conducted first large-scale population-based study of common mental disorders in South Africa. Their paper provided data on the 12-month and lifetime prevalence of mental conditions. Data from a nationally representative sample of 4351 adults were analyzed. Simple weighted cross-tabulation methods were used to estimate prevalence, and logistic regression analysis was used to study correlates of 12-month and lifetime prevalence. The lifetime prevalence for any disorder was 30.3%, and the most prevalent 12-month and lifetime disorders were the anxiety

disorders. The Western Cape had the highest 12-month and lifetime prevalence rates, and the lowest rates were in the Northern Cape. The SASH study shows relatively high 12-month and lifetime prevalence rates.

Lawal et al [10] assessed the prevalence and pattern of psychiatric disorders among a sample of the violent offenders and examined the relationship between psychiatric disorders and crimes. They employed a two phase cross-sectional study in three police stations in Ile-Ife/Modakeke area of Nigeria. In the first phase, they screened 400 consecutive adults arrested for violent crimes using the General Health Questionnaire—30. In the second phase, all 36 persons with probable psychopathology were then interviewed with the Present State Examination to make a definitive diagnosis. The result showed that the mean age of all the subjects was 29.9 years ( $SD \pm 7.3$ ). The male to female ratio was 11:1. Respondents were mostly single (54%); most had secondary education or less (82%) and about 60% were currently using psychoactive substances (drugs). About 8.5% of all the subjects had a diagnosable psychiatric disorder; paranoid schizophrenia was the commonest psychiatric disorder (41.2%). Mentally ill subjects were three times more likely to commit homicidal offence than non-mentally ill subjects.

Mbadiwe et al [11] described the demographic and diagnostic characteristics of bipolar patients in Enugu, South East Nigeria. They employed a cross-sectional design in their study. The study was carried out in Federal Neuropsychiatric Hospital Enugu (FNPHE) and in a Private Psychiatrist's Office (PPO) in Enugu, South East Nigeria. 94 patients were recruited to take part in the study. 49 patients were included from the FNPHE and 45 patients from the PPO. Frequencies were run on demographic characteristics while means and standard deviations were calculated for continuous variables. The result showed that majority of the sample (68.1%) met the criteria for bipolar I disorder. The mean age of patients was 33.17 ( $SD = 11.87$ ) years and mean duration of bipolar illness was 9.6 ( $SD = 8.9$ ) years. Among the 94 patients, 58.8% were males. The mean age at onset of illness for the whole group was 22.9 ( $SD = 8.3$ ) years.

Nordin et al [12] determine the association between several selected demographic characteristics and the mental health status of young adults studying in public Malaysian universities. A total of 1467 respondents were recruited using a multistage cluster sampling. General Health Questionnaire (GHQ-12) (Goldberg, 1978) was the research tool utilised to assess the undergraduates' mental health status. Their findings indicate that a majority of undergraduates exhibit a healthy mental state while a minority has some mental health concerns. One-way ANOVA tests showed that the mental health of undergraduates in this study differed in terms of ethnicity, year of study and academic field.

Saleem et al [13] employed an indigenous Student Problem Checklist (SPCL) developed by Mahmood & Saleem, (2011), 45 items as a rating scale, designed to determine the prevalence rate of mental health problem among university students. This scale relates to four dimensions of mental health problems as reported by university students, such as: Sense of Being Dysfunctional, Loss of Confidence, and Lack of self-regulation and Anxiety Proneness. Their finding show that 31% of the participants fall in the “severe” category, whereas 16% fall in the “very severe” category. As far as the individual

dimensions are concerned, 17% respondents comprising sample of the present study fall in very severe category Sense of Being Dysfunctional, followed by Loss of Confidence (16%), Lack of Self Regulation (14%) and Anxiety Proneness (12%). Their findings are in line with similar other studies on mental health of students.

### 3. Method

The study employed the ordinal logistic regression in testing the relationship between mental illness diagnoses and the studied characteristics. The chi-square test of association was

also used to test and affirm the relationship between mental illness cases and the studied characteristics. Ordinal coding were carried out on the variables so as to fit in to the desired analysis. The variable coding scheme is presented as follows:

*DIAGNOSIS*: Psychosis = 0; Schizophrenia = 1; and others =3

*AGE*: 20-29 years=2; 30-39=3; 40-49=4; 50-59=5; 60-69=6, 70 and above=7

*SEX*: male = '1' and female='0'

*QUARTER*: first quarter=1; second quarter=2; third quarter=3; and fourth quarter=4

*Presentation of result and discussion of findings*

**Table 1.** The prevalence of mental illness by sex.

			SEX		Total
			Female	Male	
DIAGNOSIS	others	Count	19 <sub>a</sub>	6 <sub>b</sub>	25
		% within DIAGNOSIS	76.0%	24.0%	100.0%
		% within SEX	12.6%	3.8%	8.1%
		% of Total	6.1%	1.9%	8.1%
	Schizophrenia	Count	119 <sub>a</sub>	112 <sub>a</sub>	231
		% within DIAGNOSIS	51.5%	48.5%	100.0%
		% within SEX	78.8%	70.9%	74.8%
		% of Total	38.5%	36.2%	74.8%
	Psychosis	Count	13 <sub>a</sub>	40 <sub>b</sub>	53
		% within DIAGNOSIS	24.5%	75.5%	100.0%
		% within SEX	8.6%	25.3%	17.2%
		% of Total	4.2%	12.9%	17.2%
Total	Count	151	158	309	
	% within DIAGNOSIS	48.9%	51.1%	100.0%	
	% within SEX	100.0%	100.0%	100.0%	
	% of Total	48.9%	51.1%	100.0%	

The crosstabulation of mental illness diagnosis and sex is presented in table 1. On the whole, 48.9% of the reported cases of mental illness are female while 51.1% are male. 74.8% of the total cases were diagnoses of schizophrenia while 17.2% were psychosis. The other mental illness constitute 8.1% of the total cases.

**Table 2.** Chi-Square Tests Of Association Between Mental Illness And Sex.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.579 <sup>a</sup>	2	.000
Likelihood Ratio	21.579	2	.000
Linear-by-Linear Association	20.479	1	.000
N of Valid Cases	309		

Table 2 presents the Chi-square test of association between sex and mental illness diagnosis. Pearson Chi-square coefficient of 20.577 with a p-value of approximately 0.00 shows that a significant association between mental illness and sex.

**Table 3.** Prevalence Of Mental Illness By Quarter Of The Year.

			QUARTER				Total
			first quarter	second quarter	third quarter	fourth quarter	
DIAGNOSIS	others	Count	3 <sub>a</sub>	14 <sub>a, b</sub>	5 <sub>a, b</sub>	3 <sub>b</sub>	25
		% within DIAGNOSIS	12.0%	56.0%	20.0%	12.0%	100.0%
		% within QUARTER	3.9%	9.0%	8.1%	20.0%	8.1%
		% of Total	1.0%	4.5%	1.6%	1.0%	8.1%
	Schizophrenia	Count	64 <sub>a</sub>	114 <sub>a, b</sub>	43 <sub>b</sub>	10 <sub>a, b</sub>	231
		% within DIAGNOSIS	27.7%	49.4%	18.6%	4.3%	100.0%
		% within QUARTER	84.2%	73.1%	69.4%	66.7%	74.8%
		% of Total	20.7%	36.9%	13.9%	3.2%	74.8%
	Psychosis	Count	9 <sub>a</sub>	28 <sub>a</sub>	14 <sub>a</sub>	2 <sub>a</sub>	53
		% within DIAGNOSIS	17.0%	52.8%	26.4%	3.8%	100.0%
		% within QUARTER	11.8%	17.9%	22.6%	13.3%	17.2%
		% of Total	2.9%	9.1%	4.5%	0.6%	17.2%
Total	Count	76	156	62	15	309	
	% within DIAGNOSIS	24.6%	50.5%	20.1%	4.9%	100.0%	
	% within QUARTER	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	24.6%	50.5%	20.1%	4.9%	100.0%	

**Table 4.** Chi-Square Tests.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.233 <sup>a</sup>	6	.221
Likelihood Ratio	7.877	6	.247
Linear-by-Linear Association	.004	1	.948
N of Valid Cases	309		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 1.21.

Table 3 presents the cross prevalence of mental illness by quarter of the year the case was reported. Of the total number of cases reported in the study period, 24.6% of the mental illness cases were reported in first quarter of the year. The second quarter was found to have the highest reported cases of mental illness of about 50.5% while third and fourth quarters have 20.1% and 4.9% respectively. The fourth

quarter was found to have the least cases of mental illness reportage from the study area. The least last quarter was also found to have the least reported cases over the study area. The test of association in table 4 shows that there is no significant association between mental illness diagnosis and the quarter of the year it was reported.

**Table 5.** Prevalence Of Mental Illness By Age.

		AGE						Total
		20-29yrs	30-39yrs	40-49yrs	50-59yrs	60-69yrs	70+yrs	
others	Count	6 <sub>a</sub>	4 <sub>a</sub>	5 <sub>a, b</sub>	1 <sub>a</sub>	6 <sub>b, c</sub>	3 <sub>c</sub>	25
	% within DIAGNOSIS	24.0%	16.0%	20.0%	4.0%	24.0%	12.0%	100.0%
	% within AGE	5.7%	4.5%	10.4%	2.4%	26.1%	75.0%	8.1%
	% of Total	1.9%	1.3%	1.6%	0.3%	1.9%	1.0%	8.1%
Schizophrenia	Count	69 <sub>a, b</sub>	73 <sub>c</sub>	39 <sub>b, c</sub>	36 <sub>c</sub>	13 <sub>a</sub>	1 <sub>a</sub>	231
	% within DIAGNOSIS	29.9%	31.6%	16.9%	15.6%	5.6%	0.4%	100.0%
	% within AGE	65.7%	83.0%	81.2%	87.8%	56.5%	25.0%	74.8%
	% of Total	22.3%	23.6%	12.6%	11.7%	4.2%	0.3%	74.8%
Psychosis	Count	30 <sub>a</sub>	11 <sub>b</sub>	4 <sub>b</sub>	4 <sub>b</sub>	4 <sub>a, b</sub>	0 <sub>a, b</sub>	53
	% within DIAGNOSIS	56.6%	20.8%	7.5%	7.5%	7.5%	0.0%	100.0%
	% within AGE	28.6%	12.5%	8.3%	9.8%	17.4%	0.0%	17.2%
	% of Total	9.7%	3.6%	1.3%	1.3%	1.3%	0.0%	17.2%
Total	Count	105	88	48	41	23	4	309
	% within DIAGNOSIS	34.0%	28.5%	15.5%	13.3%	7.4%	1.3%	100.0%
	% within AGE	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	34.0%	28.5%	15.5%	13.3%	7.4%	1.3%	100.0%

Each subscript letter denotes a subset of AGE categories whose column proportions do not differ significantly from each other at the .05 level.

Table 5 presents the prevalence of mental illness by age in the study area. From the table, it is observed that mental illness reduces as age increases. 34% of the total cases reported were found to be within the age group of 20-29 years, 28.5% falls within the 30-39 years age group, 15.5% falls within the 40-49 years age group. 13.3% of the reported cases falls within the age group of 50-59 years, while 7.4% and 1.3% fall within the 60-69 and 70+ years of age group.

**Table 6.** Chi-Square Tests.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	54.136 <sup>a</sup>	10	.000
Likelihood Ratio	38.248	10	.000
Linear-by-Linear Association	16.405	1	.000
N of Valid Cases	309		

a. 7 cells (38.9%) have expected count less than 5. The minimum expected count is .32.

The chi-square test of association presented in table 6 shows that there is a significant association between mental illness diagnosis and age.

**Table 7.** Model Fitting Information.

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	196.081			
Final	143.757	52.323	11	.000

Link function: Logit.

The model fitting information in table 7 shows that the chi-square statistic is significant at ( $p < 0.05$ ). This indicates that the Final model of the relationship between mental illness and the characteristics studies gives a significant improvement over the baseline intercept-only model. This shows that the model presents a better fit than the one made on the marginal probabilities for the outcome categories.

**Table 8.** Goodness-of-Fit.

	Chi-Square	df	Sig.
Pearson	76.997	67	.189
Deviance	72.712	67	.296

Table 8 contains Pearson's chi-square statistic for the model and the one based on the deviance. These statistics are

intended to test whether the observed data are consistent with the fitted model. The null hypothesis here is that the fit is good. Since the null hypothesis is accepted, then we are bold

to conclude that the data and the model predictions are similar and that we have a good model.

**Table 9.** *Parameter Estimates.*

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[DIAGNOSIS =.00]	5.051	3.344	2.282	1	.131	-1.503	11.604
	[DIAGNOSIS = 1.00]	9.755	3.387	8.295	1	.004	3.117	16.393
	[SEX=.00]	-1.288	.313	16.903	1	.000	-1.902	-.674
	[SEX=1.00]	0 <sup>a</sup>	.	.	0	.	.	.
	[AGE=2.00]	4.706	1.255	14.052	1	.000	2.245	7.166
	[AGE=3.00]	3.993	1.252	10.177	1	.001	1.540	6.447
	[AGE=4.00]	3.450	1.271	7.365	1	.007	.958	5.942
Location	[AGE=5.00]	4.134	1.287	10.312	1	.001	1.611	6.657
	[AGE=6.00]	3.382	1.321	6.550	1	.010	.792	5.972
	[AGE=7.00]	0 <sup>a</sup>	.	.	0	.	.	.
	[QUARTER=1.00]	4.508	1.678	7.215	1	.007	1.219	7.797
	[QUARTER=2.00]	4.698	1.655	8.053	1	.005	1.453	7.942
	[QUARTER=3.00]	1.195	.686	3.040	1	.081	-.148	2.539
	[QUARTER=4.00]	0 <sup>a</sup>	.	.	0	.	.	.

Table 9 presents the parameter estimate for the ordinal logistic regression model for the relationship between mental illness diagnosis and studied characteristics (age, sex and period or quarter of the year). The threshold coefficients are not usually interpreted individually. They just represent the intercepts, specifically the point where mental illness diagnosis might be predicted into the other categories.

The results show that all levels of sex and age have significant effect on mental illness. Also the first and second quarter of the year have significant impact on mental illness while others do not.

## 4. Conclusion

This study on the prevalence of mental illness and associated characteristics in Anambra State was aimed at determining the prevalence of mental illness by age, sex and period of the year. The results presented leads to the conclusion that a significant association exist between mental illness and sex. Also a significant association was found to exist between mental illness and age of patients. This was also visible in the pattern of manifestation of mental illness as mental illness was found to reduce as age increases. On the average, the second quarter of the year was found to have the highest prevalence of mental illness in the study area. On the other hand, even when the first and second quarter proved to be significantly relation with mental illness diagnosis, the chi-square test of association shows that there is no significant association between mental illness diagnosis and the period of the years the diagnosis was made.

## References

- [1] Collins, P. Y., Patel, V., Joestl, S. S., March, D., Insel, T. R., Daar, A. S. (2011). Grand challenges in global mental health: A consortium of researchers, advocates and clinicians announces here research priorities for improving the lives of people with mental illness around the world, and calls for urgent action and investment. *Nature*, 475 (7354), 27-30.
- [2] Becker, A. E., & Kleinman, A. (2013). Mental health and the global agenda. *New England Journal of Medicine*, 369 (1), 66-73.
- [3] World Health Organization. (2003). *The Mental Health Context: Mental Health Policy and Service Guidance Package*. Geneva: WHO
- [4] Okasha, A. (2002). Mental health in Africa: The role of the WPA. *World Psychiatry*, 1(1), 32.
- [5] Monteiro, N. M (2015). Addressing Mental Illness in Africa: Global Health Challenges and Local Opportunities. *Psych. Glob. Persp.* Vol 1 (2):78-95.
- [6] Aguocha, C. M., Uwakwe, R. U., Duru, C. B., Diwe, K. C., Aguocha, J. K., Enwere, K. O. and Olose, E. O. (2015). Prevalence and Socio-demographic Determinants of Depression among Patients Attending HIV/AIDS Clinic in a Teaching Hospital in Imo State, Nigeria. *American Journal of Medical Sciences and Medicine*, vol. 3 (6): 106-112.
- [7] Bromet, E., Bruffaerts, R., Girolamo, G., Fayyad, J., Gureje, O., Haro, J. M., Kawakami, N., Levinson, D., Oakley Browne, M. A., Ormel, J., Posada-Villa, J., Williams, D. R and Kessler, R. C (2009). Mental disorders and termination of education in high-income and low- and middle-income countries: epidemiological study. *The British Journal of Psychiatry*, 194: 411-417.
- [8] Burke-Miller, J. K., Cook, J. A., Grey, D. D., Razzano, L. A and Taylor, A (2006). Demographic Characteristics and Employment among People with Severe Mental Illness in a Multisite Study.
- [9] Herman, A. A., Stein, D. J., Seedat, S., Heeringa, S. G., Moomal, h., Williams, D. R (2009). The South African Stress and Health (SASH) study: 12-month and lifetime prevalence of common mental disorders. *S. Afr Med J*; 99: 339-344.
- [10] Lawal, M. A., Mosaku, S. K., Ola, B. A and Morakinyo, O. (2014). Prevalence, Pattern and Factors Associated with Psychiatric Disorders among Persons Arrested for Violent Crimes in Ife/Modakeke Area, Southwestern Nigeria. *Journal of Behavioral and Brain Science*, 4: 535-543.
- [11] Mbadiwe, O., Agomoh, A. & Efiog, J. (2010) Bipolar Disorder in Enugu, South East Nigeria: Demographic and diagnostic characteristics of patients *Psychiatria Danubina*, Vol. 22 (1): 152-157.

- [12] Nordin, N. M., Yaacob, S. N. and Sabran, M. S (2010). A Study on Selected Demographic Characteristics and Mental Health of Young Adults in Public Higher Learning Institutions in Malaysia. Global Journal of Health Science Vol. 2 (2).
- [13] Saleem, S., Mahmood, Z. and Madeha Naz (2013). Mental Health Problems in University Students: A Prevalence Study. Journal of Social Sciences, Vol. 7(2): 24-130