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PREVALENCE OF ANXIETY & DEPRESSION AMONG NEUROLOGICAL OUTPATIENTS IN KARACHI

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Abstract

Introduction: Anxiety and depression are common mental health disorders that have a considerable effect on patients' health-related quality of life. In Pakistan, during the COVID-19 lockdown, 39.9% suffered from depression and 57.7% from anxiety. This high prevalence suggests a need for further investigation in specific patient populations, such as neurological outpatients.

Methods: The study used a survey method to quantitatively measure anxiety and depression levels in patients attending outpatient neurology clinics. The participants were neurological outpatients from private and public hospitals. The Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A) were used for measurement. Both scales are considered standard and reliable for assessing anxiety and depression.

The sample size consisted of 200 patients, 100 each from a private neurology clinic and a public hospital outpatient clinic. Inclusion criteria were patients with neurological problems attending the clinics. Those who refused to take the screening tests or did not have neurological problems were excluded.

After obtaining consent, the Hamilton Rating Scales were used to assess depression and anxiety. Demographic data was also collected. The results were analyzed using SPSS software.

Results: The study found that anxiety is more common in women among neurological outpatients in Karachi, with a statistically significant p-value of 0.012 and a male/female odds ratio of 0.453 (0.241-0.853; 95% confidence interval).

Implications: The findings underscore the need for gender-specific interventions in the treatment and management of anxiety among neurological outpatients. Healthcare providers should consider the different needs and experiences of men and women when developing treatment plans.

The findings could also inform public health strategies aimed at reducing the prevalence of anxiety among neurological outpatients. For example, public health campaigns could aim to raise awareness about the higher prevalence of anxiety among women and promote services and resources available to help manage these conditions.

The results also highlight the importance of training for healthcare providers to recognize and address gender differences in the prevalence of anxiety. This could help ensure that all patients receive appropriate care and support.

INTRODUCTION

According to the American Psychiatric Association (2017), depression is defined as "*feelings of sadness and/or a loss of interest in activities once enjoyed which can lead to a variety of emotional and physical problems and can decrease a person's ability to function at work or at home, with symptoms lasting at least two weeks required for a diagnosis"* (1). According to a 2016 report prepared for the Substance Abuse and Mental Health Services Administration (SAMHSA), depression affects an estimated 1 in 15 adults in the US, which amounts to 6.7% in any given year (3). Another concerning finding from the report is that 1 in 6 people in the US, 16.6%, will experience depression at some point in their lives (3). According to a 2007 study published online in PLoS One, the prevalence of depression in the city of Karachi in Pakistan was 35.7% (4).

The American Psychiatric Association (2017) describes anxiety disorders as "*excessive fear or anxiety and mentions that they are the most common of all mental disorder*s" (2). The lifetime prevalence of anxiety disorders is 28.8%, which means that nearly 30% of the US population will experience it at some point in their lives (5). A 2013 study published in the Journal Pakistan Medical Association found an alarming anxiety prevalence of 50.2% in DHA, an urban settlement in Karachi, Pakistan (7).

A 2014 study published in the Pakistan Journal of Neurological Sciences found that 82% of people with Guillain–Barré syndrome in Islamabad suffered from moderate to severe depression and 76% of them suffered from severe anxiety (8). These numbers are much higher than those in the general population and indicate that neurological patients may be more susceptible to these conditions. These statistics show a heavy burden of these disorders and requirement of data for the population of Karachi in general and neurological outpatients in particular to help devise better strategies for dealing with these problems and improving the quality of life of these patients.

The study aimed to update the data available regarding the prevalence of anxiety and depression among neurological outpatients in Karachi, Pakistan. We also attempted to find the differences in the prevalence of these conditions in neurological outpatients of private and government hospitals, as well as different demographic variables.

PROBLEM STATEMENT:

The statistics mentioned above indicate a high burden of anxiety and depression among the Pakistani population. Anxiety disorders are important to identify and treat as they disrupt the normal day to day activities of the patients, who may suffer from sudden panic attacks, irrational fears and nightmares. Besides identifying the prevalence of anxiety and depression, the main benefit provided by the knowledge gained by this research is to reduce the occurrence of suicide and self-harm among the community, thereby improving its collective mental health. According to the World Population Review (2018), Pakistan ranks at number 170, with 2.1 suicides per 100,000 (6).

A cross-sectional study of inpatients with Major Depressive Disorder in Karachi, Pakistan, revealed that 19.6% of them had a history of suicide attempts, and that the factors associated with suicide attempts were younger age, lower education, unemployment, comorbid anxiety disorder, and family history of suicide (14). This indicates that anxiety is a major risk factor for suicide. Hence, the importance of curbing anxiety rates is clearly one of the most efficient methods of reducing overall suicide.

Significance of the Study

- The results of the study warrant a higher number of available psychologists and psychiatrists in hospitals to assess and diagnose the cases that may otherwise be missed. Since many people who

suffer from these conditions are unaware of it or have not received a formal diagnosis, they will benefit greatly from having more experts around to help in that regard.
- As more people become aware of their condition, they can begin to seek the appropriate help they need.
- This can also aid in reducing the stigma surrounding mental health issues in communities and create awareness about these issues in the general population.

METHODOLOGY

The survey method was used in the current study to collect data and to quantitatively measure the degree to which the patients attending outpatient neurology clinics suffer from anxiety and depression. The participants for the present study consisted of the neurological outpatients of private and public hospitals. Informed consent and basic demographic forms were also provided. The Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A) were used to quantitatively measure the rate of anxiety and depression levels.

Measures:

The Hamilton Depression Rating Scale is a questionnaire that has the purpose of grading the level of depression. The questionnaire takes 15-20 minutes to administer and has a score range of 0-56. A score of 0-7 would be considered normal, 20 and above would be considered clinically depressed. The Hamilton Anxiety Rating Scale is a similar questionnaire meant to grade the level of anxiety in a patient. It requires 10-15 minutes to administer and also has a score range of 0-56. In this scale 0-4 is normal, 18-24 is mild to moderate anxiety and 25-30 is severe anxiety.

Both the HAM-A and HAM-D are considered standard scales for anxiety and depression and have been proven reliable by multiple studies. One study (9), states that the internal consistency of the Hamilton Anxiety Rating Scale was adequate to good (α= .77 to .81), while another rated the internal consistency as excellent (α= .92) (10). HAM-A scores show strong convergence (11,12) and discriminant validity (10). Studies have shown that HAM-A scores correlated positively with social anxiety symptoms and negatively with quality of life (13).

Sample Size

The sample size consisted of 100 patients from a private neurology clinic and 100 patients from an outpatient clinic of a public hospital. This sample was selected from these sites to increase the diversity in the data and rule out factors such as conditions of treatment and socioeconomic status.

Inclusion Criteria

The inclusion criteria included
- Patients having neurological problems and attending the neurological clinics

Exclusion Criteria

Only those patients who refused to take the screening tests for anxiety and depression or were not suffering from any neurological problems were excluded from this study.

Procedure

.After consent, the questionnaires were used in assessing depression and anxiety in neurological patients using the Hamilton Rating Scales. The data collection method was a survey method only. Demographical data was also collected for age, gender, severity of illness (using a Modified Rankin Scale) etc. The results were tabulated and entered into SPSS software for data analysis.

RESULTS

Age and Anxiety

Crosstab # 1: ***Statistical Analysis of Age and Anxiety among Neurological Outpatients***

Age					
HAS Mild Sev	Mean	N	Std. Deviation	Minimum	Maximum
Mild	42.01	177	19.628	9	87
Severe	39.94	33	16.002	15	75
Total	41.69	210	19.084	9	87

Table # 1 shows the descriptive analysis of people with mild and severe anxiety.

This difference was statistically insignificant, suggesting that age has no significant effect on the prevalence of anxiety among neurological outpatients.

Age and Depression

Crosstab # 2: ***Statistical Analysis of Age and Depression among Neurological Outpatients***

Depression	Mean	N	Std. Deviation	Minimum	Maximum
Mild	42.47	154	19.558	10	87
Severe	39.54	56	17.706	9	72
Total	41.69	210	19.084	9	87

The above table shows the descriptive analysis of the mean age of people with mild and severe depression. This difference was statistically insignificant, suggesting that age has no effect on the prevalence of depression among neurological outpatients.

Statistical Analysis of Anxiety and Sector among Neurological Outpatients

The difference in the prevalence of anxiety between the government and private sectors was statistically insignificant, suggesting that sector makes no significant difference to the prevalence of anxiety among neurological outpatients. 51.4% with mild anxiety were from the government sector, while 48.6% of them were from the private sector. Among those with severe anxiety, 54.5% were from the government sector, while 45.5% were from the private sector.

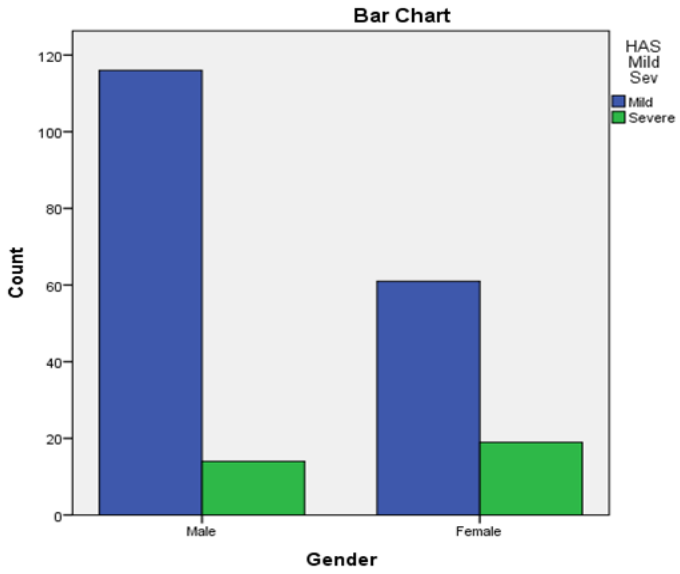
Statistical Analysis of Depression and Sector among Neurological Outpatients

Among those with severe depression, 57.1% were from the government sector, while 42.9% were from the private sector. The difference in the prevalence of depression between the government and private sectors was statistically insignificant, suggesting that sector makes no significant difference to the prevalence of depression among neurological outpatients.

Crosstab # 3: ***Statistical Analysis of Anxiety and Gender among Neurological Outpatients***

Crosstab					
			HAS Mild Sev		Total
			Mild	Severe	
Gender	Male	Count	116	14	130
		% within HAS Mild Sev	65.5%	42.4%	61.9%
	Female	Count	61	19	80
		% within HAS Mild Sev	34.5%	57.6%	38.1%
Total		Count	177	33	210
		% within HAS Mild Sev	100.0%	100.0%	100.0%

Bar Chart # 1: ***Statistical Analysis of Anxiety and Gender among Neurological Outpatients***

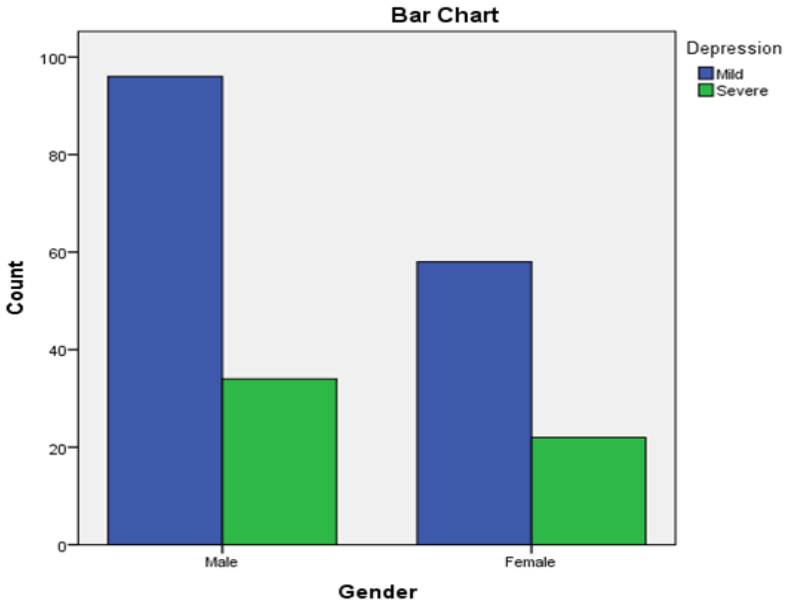


Among those with mild anxiety, 65.5% were males, and 34.5% were females.
Among those who had severe anxiety, 42.4% were male, and 57.6% were female.
These results were statistically significant, with p=0.012.

Crosstab # 4: ***Statistical Analysis of Depression and Gender among Neurological Outpatients***

Crosstab					
			Depression		Total
			Mild	Severe	
Gender	Male	Count	96	34	130
		% within Depression	62.3%	60.7%	61.9%
	Female	Count	58	22	80
		% within Depression	37.7%	39.3%	38.1%
Total		Count	154	56	210
		% within Depression	100.0%	100.0%	100.0%

Bar Chart # 2: Statistical Analysis of Depression and Gender among Neurological Outpatients

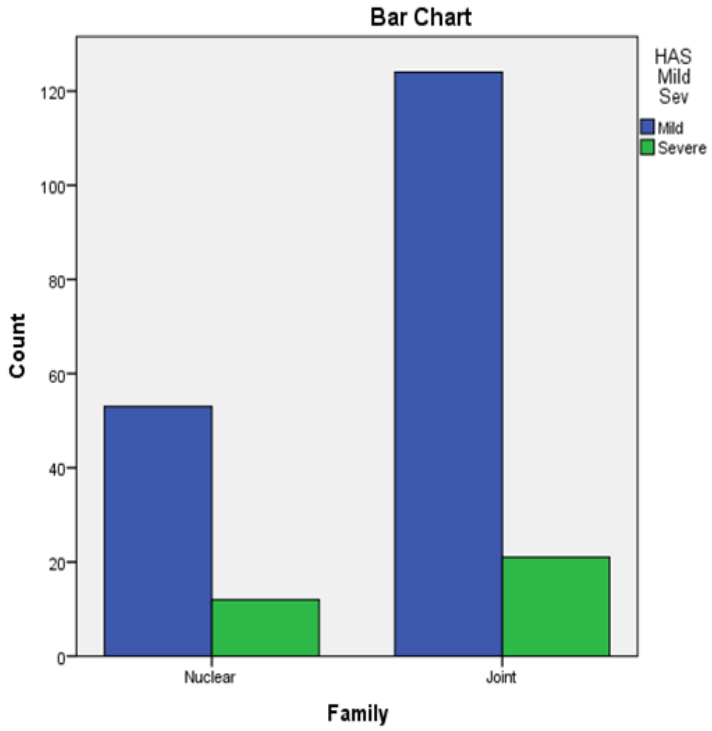


Among those who had mild depression, 62.3% were males, while 37.7% were females.
Among those who had severe depression, 60.7% were male, while 39.3% were female.
The difference in the prevalence of depression between males and females was statistically insignificant, suggesting that gender makes no significant difference to the prevalence of depression among neurological outpatients.

Crosstab # 5: ***Statistical Analysis of Anxiety and Family Structure among Neurological Outpatients***

Crosstab					
			HAS Mild Sev		Total
			Mild	Severe	
Family	Nuclear	Count	53	12	65
		% within HAS Mild Sev	29.9%	36.4%	31.0%
	Joint	Count	124	21	145
		% within HAS Mild Sev	70.1%	63.6%	69.0%
Total		Count	177	33	210
		% within HAS Mild Sev	100.0%	100.0%	100.0%

Bar Chart # 3: ***Statistical Analysis of Anxiety and Family Structure among Neurological Outpatients***

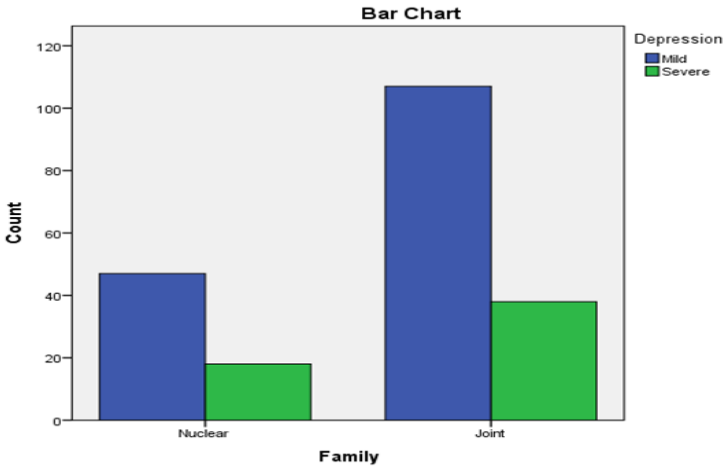


Among those who were either normal or had mild anxiety, 29.9% lived in a nuclear family structure, while 70.1% lived in a joint family structure.Among those who had severe anxiety, 36.4% lived in a nuclear family structure, while 63.6% lived in a joint family structure.
The difference in the prevalence of anxiety among those who lived in a nuclear family structure and those who lived in a joint family structure was statistically insignificant, suggesting that family structure makes no significant difference to the prevalence of anxiety among neurological outpatients.
Depression

Crosstab # 6: ***Statistical Analysis of Depression and Family Structure among Neurological Outpatients***

Crosstab					
			Depression		Total
			Mild	Severe	
Family	Nuclear	Count	47	18	65
		% within Depression	30.5%	32.1%	31.0%
	Joint	Count	107	38	145
		% within Depression	69.5%	67.9%	69.0%
Total		Count	154	56	210
		% within Depression	100.0%	100.0%	100.0%

Bar Chart # 4: ***Statistical Analysis of Depression and Family Structure among Neurological Outpatients***



Among those who had mild depression, 30.5% lived in a nuclear family structure, while 69.5% lived in a joint family structure.

Among those with severe depression, 32.1% lived in a nuclear family structure, while 67.9% lived in a joint family structure.

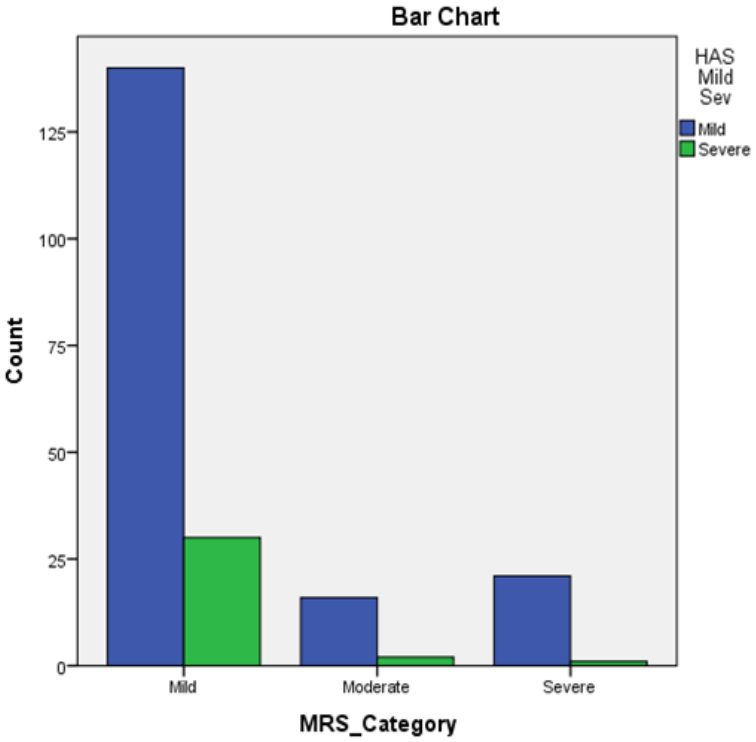
The difference in the prevalence of depression among those who lived in a nuclear family structure and those that lived in a joint family structure was statistically insignificant, suggesting that family structure makes no significant difference to the prevalence of depression among neurological outpatients.

Disability and Anxiety

Crosstab # 7: ***Statistical Analysis of Anxiety and Disability among Neurological Outpatients***

Crosstab					
			HAS Mild Sev		Total
			Mild	Severe	
MRS_Category	Mild	Count	140	30	170
		% within HAS Mild Sev	79.1%	90.9%	81.0%
	Moderate	Count	16	2	18
		% within HAS Mild Sev	9.0%	6.1%	8.6%
	Severe	Count	21	1	22
		% within HAS Mild Sev	11.9%	3.0%	10.5%
Total		Count	177	33	210
		% within HAS Mild Sev	100.0%	100.0%	100.0%

Bar Chart # 5: ***Statistical Analysis of Anxiety and Disability among Neurological Outpatients***



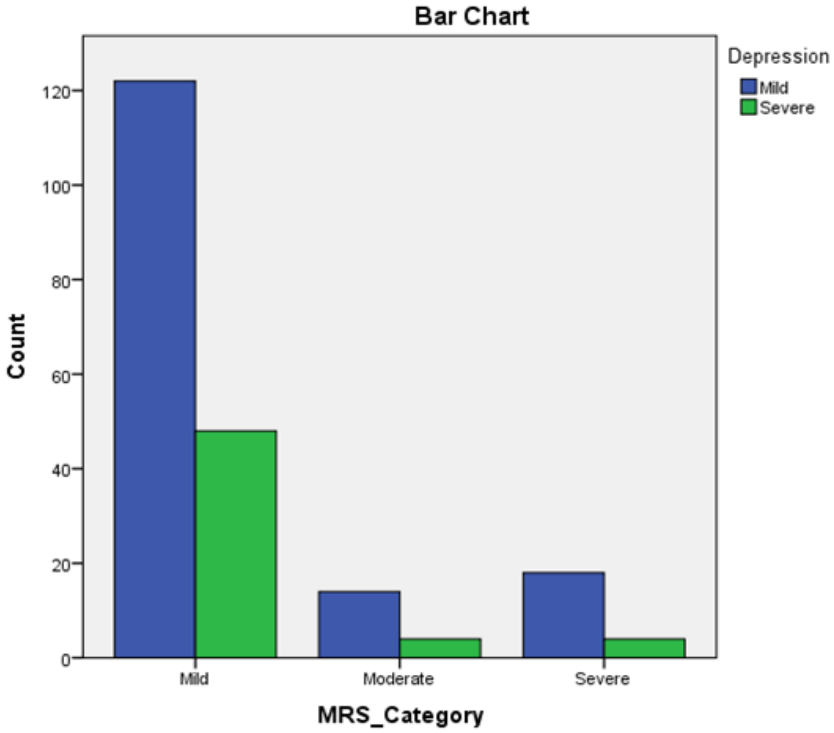
Among those who were either normal or had mild anxiety, 79.1% had either no disability or mild disability, 9.0% had moderate disability, and 11.9% had severe disability.
Among those who had severe anxiety, 90.9% had none or mild disability, 6.1% had moderate disability, and 3.0% had severe disability.
The difference in the prevalence of anxiety among the different categories of disability was statistically insignificant, suggesting that disability makes no significant difference to the prevalence of anxiety among neurological outpatients.

Depression and Disability

Crosstab # 8: ***Statistical Analysis of Depression and Disability among Neurological Outpatients***

Crosstab					
			Depression		Total
			Mild	Severe	
MRS_Category	Mild	Count	122	48	170
		% within Depression	79.2%	85.7%	81.0%
	Moderate	Count	14	4	18
		% within Depression	9.1%	7.1%	8.6%
	Severe	Count	18	4	22
		% within Depression	11.7%	7.1%	10.5%
Total		Count	154	56	210
		% within Depression	100.0%	100.0%	100.0%

Bar Chart # 6: ***Statistical Analysis of Depression and Disability among Neurological Outpatients***



Among those who were either normal or had mild depression, 79.2% had either no disability or mild disability, 9.1% had moderate disability, and 11.7% had severe disability.
Among those with severe depression, 85.7% had either no disability or mild disability, 7.1% had moderate disability, and 7.1% had severe disability.
The difference in the prevalence of depression among the different categories of disability was statistically insignificant, suggesting that disability makes no significant difference to the prevalence of depression among neurological outpatients.

DISCUSSION

Background Information

Anxiety and depression are common mental health disorders that have a considerable effect on patients' health-related quality of life (15). In Pakistan, during the COVID-19 lockdown, 39.9% suffered from depression and 57.7% from anxiety (16). This high prevalence suggests a need for further investigation in specific patient populations, such as neurological outpatients.
Neurological disorders are a major cause of morbidity and mortality in developing countries (17). Patients with neurological disorders may have a higher risk of developing mental health issues due to the chronic nature of their conditions, the impact on their daily life, and the stress associated with managing their health (18).
Karachi, being one of the largest cities in Pakistan, has unique socio-demographic factors that could influence the prevalence of anxiety and depression among its population. These factors include urbanization, economic conditions, access to healthcare services, and cultural attitudes towards mental health (16).
Understanding the prevalence of anxiety and depression among neurological outpatients can help in designing targeted interventions to improve mental health outcomes in this population (15). This could include integrating mental health services into neurology clinics or developing specific mental health programs for patients with neurological disorders.
There is a lack of data specifically on the prevalence of anxiety and depression among neurological outpatients in Karachi, Pakistan. This study would contribute to filling this gap in the literature and provide valuable insights for healthcare providers, policy makers, and researchers.

Analysis and Discussion of the Findings in Relation to the Existing Literature

A recent study conducted in 2019 by the National Center for Health Statistics in the United States examined the prevalence of anxiety symptoms among adults. The study found that during 2019, 9.5%, 3.4%, and 2.7% of adults experienced mild, moderate, or severe symptoms of anxiety in the past 2 weeks, respectively, while 84.4% experienced no or minimal symptoms. The percentage of adults who experienced mild, moderate, or severe symptoms of anxiety was highest among those aged 18–29 and decreased with age (19). Another study conducted in Malaysia in 2021 found that the prevalence risk of anxiety among university students was 29%. The study identified several factors associated with the risk of anxiety, including academic year, financial support for the study, alcohol consumption, poor sleep quality, body mass index (BMI), having a good friend in the university, having doubt regarding the future, actively involved in the society, and having problems with other students and lecturer(s) (20). These studies suggest that younger age groups tend to have a higher prevalence of anxiety compared to older age groups. Our study found the mean age of patients with severe anxiety was 39.94 years. However, the difference in age between those with severe anxiety compared with those who were either normal or had mild anxiety was statistically insignificant. This may possibly be attributed to a relatively small sample size and a small number of patients on either extreme of the population pool.

A recent study conducted in 2019 by the National Center for Health Statistics in the United States examined the prevalence of depression symptoms among adults. The study found that during 2019, the percentage of adults who experienced any symptoms of depression was highest among those aged 18–29 (21.0%), followed by those aged 45–64 (18.4%) and 65 and over (18.4%), and lastly, by those aged 30–44 (16.8%) (21). Another study conducted in 2021 aimed to provide a precise estimate of the prevalence of depression and its determinants among old age. The study found that the average expected prevalence of depression among old age was 31.74% (22). These studies suggest that younger age groups tend to have a higher prevalence of depression compared to older age groups. Although the difference in age between those with severe depression and those who either didn't have depression or had mild depression was statistically insignificant in our study, it is interesting to note that it did, however, line up with the results of these studies, with the mean age of those with severe depression (39.54) being lower than that of those who were either normal or had mild depression (42.47).

There is very limited research available on the difference in anxiety and depression between patients in the government sector as compared with those in the private sector. This study did not find a statistically significant difference between the prevalence of these conditions between the 2 sectors. Since the literature on this comparison is very scarce, more research is needed to analyze the effect of the sector on anxiety and depression in both neurological outpatients as well as the general population.

Several recent studies have found that the prevalence of anxiety tends to be higher in women compared to men. A 2020 report from the National Health Interview Survey in the United States found that women were more likely to experience mild, moderate, or severe symptoms of anxiety than men (19). The Mental Health Foundation reported that in 2022/23, an average of 37.1% of women and 29.9% of men reported high levels of anxiety (23). The National Institute of Mental Health (NIMH) reports that, based on diagnostic interview data from the National Comorbidity Study Replication, the past year prevalence of any anxiety disorder was higher for females (23.4%) than for males (14.3%) (24). These findings suggest that gender can play a significant role in the prevalence and experience of anxiety. These data support the results of our study, which were statistically significant, with p=0.012. The male/female odds ratio was 0.453 (0.241-0.853; 95% confidence interval), which suggests that being female increases the odds of having severe anxiety by 54.7% among neurological outpatients. A possible reason for this difference may be the bias faced by women in the social and cultural background of Pakistan. It's widely recognized that

gender inequality can have a profound effect on mental health worldwide. Some of the psychological effects of gender inequality include higher levels of stress, anxiety, depression, and post-traumatic stress disorder (PTSD) in women and people of marginalized genders (25). This could potentially apply to women in Pakistan who face cultural disadvantages, as these disadvantages could impact their mental health.

Several recent studies have found that the prevalence of depression tends to be higher in women compared to men. The World Health Organization (WHO) estimates that depression is about 50% more common among women than among men (26). However, a study published in JAMA Network found that a higher proportion of men (26.3%) than women (21.9%) met criteria for depression when alternative, male-type symptoms of depression were included (27). Research published in Frontiers in Psychology shows that women are twice as likely to experience depression than men (23). However, 15% of women receive treatment for depression, compared to only 9% of men (29). These findings suggest that gender can play a significant role in the prevalence and experience of depression. Although the results of our study found a higher count for women with severe depression than those who were normal or had mild depression, this was not statistically significant.

It's widely recognized that family structure can have a significant impact on mental health. For example, a study conducted among Chinese medical students found that depression and anxiety symptoms had highly significant correlations with family functioning (30). However, there are a very limited number of studies comparing the prevalence of anxiety and depression between joint family structures and nuclear family structures in Pakistan. This study did not find a statistically significant difference in the prevalence of these disorders between the family structures. More research is needed to confirm if family structure plays a role in the development of these conditions as this could significantly impact the recommendations that healthcare providers give their patients regarding these issues.

Several recent studies have explored the relationship between disability and anxiety. A study titled "Predicting depression and anxiety among adults with disabilities during the COVID-19 pandemic" found that 61.0% of participants met criteria for a probable diagnosis of major depressive disorder and 50.0% for generalized anxiety disorder. The study identified higher social isolation, presence of chronic pain, younger age, higher disability-related stigma, and higher worries about contracting COVID-19 as significant predictors of both depression and anxiety symptoms (31). A study conducted by UCL found that people with disabilities were more likely to be depressed, anxious, and lonely during the pandemic. The researchers found that around 29% of respondents with a disability had significant depressive symptoms during the pandemic period compared with 16% of those without a disability. Almost 16% of people with ADL (activities of daily living) disability were found to have significant anxiety symptoms, contrasting with 7% of able-bodied people (32). These studies highlight the significant impact of disability on mental health, and the need for targeted interventions to support individuals with disabilities, particularly during times of increased stress such as the COVID-19 pandemic. The results of our study do not show this same correlation between disability and anxiety or depression. However, since the results are statistically insignificant, this difference may very well be just a matter of chance. One possible reason that the results differ from the previous literature may be the small number of patients in the moderate (8.6%) and severe (10.5%) categories of disability.

Limitations

There are some potential limitations that should be considered for this study.

Sample Size:

While a sample size of 200 might provide some valuable insights, it may not be large enough to be representative of the entire population of neurological outpatients in Karachi, Pakistan. Larger studies would provide more reliable results.

Selection Bias:
The study includes patients from only two clinics (one private and one public). This could potentially introduce selection bias, as the patients attending these clinics might not be representative of all neurological outpatients in Karachi.

Self-Report Measures:
The Hamilton Depression Rating Scale (HAM-D) and Hamilton Anxiety Rating Scale (HAM-A) rely on self-reporting, which can be subject to bias. Patients might underreport or overreport their symptoms due to stigma, misunderstanding of the questions, or other factors.

Cross-Sectional Design:
The study is cross-sectional, meaning it provides a snapshot of the prevalence of anxiety and depression at a specific point in time. It does not capture changes over time or establish causality.

Lack of Control Group:
The study does not include a control group of non-neurological outpatients. This makes it difficult to determine whether the observed rates of anxiety and depression are specific to neurological outpatients or are similar in the general outpatient population.

Cultural and Linguistic Differences:
The HAM-D and HAM-A were developed in Western countries and might not fully capture the cultural and linguistic nuances of depression and anxiety in Pakistan.

Lack of Detailed Demographic Data:
The study does not account for demographic factors like socioeconomic status, education level, employment status, etc., which could influence the prevalence of anxiety and depression.
These limitations do not invalidate the study's findings, but they should be kept in mind when interpreting the results.
Future Implications/Research
The finding that anxiety is more common in women, with a statistically significant p-value of 0.012 and a male/female odds ratio of 0.453 (0.241-0.853; 95% confidence interval), has several implications for future research and practice.
This finding underscores the need for gender-specific interventions in the treatment and management of anxiety among neurological outpatients. Healthcare providers should consider the different needs and experiences of men and women when developing treatment plans.
More research is needed to understand why women are more likely to experience anxiety. Future studies could explore biological, psychological, and social factors that might contribute to this gender difference.
The study provides a snapshot of the prevalence of anxiety among neurological outpatients at a specific point in time. Longitudinal studies are needed to track changes over time and to understand the long-term impacts of these conditions.
Future research could also consider other demographic factors such as age, socioeconomic status, and ethnicity, which might interact with gender to influence the prevalence of anxiety.
The findings could inform public health strategies aimed at reducing the prevalence of anxiety among neurological outpatients. For example, public health campaigns could aim to raise awareness about the higher prevalence of anxiety among women and promote services and resources available to help manage these conditions.
The results highlight the importance of training for healthcare providers to recognize and address gender differences in the prevalence of anxiety. This could help ensure that all patients receive appropriate care and support.

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