

Frequency of generalised anxiety disorder and associated factors in an urban settlement of Karachi

Muhammad Shahzeb Khan,¹ Muhammad Umer Ahmed,² Mohammad Adnan,³ Muhammad Azeem Khan,⁴ Faizan Imran Bawany⁵

Abstract

Objective: The study was undertaken to find the frequency of Generalised Anxiety Disorder (GAD) along with associated factors in an urban settlement of Karachi.

Method: A cross-sectional study was conducted at Defence Housing Authority (DHA), a posh area of Karachi. The sample population consisted of residents of ages between 18 and 65. The sample of 420 was completed by randomly going to residences in the DHA area. Self-administered questionnaires were handed out after taking informed consent. General Anxiety Disorder (GAD) 7 scale was used to estimate the anxiety level. The data was entered and analysed using SPSS version 16.0. Pearson's chi-square was used as the primary statistical test.

Results: The mean anxiety score of the total individuals selected was 5.1 ± 3.79 . Males reported a mean score of 4.99 ± 4.01 while females reported a mean score of 5.25 ± 3.42 . A score of 5 is considered as the threshold for anxiety and anything below 5 is considered as normal. Based on this benchmark, out of the total sample size of 420, 211 (50.2%) individuals reported some degree of anxiety. Employment and education status were found to be significantly associated ($p=0.01$) with anxiety among the participants.

Conclusion: Based on the results, the high prevalence of anxiety in one of the most developed areas of Karachi is alarming. For 50.2% of the respondents to have anxiety is high considering the sample chosen represented individuals that were educated and had a high standard of living. The major factors responsible for anxiety cited by

Introduction

Anxiety is a sensation characterised by a sense of foreboding, uneasiness and fear. Such feelings are considered normal if they are in response to an appropriate stress. However, when anxiety increases to an amount that it debilitates an individual and is disproportionate to the episode that has caused it, then it may be classified as a disorder. Anxiety disorders are prevalent in the global population.¹ Generalised Anxiety Disorder (GAD) is the most prevalent anxiety disorder; in the United States, 5.1% of the population has a lifetime prevalence of GAD.² This disorder is commonly seen in clinical practice and is associated with other Axis I diseases such as major depressive disorder or bipolar disorders.³ GAD can also be present with a number of other chronic medical conditions. Despite attempts to understand the disorder's neurobiology and pathophysiology, at present little is understood.³ Currently, anxiety disorders are a major contributor to the

global disease burden, and according to a projection made by the World Health Organization, depressive disorders such as GAD will be the second leading cause of global disease burden by 2020.⁴ One study has claimed that the overall prevalence of anxiety and depressive disorders in Pakistan is 34%.⁵ Another pilot study carried out in Karachi reported that 39.4% of women surveyed had anxiety compared to 23.3% of males.⁶ Such high rates of prevalence indicate that the global economy is already burdened by these disorders⁵ and this burden will continue to increase unless research is carried out to determine appropriate measures that can be taken to diagnose and treat depressive disorders such as anxiety.

The southern port city of Karachi is the largest and the most populous city of Pakistan with an estimated population of 21 million people. It is the financial hub of Pakistan as it is the primary centre for banking, trade and industry in the country. Therefore, the physical and mental well-being of its inhabitants and work force is vital for the economic prosperity of the country. As can be said of any large metropolis in a developing economy, Karachi suffers from a wide array of problems. There is widespread poverty; 22.3% of Pakistanis are estimated to live below the poverty line.⁷ There has been a dramatic increase in

.....
^{1,5}Medical Student, Dow University of Health Sciences, Karachi, ^{2,4}Medical Student, Ziauddin Medical University, Karachi, ³Department of Physiology, Muhammad Bin Qasim Medical and Dental College, Karachi.

Correspondence: Muhammad Shahzeb Khan. Email: shahzebkh@gmail.com

acts of terrorism and ethnic violence which have claimed many lives over the past decade. Such circumstances, along with personal, social and biological factors, which may contribute to increased anxiety within the population, have been factored into our research as possible causes.

In Pakistan, there is a lack of research and policies on how to identify and tackle depressive disorders such as GAD. Some studies have estimated that 7% to 50% of the population of various cities in Pakistan suffers from depressive disorders but substantial evidence is still lacking.^{6,8} The burden of such a disease amongst the wealthier and more affluent residents is of special interest because these are the individuals who are most likely to drive growth, bring economic prosperity and create jobs. Thus our study was designed to evaluate the frequency of GAD in upper middle class section of the population and to explore possible causes for it. Subsequently the collected data and its findings can be used to formulate policies to combat this condition.

Our survey was carried out amongst the residents of Defense Housing Authority (DHA), a relatively wealthy housing district in Karachi. The objective of our study was to assess the presence of GAD amongst this affluent population. The General Anxiety Disorder (GAD) 7 Scale was used as a validated screening instrument. This scale has shown promise as a useful screening instrument in the community setting.⁹

Methods

This cross sectional study was conducted among the residents of DHA, one of the most developed areas of the city after approval from the Institutional Review Board (IRB) and ethical committee of Dow University of Health Sciences. It was estimated that there are 4681 residential plots in Phase 6 with the help of a map taken from the DHA office. The sampling technique used was multi-stage sampling. In the first stage, the plots were selected randomly by chit method. The subjects from each house were then selected conveniently according to the inclusion and exclusion criteria. We required a sample size of 420 subjects to fulfil the objectives of our study at a 95% confidence level. This sample size was calculated assuming a 50% prevalence of anxiety disorder and 5% bound of error. The sample was then inflated by 10% to account for non-respondents and incomplete questionnaires. The data was collected during the period of November 2012 to December 2012.

Plots that had no residents living in them were ignored before selecting the sample randomly. Household members of the selected houses that were below the age

of 18 or above 65 were excluded from the research. Servants like drivers and guards living in those houses were also excluded from the study. The data was collected by a group of 2 researchers between the timings 6-10pm keeping in mind that majority of people residing in DHA work and reach home from work after 5 pm. Due to the current security problems in Karachi, some residents refused to participate in the study. A total of 177 houses in the locality were visited; no response was seen in 38 houses out of these. A maximum of 5 people were selected from one house for the study. Those who gave consent seldom left the questionnaire incomplete. A written consent form was signed by all of the participants. The respondents were given the incentive they would be checked for anxiety free of cost and all the information that they give will remain confidential.

A self-administered questionnaire in English language was used considering that majority of residents in Phase 6 are well-educated and more comfortable with English. The principal researcher was present at all times to answer the queries of the participants if they had any. The questionnaire had two sections. In the first section with the help of GAD 7 scale, the participant was checked for the level of anxiety he or she had, if any. The second section was regarding the factors associated with anxiety.

The prevalence of anxiety among the respondents was assessed through the GAD 7 Scale. The responses to the seven questions are constructed on a 3-point scale from "Not at all" to "Nearly every day" and the survey was scored on a 0 to 21 point scale. A score of 5-9 indicated mild anxiety, 10-14 indicated moderate anxiety, and 15 or more indicated severe anxiety. GAD 7 is thought to have a good reliability and validity.¹⁰ Furthermore, several questions assessing socio-demographics and possible factors that cause anxiety were also asked.

The data was entered and analysed using SPSS version 16.0. Frequency distribution was calculated for demographic data such as gender, marital status, family type and qualification. The association of anxiety level with different demographic and other social factors was assessed with the use of chi square test and p-value of 0.05 was considered as significant. Odds ratio was then calculated to measure the strength of association between the two.

Results

A total of 420 subjects were selected randomly from a developed area of Karachi, Pakistan, out of which 246 (58.6%) were males with a mean age of 33.1±15.2 years and 174 (41.4%) were females with a mean age of 33.5±13.7 years. Table-1 shows the demographic data of

Table-1: Demographic characteristics.

(%)	Frequency	Percentage
Total Participants	420	100
Age		
< 40 years	298	71
≥ 40 years	122	29
Gender		
Male	246	58.6
Female	174	41.4
Marital Status		
Single	219	52.1
Married	201	47.9
Family type		
Joint family	233	55.5
Nuclear family	187	45.5
Income (in Pak Rupees)		
Up to 30,000	26	6.2
30,000 - 100,000	43	10.2
More than 100,000	253	60.2
Did not disclose	98	23.3
Qualification		
Up to Intermediate	96	22.9
Graduates	183	43.6
Post graduates	141	33.6
Suffering from a chronic disease		
No	88	21
Yes	332	79

Table-2: Anxiety level of selected individuals according to GAD 7 scale.

(%)	Frequency	Percentage
No Anxiety (0-4)	209	49.8
Mild Anxiety (5-9)	164	39
Moderate Anxiety (10-14)	34	8.1
Severe Anxiety (15-21)	13	3.1
Total	420	100
Anxiety Level		
Normal (< 5)	209	49.8
Anxiety Present (5 or more)	211	50.2
Total	420	100

the study population in terms of frequency and percentages. The mean anxiety score of the total individuals selected was 5.1 ± 3.79 . Males reported a mean score of 4.99 ± 4.01 while females reported a mean score of 5.25 ± 3.42 . Out of the total selected individuals, 211 (50.2%) individuals had some level of anxiety calculated by GAD 7 scale as shown in Table-2. A score of less than 5 was considered as normal and a score of equal or above 5 showed some degree of anxiety.

In order to assess the association of anxiety level with different demographic and other social factors, chi square

Table-3: Association of anxiety with demographics and social factors.

	No Anxiety (n = 209)	Anxiety Present (n = 211)	P value (X ²)	Odds Ratio (95% C.I.)
Gender			0.089	1.402 (0.949-2.070)
Male	131(62.7%)	115(54.5%)		
Female	78(37.3%)	96(45.5%)		
Age			0.149	1.365 (0.894-2.084)
< 40 years	155(74.2%)	143(67.8%)		
≥ 40 years	54(25.8%)	68(32.2%)		
Marital Status			0.842	1.040 (0.709-1.525)
Single	110(52.6%)	109(51.7%)		
Married	99(47.4%)	102(48.3%)		
Family Type			0.173	0.765 (0.525-1.125)
Joint Family	109(52.2%)	124(58.8%)		
Nuclear Family	100(47.8%)	87(41.2%)		
Chronic Disease			0.019	0.565 (0.349-0.913)
Present	34(16.3%)	54(25.6%)		
Absent	175(83.7%)	157(74.4%)		
Loss of a loved one			< 0.001	0.419 (0.265-0.644)
Yes	36(17.2%)	70(33.2%)		
No	173(82.8%)	141(66.8%)		
Emotional harm by another person			< 0.001	0.31 (0.200-0.479)
Yes	41(19.6%)	93(44.1%)		
No	168(80.4%)	118(55.9%)		
A physical injury			0.119	0.57 (0.279-1.164)
Yes	13(6.2%)	22(10.4%)		
No	196(93.8%)	189(89.6%)		
Adverse effects of medication			0.05	0.511 (0.259-1.009)
Yes	14(6.7%)	26(12.3%)		
No	195(93.3%)	185(87.7%)		
Unsuccessful relationships			0.001	0.424 (0.253-0.709)
Yes	26(12.4%)	53(25.1%)		
No	183(87.6%)	158(74.9%)		
Social atmosphere, surrounding and lifestyle			< 0.001	0.369 (0.249-0.584)
Yes	73(34.9%)	125(59.2%)		
No	136(65.1%)	86(40.8%)		
Job, study or peer pressure			0.01	0.601 (0.407-0.887)
Yes	78(37.3%)	105(49.8%)		
No	131(62.7%)	106(50.2%)		
No meaningful application of achievements			0.015	0.557 (0.346-0.895)
Yes	35(16.7%)	56(26.5%)		
No	174(83.3%)	155(73.5%)		
Political instability and violence			0.163	0.759 (0.515-1.118)
Yes	82(39.2%)	97(46%)		
No	127(60.8%)	114(54%)		

test was applied and odds ratio was calculated to measure the strength of association. No significant difference was found in the anxiety level among participants with respect to gender, marital status, age and family type as shown in Table 3. People who were suffering from any chronic disease were more anxious than people without the disease ($p < 0.09$). Individuals were anxious with respect to emotions and were found to have a high level of anxiety associated with loss of a loved one ($p < 0.001$),

emotionally accused by someone ($p < 0.001$), unsuccessful relationship ($p < 0.001$), social relation and lifestyle ($p < 0.001$). Anxiety was also found to be significantly associated with respect to job and education among the participants ($p < 0.01$). No significant association was found between anxiety and political instability and violence in the city.

Discussion

In Pakistan, the average total prevalence of depression and anxiety established on public samples is 33.62%, with a point prevalence of 45.5% amongst females and 21.7% amongst males.⁵ Few previous studies have shown that the prevalence of anxiety ranges between 7%-50% in various cities of Pakistan.^{5,6} In the neighbouring country south of Pakistan (India), the prevalence of anxiety in patients coming to the primary care centres ranges from 21% to 57%.¹ A research stated that the mean anxiety score amongst its participants was 5.7 ± 3.86 .⁶ In comparison to the studies mentioned earlier, our research indicated a mean anxiety score of 5.1 ± 3.79 and a frequency of 50.2%. Therefore, it can be established that our data is consistent with both local and regional trends.

According to a study, socio-demographic factors associated with anxiety within a population include low level of education, marital status (widowed, separated or divorced), role of a housewife and age factor (middle age).^{5,11} However, our research in contrast has shown that the presence of a chronic disease and an emotionally disturbed status can play a vital role towards the development of anxiety in the educated, well-to-do class of Pakistan. This is in accordance with another research that establishes strong links between physical/psychiatric illness and anxiety.⁶ Other minor factors found to be positively associated with anxiety in our study included job status, peer pressure, loss of a loved one, surrounding atmosphere and the individual lifestyle.

Chronic illness refers to a condition in which the well-being of a person is affected, causing a state of anxiety and ensuing anxiety disorders.^{12,13} Therefore a firm association between anxiety and chronic illness can be established. This is further reinforced by two other research studies that highlight the correlation between chronic illness and the prevalence of anxiety.^{12,13} A research established that amongst the people suffering from chronic rheumatologic disorders, the frequency of anxiety and depression was 68.2%.¹³ This fact is further supported by a research in Iran which has shown a strong association of symptoms of anxiety in people suffering from chronic rheumatoid arthritis and hepatitis.¹³

Our study displayed significant levels of anxiety amongst

the educated and the well-to-do class of Karachi, Pakistan. A reasonable hypothesis towards the high level of anxiety amongst the sample size could be attributed towards the fact that most of the people in the sample size were the family's bread earners. A strong joint family system in the urban population of Pakistan usually lays down the support foundation for its members in times of hardship and plays a vital role in development of strong bonds amid its members. Therefore, any disruption in this regard predisposes an individual to emotional harm and other psychosocial factors ultimately culminating in symptoms of anxiety and related disorders. Therefore the physical and the mental state of citizens is important for the development of a nation. It is recommended that in a country like Pakistan where the general awareness of anxiety amongst the population is low, the government must launch widespread anxiety control programmes and hold workshops educating the people the means to evaluate their level of anxiety. Exercise has also been found to be of great benefit in controlling anxiety and various exercises such as yoga can help curtail anxiety.¹⁴ Furthermore yogic breathing has also been found to be beneficial in the treatment of anxiety and stress-related medical illnesses.¹⁵ It is a low risk, low cost technique that enhances mood and stress tolerance.¹⁴ Likewise, people must also be educated on how to live a healthy, disease-free life with utmost emphasis on those people suffering from chronic diseases of diabetes and hypertension. Nonetheless, further researches must also be conducted to evaluate anxiety and other contributing risk factors.

There are other limitations to this study that also need to be considered. Data was collected from a certain area of Karachi (phase 6 D.H.A) which is not complete representation of the general urban population. Other well-established urban areas should also have been included in the sample. The sample size of 420 people is relatively small considering the total population of Karachi. A larger sample size would further substantiate the results obtained from this study. However, it must be noted that the use of the GAD scale enhances the reliability of the results. Since this study is a cross sectional study, the findings are usually for a certain period of time. Most of the data was collected after sunset, usually a time where people return tired from work, with relatively high anxiety and physical/mental pressure.¹⁶

Conclusion

Based on our results the high prevalence of anxiety in one of the most developed areas of Karachi is alarming. For 50.2% of the respondents to have anxiety is high considering the sample chosen represented individuals that were educated and had a high standard of living. The

major factors responsible for anxiety cited by respondents were chronic diseases and emotional harm. Therefore, anxiety should be taken as a serious public threat to the population of Karachi with a need for future studies conducted extensively in other parts of the city to determine the prevalence and factors associated with anxiety. Furthermore co-relation between anxiety and specific chronic diseases should also be studied in well-developed areas of Karachi. It is clear from our results that significant measures need to be taken in order to reduce the level of anxiety among the general population and health planners need to devise effective strategies to curtail this disease on a wide scale. Special emphasis also needs to be placed on general awareness on coping with stressful situations and chronic illnesses. Counselling sessions on how to respond to psychosocial factors linked to anxiety would also be helpful.

References

1. Institute of Medicine, Committee on Nervous System Disorders in Developing Countries. Neurological, Psychiatric, and Developmental Disorders: Meeting the Challenge in the Developing World. Washington, DC: National Academy Press; 2001.
2. Kessler RC, Keller MB, Wittchen HU. The epidemiology of generalized anxiety disorder. *Psychiatr Clin North Am* 2001; 24: 19-39.
3. Hidalgo RB, Sheehan DV. Generalized anxiety disorder. *Handb Clin Neurol* 2012; 106: 343-62.
4. Murray CJL, Lopez AD (eds). The Global Burden of Diseases: A Comprehensive Assessment of Mortality and Disability From Diseases, Injuries and Risk Factors in 1990 and Projected to 2020. Cambridge: Harvard University Press; 1996.
5. Mirza I, Jenkins R. Risk factors, prevalence, and treatment of anxiety and depressive disorders in Pakistan: systematic review. *BMJ* 2004; 328: 794.
6. Khan H, Kalia S, Itrat A, Khan A, Kamal M, Khan MA, et al. Prevalence and demographics of anxiety disorders: a snapshot from a community health centre in Pakistan. *Ann Gen Psychiatry* 2007, 6:30. doi:10.1186/1744-859X-6-30.
7. United Nations Development Program. Human Development Report 2013. The rise of the South: Human progress in a diverse world. 2013. UNDP, New York, NY, USA.
8. Desjarlis R, Eisenberg L, Good B, Kleinman A. World Mental Health: Problems and Priorities in Low- Income Countries. Oxford: Oxford University Press; 1995.
9. Kertz S, Bigda-Peyton J, Bjorgvinsson T. Validity of the generalized anxiety disorder-7 scale in an acute psychiatric sample. *Clin Psychol Psychother* 2012. doi: 10.1002/cpp.1802.
10. Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder. *Arch Intern Med* 2006; 166: 1092-7.
11. Rabbani F, Raja FF. The minds of mothers: maternal mental health in an urban squatter settlement of Karachi. *J Pak Med Assoc* 2000; 50: 306-12.
12. Ohayon MM, Schatzberg AF. Using chronic pain to predict depressive morbidity in the general population. *Arch Gen Psychiatry* 2003; 60: 39-47.
13. Bayat N, Alishiri GH, Salimzadeh A, Izadi M, Saleh DK, Lankarani MM, et al. Symptoms of anxiety and depression: a comparison among patients with different chronic conditions. *J Res Med Sci* 2011; 16: 1441-7.
14. Deboer LB, Powers MB, Utschig AC, Otto MW, Smits JA. Exploring exercise as an avenue for the treatment of anxiety disorders. *Expert Rev Neurother* 2012; 12: 1011-22.
15. Brown RP, Gerbarg PL. Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety, and depression. Part II - clinical applications and guidelines. *J Altern Complement Med* 2005; 11: 711-7.
16. Natvik S, Bjorvatn B, Moen BE, Magerøy N, Sivertsen B, Pallesen S. Personality factors related to shift work tolerance in two- and three-shift workers. *Appl Ergon* 2011; 42: 719-24.