

A cross-sectional study on generalized anxiety disorder and its socio-demographic correlates among the general population in Saudi Arabia

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ABSTRACT

Background: Generalized anxiety disorder (GAD) is often described than define as a psychological illness that is characterized by excessive worry. Little attention has been given to anxiety disorders by the medical community in Saudi Arabia. This study was carried out to screen for GAD among adults and determine the correlation of anxiety disorder with other comorbidities. **Methodology:** This study was a cross-sectional observational study carried out among adults aged 18 years and above in the general population in Saudi Arabia. The people were screened by using an Arabic validated version of General Anxiety Disorder-7 (GAD-7) questionnaire that was sent as a Google link via emails or different social media (Twitter, Facebook, WhatsApp, and Telegram groups) of the general population. The study was approved by the hospital research committee and the Institutional Review Board (HIRI-05-Apr21-01). **Results:** We collected 338 participants in response to our questionnaire where 60.7% of them were females and 54.5% were aged between 25 and 34 years old. hypersensitivity, rheumatoid arthritis (RA), hypertension and diabetes mellitus (DM) were the main medical conditions represented by 7.6%, 4.8%, 3.7%, and 3.4%. According to GAD-7 questionnaire, prevalence of any degree of anxiety was 62.1% where 33.1% of the total sample had mild anxiety, 15.7% had a moderate degree of anxiety and 13.3% had severe anxiety. Anxiety was related to age, residency, occupation, and some medical conditions. **Conclusion:** We found high prevalence of anxiety among our population which was the highest among younger participants, and students. Moreover, we found that prevalence and severity of anxiety were higher in patients with chronic conditions and depressed patients.

Keywords: GAD-7 score, generalized anxiety disorder (GAD), prevalence of anxiety

Introduction

Generalized anxiety disorder, GAD, is often described than define as a psychological illness that is characterized by excessive worry. Patients diagnosed with GAD live in expectation of something terrible happening to them regarding money, health, work, or it

could be any social appraisal. GAD is usually expressed as physical signs such as sweating, wavering, faintness, or a fast heartbeat, where GAD manifested differently in different situations.^[1] Issues such as gender, occupation, socioeconomic status, and education level are some of the paradigms that can be used to understand the philosophies of this disorder. A study conducted in the United Arab Emirates showed that the prevalence rate for anxiety (56%) was higher than that of other disorders such as depression.^[2]

Patients with GAD often had other disorders, including psychiatric disorders (e.g., major depressive disorder), substance

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use, and obesity. They may have a history of trauma or family member with GAD.^[3] Although the high prevalence of GAD and the burden of untreated patients including but not limited to missing working days, unemployment support, emergency visits because of somatic manifestation. In the United States, costs associated with anxiety disorders were \$46.6 billion, 31.5% of total mental illness expenditures. Less than one-quarter of the costs related to anxiety disorders were for direct medical treatment; over three-quarters were attributable to lost or reduced productivity. Prompt detection and treatment substantially reduce the economic and social burden of these common and often crippling disorders.^[4]

Moreover, little attention has been given to anxiety disorders by the medical community in Saudi Arabia. Mental illness is often ignored as a severe illness in Middle East societies.^[5] Therefore, depending on the rate of prevalence, this study will likely raise awareness of the seriousness of the disease and possibly influence policy change in Saudi Arabia regarding the plan of care for GAD patients.

In cross-sectional community-bases study which was conducted by Alzahrani *et al.*^[6] in rehabilitations centers at Majmaah and Sharqa citites, the authors discussed the prevalence of GAD and major depression in health-care givers which affirmed that the predominance of psychosomatic disarray was very low. Nationality, gender, marital status, educational level, profession, and income were not considerably linked with psychosomatic disorders.

In another study published in 2020 among pharmacy students, Samreen S *et al.*^[7] used a cross-sectional design, using paper-based self-generated questionnaires. The General Anxiety Disorder-7 (GAD-7) scale was used to measure and sort anxiety among the study providers. This study's results brought the fact to the front that half of the pharmacy students underwent anxiety occurrence during their study period in university.

A study carried out in different regions of Saudi Arabia to know the prevalence of anxiety in general youth found 53 (11%) had mild GAD indications, 268 (55.8%) had reasonable, and 39 (8.1%) had tremendously severe GAD symptoms. More than half the youth in this study had shown indications of GAD.^[8] The cultural background becomes an important paradigm together with gender and impact of GAD on individuals and society for assessing the prevalence of GAD among the adult population.

The previous researches carried out in different cities of Saudi Arabia focused mainly on anxiety and psychosomatic symptoms in specific populations like students and healthcare workers. There is severe lacking of studies that quantify the anxiety in the general population, its correlation with socio-demographic variables and other preexisting comorbidities.

In Saudi Arabia, anxiety and depression screening is the cornerstone of primary care and family physicians' practice. This

is due to the patient longitudinal follow-up of chronic disease in the Primary Health Centers especially Diabetes, hypertension, and hypothyroidism. Counseling and primary care services can help ensure that patients get the mental health care they need. This study was carried out to screen for GAD among adults and determine the correlation of anxiety disorder with other co-morbidities.

Materials and Methods

Study area/Setting

This study was a community-based study targeting people living in Saudi Arabia through online social media (Twitter, Facebook, WhatsApp, and Telegram groups).

Study subjects

Individuals aged above 18 years of both genders were included in the study on their consent to participate in the study. However, individuals aged less than 18 years and already on treatment for GAD were excluded from the study.

Study design

This was a cross-sectional observational study.

Sample size

The sample size is calculated based on the prevalence of anxiety of 10%^[9] by using the formula of $Z^2 PQ/d^2$ with an error of 5%. And sample was estimated to be 138.

Z = Standard normal deviate = 1.96, P = 0.1, Q = 1-p, D = accepted error = 0.05.

Sampling technique

A non-probability sampling (convenience sampling) as the sample was collected from easily accessible participants with no randomization through online social media.

Data collection methods, instrument used, measurements

This study was carried out among adults aged 18 years and above in the general population in Saudi Arabia. The people were screened for generalized anxiety by using the GAD-7 questionnaire. The Arabic validated version of GAD-7 was sent as a Google link via emails or different social media (Twitter, Facebook, WhatsApp, and Telegram groups) of the general population. The questionnaire started with a statement to express the participant's consent to be included in this study in the Google link.

The questionnaire consisted of two sections; the first section included questions related to socio-demographic correlations such as age, gender, and employment status. It is also included questions to know if the respondents are suffering from Diabetes mellitus, Hypertension, other chronic diseases, and any psychological disease.

The second section of the questionnaire consisted of 7 items GAD-7 “in Arabic” to screen for any anxiety disorder in the general population. The Score was determined by applying scores of 0, 1, 2, and 3 to the “not at all,” “several days,” “more than half the days,” and “almost every day” response groups, respectively. Total scores of 5, 10, and 15 were recorded for mild, moderate, and extreme anxiety as the reference points.

Data management and analysis plan

Data were retrieved on an Excel file and analyzed using IBM SPSS statistics 24.0. Mean and SD were estimated for quantitative variables. Frequencies and percentages were used for qualitative variables. Pearson Chi-square and Fisher exact test were applied to observe associations between qualitative variables. A value of $P < 0.05$ was considered statistically significant.

Ethical consideration

The questionnaire started with a statement to express the participant’s consent to be included in this study in the Google link. All records were kept confidential, no names or any sort of identification were asked in the link as anonymity was maintained. The research was conducted only after getting the institutional review board (IRB) from King Saud medical city research center (HIRI-05-Apr21-01).

Results

In this study, we collected 338 participants in response to our questionnaire where 60.7% of them were females and 54.5% were aged between 25 and 34 years old. Moreover, 52.7% of participants indicated that they were from central region, whereas 15.1% were from southern region. After calculated BMI from reported height and weight, we found that prevalence of underweight, overweight and obesity in our study were 7.6%, 28% and 28% respectively. Moreover, 64.5% of participants that they are worker and 14.8% as smoker [Table 1]. Moreover, 69.1% of the sample indicated that they had no medical comorbidity; however, hypersensitivity, rheumatoid arthritis (RA), hypertension and diabetes mellitus (DM) were the main medical conditions represented by 7.6%, 4.8%, 3.7% and 3.4% [Figure 1].

Furthermore, 75.4% of participants indicated having no psychological condition or not diagnosed with psychological condition; however, 12.7% indicated having anxiety, 9.9% depression and 1.9% bipolar conditions [Figure 2].

According to GAD-7 questionnaire, prevalence of any degree of anxiety was 62.1% where 33.1% of total sample had mild anxiety, 15.7% had moderate degree of anxiety and 13.3% had severe anxiety [Figure 3].

In [Table 2], we showed the relation between demographic factors of participants and level of anxiety as interrupted from GAD-7 questionnaire. we found that anxiety were more prevalent in females than males where 35.1% of females compared with

Table 1: Demographic profile of the survey respondents

Variables	Sub-Variables	Count	Column n %
Gender	Male	133	39.3%
	Female	205	60.7%
Age	18-24	63	18.6%
	25-34	184	54.4%
	35-44	58	17.2%
	45-54	19	5.6%
	55-64	14	4.1%
Residency	Central region	178	52.7%
	Northern region	33	9.8%
	Southern region	51	15.1%
	Western region	49	14.5%
	Eastern region	27	8.0%
BMI	Underweight	25	7.6%
	Normal	119	36.3%
	Overweight	92	28.0%
Occupation	Obese	92	28.0%
	Student	67	19.8%
	Worker	218	64.5%
Smoking	Not-working	53	15.7%
	Yes	50	14.8%
	No	288	85.2%

42.1% of males had no anxiety, whereas 15.6% of females had severe anxiety compared with 9.8% of males; however, there is no significant difference between the two genders. Moreover, we found a significant difference between participants considering degree of anxiety depending on their age categories where it seems that prevalence of anxiety was higher in younger participants who had more severe anxiety than older participants ($P = 0.00$) where almost 85% of participants of age category (18–24) had a degree of anxiety. Moreover, we found that the higher prevalence of anxiety was in western region and southern region (83.7% and 76.5%) ($P = 0.015$). We did not find a significant difference depending BMI; however, anxiety was more prevalence and more severe in underweight and obese participants. Moreover, we found that prevalence of anxiety was significantly higher in students than workers; however, participants who did not work show more severe anxiety. Prevalence and severity of anxiety were higher in smokers; however, this is not significant.

Moreover, we found that prevalence and severity of anxiety is related to some medical conditions. As shown in [Table 3], prevalence of anxiety was significantly higher in patients with colon conditions, lupus erythematosus, heart conditions and thyroid dysfunction with 100%, 77.8%, 75%, and 72.7%, whereas patients of anemia represented the highest severity of anxiety (33.3%). Patients with depression and anxiety showed significant higher prevalence of anxiety (88.9% and 89.1%).

Discussion

In our study, we aimed to assess the prevalence and severity of anxiety among public population in Saudi Arabia as well as to determine if any relationship exists between GAD and other

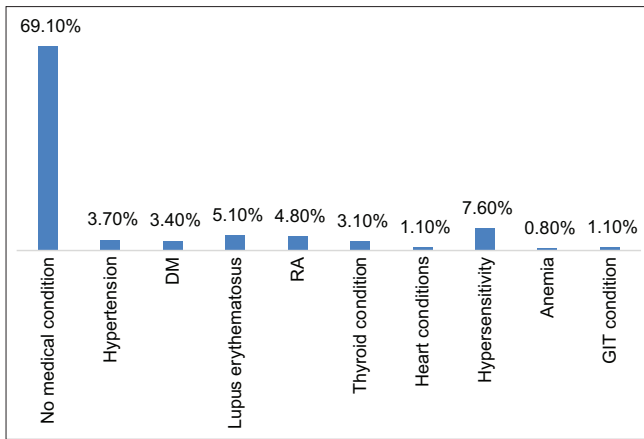


Figure 1: Incidence of other medical conditions

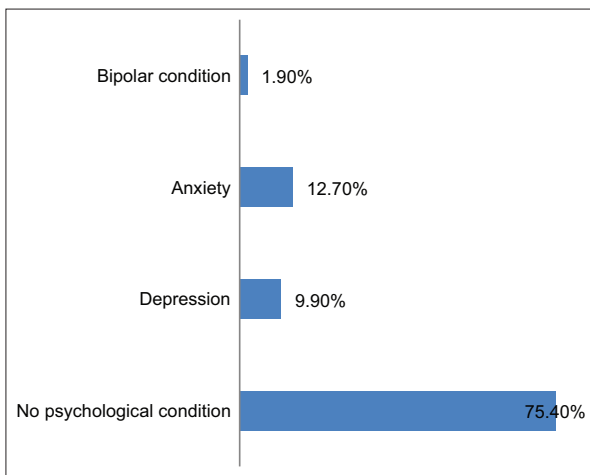


Figure 2: Prevalence of psychological conditions as reported by participants

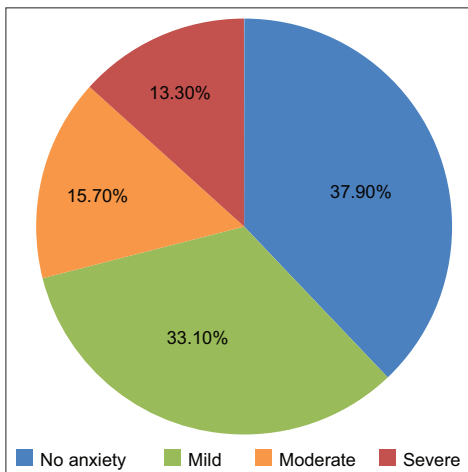


Figure 3: Distribution of participants according severity of anxiety according to GAD-7

co-morbidities like Diabetes, Hypertension, and other chronic conditions. In this study, the prevalence of any degree of anxiety according to GAD-7 tool was 62.1% where 33.1% of total sample had mild anxiety, 15.7% had moderate degree of anxiety and 13.3%

had severe anxiety. In a study conducted by Salari N, the authors found that prevalence of anxiety among public population was 31.9%,^[10] whereas study of Maroufizadeh S which conducted among public population in Iran, the authors found that prevalence of anxiety was 61.8% where 31.7% of total population had mild anxiety, 18.1% had moderate anxiety and 12.1% had severe anxiety which is similar to our results.^[11] Moreover, study of Hajure M among chronic medical patients showed that prevalence of anxiety was 61.8%^[12] and study of Samreen S found that prevalence of anxiety among students was 49% where 25.9% had mild anxiety, 14.1% had moderate anxiety and 8.8% had severe anxiety.^[7]

Moreover, we found that prevalence of anxiety is higher among females than males and percent of females who had severe anxiety was higher than percent of males; however, we could not find a significant difference. Women are more vulnerable to stress and post traumatic stress disorder than men.^[13,14] In previous studies, the prevalence of anxiety is shown to be higher in women than in men.^[9,11,14-16]

Considering age, we found that prevalence and severity of anxiety were significantly higher in younger participants than older participants where 85% of population aged between 18 and 24 had anxiety and 65% of population aged between 35 and 44. Similar results were reported by Maroufizadeh S who reported that prevalence was higher in young and middle-aged populations,^[11] and study of Salari N who reported that the highest prevalence of anxiety among population because of COVID-19 was among age group of 21-40 years,^[10] as well as some other studies.^[17,18] This could be explained as young population have many stressors that affect their anxiety level as they worry about educational progress, need for work, preparing new families and building their own future.

According to our results, the prevalence of underweight, overweight and obesity in our study were 7.6%, 28% and 28% respectively and there is no significant relation between BMI of participants and prevalence of anxiety. In study of Alqarni s, almost half of the students (51.5%) have normal weight; and 23.1% and 3.8% are overweight and obese respectively, whereas 19.2% of the respondents are underweight.^[19] Moreover, study of Samreen S confirms our results about the non-significant effect of obesity on anxiety.^[7] Moreover, it was found that prevalence of anxiety was higher in students and not working participants.

Considering the relation between comorbidity of participants and anxiety, we discussed the effect of chronic conditions and psychological conditions. The most prevalent conditions among our population were hypersensitivity, RA) hypertension and DM. Moreover, we found a significant difference between patients with these conditions considering degree of anxiety. Prevalence of anxiety was significantly higher in patients with colon conditions, lupus erythematosus, heart conditions and thyroid dysfunction with 100%, 77.8%, 75%, and 72.7%, whereas patients of anemia represented the highest severity of anxiety (33.3%). Similar results were reported by Peltzer K who found that 19.7% of patients

Table 2: The relation between demographic factors of participants and level of anxiety

Variables	Sub-Variabes	Anxiety				P
		No anxiety	Mild	Moderate	Severe	
Gender	Male	42.1%	34.6%	13.5%	9.8%	0.274
	Female	35.1%	32.2%	17.1%	15.6%	
Age	18-24	15.9%	36.5%	25.4%	22.2%	0.005*
	25-34	44.0%	28.8%	14.1%	13.0%	
	35-44	34.5%	43.1%	10.3%	12.1%	
	45-54	52.6%	31.6%	15.8%	0.0%	
	55-64	50.0%	35.7%	14.3%	0.0%	
Residency	Central region	45.5%	28.7%	13.5%	12.4%	0.015*
	Northern region	39.4%	39.4%	6.1%	15.2%	
	Southern region	23.5%	41.2%	19.6%	15.7%	
	Western region	16.3%	42.9%	26.5%	14.3%	
	Eastern region	51.9%	22.2%	14.8%	11.1%	
BMI	Underweight	20.0%	40.0%	24.0%	16.0%	0.136
	Normal	41.2%	27.7%	19.3%	11.8%	
	Overweight	44.6%	28.3%	16.3%	10.9%	
	Obese	32.6%	42.4%	9.8%	15.2%	
Occupation	Student	19.4%	34.3%	26.9%	19.4%	0.001*
	Worker	44.5%	33.5%	12.8%	9.2%	
	Not-working	34.0%	30.2%	13.2%	22.6%	
Smoking	Yes	30.0%	34.0%	20.0%	16.0%	0.575
	No	39.2%	33.0%	14.9%	12.8%	

Table 3: Medical conditions and degree of anxiety

Medical condition	Anxiety				P	
	No anxiety	Mild	Moderate	Severe		
No medical condition	39.3%	33.6%	16.0%	11.1%	0.001*	
Hypertension	46.2%	46.2%	7.7%	0.0%		
DM	58.3%	25.0%	8.3%	8.3%		
Lupus erythematosus	22.2%	22.2%	33.3%	22.2%		
RA	41.2%	23.5%	11.8%	23.5%		
Thyroid condition	27.3%	45.5%	9.1%	18.2%		
Heart condition	25.0%	50.0%	25.0%	0.0%		
Hypersensitivity	33.3%	33.3%	14.8%	18.5%		
Anemia	66.7%	0.0%	0.0%	33.3%		
Colon condition	0.0%	25.0%	50.0%	25.0%		
Psychological conditions						0.000*
No psychological condition	43.6%	32.2%	12.5%	11.7%		
Depression	11.1%	36.1%	25.0%	27.8%		
Anxiety	10.9%	30.4%	34.8%	23.9%		
Bipolar	28.6%	42.9%	0.0%	28.6%		

with stomach and intestinal diseases had anxiety, whereas 22% of patients with cardiovascular conditions, 19.6% of arthritis patients had anxiety.^[20] Yohannes *et al.*^[21] in a systematic review of studies published between 1994 and 2009, found that patients with chronic conditions, and especially patients with obstructive lung disease and cardiovascular diseases can have particularly high rates of anxiety and depression, which had a negative effect on increasing mortality rates and decreasing the quality-of-life levels.

Considering psychological conditions, we found that depressed patients showed more severe anxiety which is in consistency with other studies.^[1,22-25]

This study had some limitations; the first limitation was the use of social media to collect responses which lead to that most of participants were mainly of young age group. However, we used validated questionnaire to assess all variables, these scales aimed for screening rather than diagnosis therefore, they may overestimate the true prevalence. Furthermore, participants may have been untruthful and biases that cannot be excluded.

Conclusion

We found high prevalence of anxiety among our population which was the highest among females, younger participants, students, not-working population and smokers; however, some

significance could be found. Moreover, we found that prevalence of anxiety and severity of anxiety were higher in patients with chronic conditions and depressed patients therefore, there is a need for assessing anxiety among these population in order to reduce the impact of anxiety on quality of life. More investigations should be conducted to find the relation between comorbidity of patients and level of anxiety.

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Conflicts of interest

There are no conflicts of interest.

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