Original Research Article

Incidence and Peak Age of Anxiety Disorders at a General Hospital: a Five-year Cross-sectional Study

Abstract

Introduction: The most prevalent mental disorders which affect up to 33.7% of the population include generalized anxiety disorder, anxiety mixed with depression, panic attack, panic disorder, specific phobia, social phobia, and agoraphobia, all of which fall under the umbrella of anxiety disorder. Its prevalence has increased due to social, environmental, and political changes, and such patients are mostly treated as outpatients. Its incidence rate from 1990 to 2019 slightly increased among the people aged 20–39 and over 75 years, but its prevalence rate over the past 60 years has gradually decreased.

Method: This single-center cross-sectional study initially enrolled 2288 patients with anxiety disorders from January 1, 2016, to December 31, 2020, at Hera General Hospital, Makkah, Saudi Arabia. Data was extracted from the hospital's health information system.

Result: Anxiety disorders developed at an average age of 41.6 years, peak age of 39.5 years, and most frequent age of 38 years, with significant changes in the median age of obsessive-compulsive disorder.

Conclusion: Anxiety disorders are the second most dysfunctional mental disorder in Saudi Arabia, with incident rate of approximately 135 cases per year with an average onset at around 41 years old at our institution.

Keywords: anxiety disorder, peak age, screening, obsessive-compulsive, mental health

Comment [J1]: A cross-sectional study was conducted at Here General Hospital, Makkah, Saudi Arabia.

Introduction

The most prevalent mental disorders which affect up to 33.7% of the population include generalized anxiety disorder, anxiety mixed with depression, panic attack, panic disorder, specific phobia, social phobia, and agoraphobia, all of which fall under the umbrella of anxiety disorder. Its prevalence has increased due to social, environmental, and political changes, and such patients are mostly treated as outpatients [1]. Generalized anxiety disorder is defined by uncontrollable worry that is intense, associated with physical symptoms such as irritability, muscle tension, difficulty concentrating, or sleep disturbance [2]. On the other hand, a diagnosis of mixed anxiety-depressive disorder describes patients with both anxiety and depressive symptoms but does not fulfill the criteria for anxiety or

Comment [J2]: Reference

depressive disorders. Meanwhile, panic disorder is defined by unexpected and recurrent episodes of excessive fear associated with physical symptoms, including heart palpitations, chest pain, dizziness, or shortness of breath [3]. Lastly, a phobia is an intense aversion or fear of a specific situation or object, wherein the emotion felt is not in proportion to the actual danger [3].

The incidence rate of anxiety disorder from 1990 to 2019 slightly increased among people aged 20–39 and over 75 years, but its prevalence rate over the past 60 years has gradually decreased [4]. In 2019, among adults aged 18 years and older, 84.4% developed of symptoms of anxiety, among which 9.5%, 3.4%, and 2.7% developed mild, moderate, and severe symptoms of the disorder, respectively [5]. Women were also more likely to have anxiety symptoms in the past 2 weeks [1]. In 2019, the peak incidence of anxiety disorder was at 10–14 years and 40–44 years of age, followed a decrease afterwards in both sexes. However, this peak has since shifted to 20–50 years of age. On the other hand, the disorder is most prevalent at over 55 years old, which is interestingly higher than incidence.

Screening is the first step to diagnosing and treating anxiety disorders. There is strong evidence confirming the need for a collaborative care model for more effective management [6-7].

This study aims to determine the peak age of anxiety disorders, including other types of anxiety disorders, phobic anxiety disorders, and obsessive-compulsive disorder in a single-center, with the goal of helping our associated primary care centers establish an appropriate age for screening.

Materials & Methods

This was a single-center cross-sectional study that initially enrolled 2288 patients with anxiety disorders from January 1, 2016, to December 31, 2020, at Hera General Hospital, Makkah, Saudi Arabia.

We included patients who were met by a board-certified psychiatrist through primary health care referral, consultation from in-patient departments, or follow-up appointments, between January 1st, 2016 and December 31, 2020. These patients must have been diagnosed with one of the following: agoraphobia, social phobia, specific (isolated) phobias, other phobic anxiety disorders, unspecified phobic anxiety disorder, panic disorder, generalized anxiety disorder, mixed anxiety and depressive disorder, other mixed anxiety disorders, other specified

Comment [J3]: It may be take off in this paragraph …… start only with Materials and Methods ……

Comment [J4]: Criteria of inclusion

Comment [J5]: 31st

anxiety disorders, unspecified anxiety disorder, and obsessive-compulsive disorder. We excluded patients who were interviewed by a board-certified psychiatrist but did not fulfill any International Classification of Diseases (ICD)-10 diagnostic standards for any disorders under phobic anxiety disorders, other anxiety disorders, and obsessive-compulsive disorder. Furthermore, Medical Record Numbers (MRNs) are arranged for each patient at our institution. In case a specific patient had multiple MRNs, the main investigator will neglect the least-used MRN from the follow-up appointments in the study population. In patients with multiple visits, only the first one will be included, and the rest will be neglected from the study.

In this study, panic disorder, generalized anxiety disorder, mixed anxiety and depressive disorder, other mixed anxiety disorders, other specified anxiety disorders, and unspecified anxiety disorder were all grouped under F41 of ICD-10 "Other anxiety disorders," whereas agoraphobia, social phobia, specific (isolated) phobias, other phobic anxiety disorders, and unspecified phobic anxiety disorder were grouped under F40 of ICD-10 "phobic anxiety disorders" [8].

Comment [J6]: Data analysis (suggestion)
To data analysis was used statistical program for social sciences (SPSS) version 26.0.....

The Statistical Program for Social Sciences version 26.0 (2018) was used for statistical analysis. The data inserted into five variables including MRN, name, diagnosis, age, and arrival date. Descriptive analysis and chart builder were the primary methods of analysis.

Comment [J7]: Data analysis not statistics analysis
There not an information about sex distribution of the sample??

Results:

Comment [J8]: Table 1 : Characteristics of sample study (title).
Age N %
Sex N %
Type of disease
Anxiety or other disorders N %
Phobic anxiety .....N %
Obsessive-compulsive N %
Table 1 it to descriptive the sample of the study
Table 2 Time line of an occurrence of diseases and age

Diagnosis (Table 1)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other anxiety disorders	574	84.9	84.9	84.9
	Phobic anxiety disorders	49	7.2	7.2	92.2
	Obsessive-compulsive disorder	53	7.8	7.8	100.0
	Total	676	100.0	100.0	

(Table 1) Total population sample was 676 patients after applying the inclusion and exclusion criteria among 2288 patients. Other anxiety disorders as defined by the ICD-10 (i.e., panic disorder, generalized anxiety disorder, mixed anxiety and depressive disorder, other mixed anxiety disorders, other specified anxiety disorders, and unspecified anxiety disorder) had the highest incidence rate over the 5-year course, at 84.9% of the population sample.

Statistics (Table 2)

Age

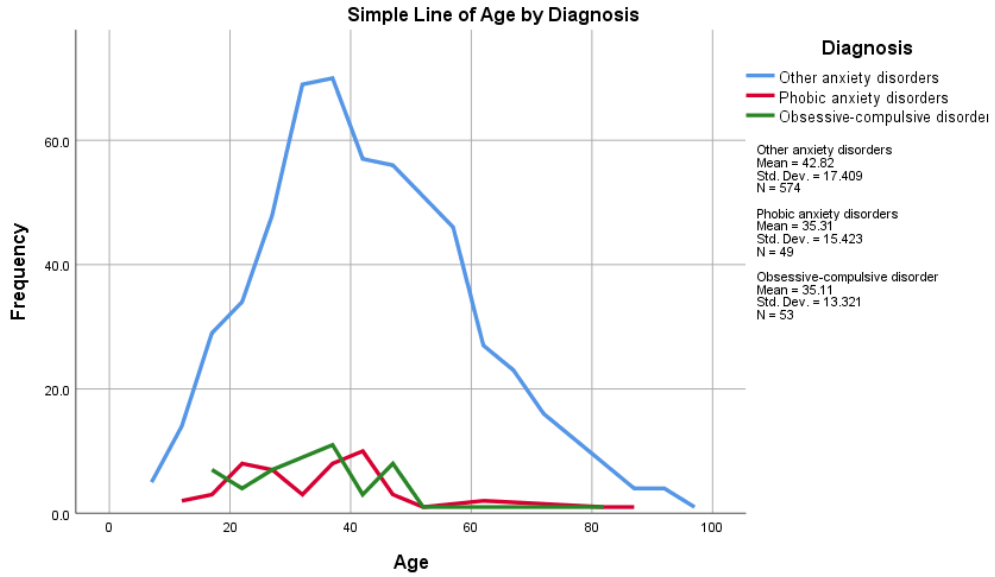
N	Valid	676
	Missing	0
Mean		41.67
Median		39.50
Mode		38

(Table 2) Anxiety disorders developed at an average age of 41.6 years, peak age of 39.5 years, and most frequent age of 38 years. These include agoraphobia, social phobia, specific [isolated] phobias, other phobic anxiety disorders, unspecified phobic anxiety disorder, panic disorder, generalized anxiety disorder, mixed anxiety and depressive disorder, other mixed anxiety disorders, other specified anxiety disorders, unspecified anxiety disorder, and obsessive-compulsive disorder.

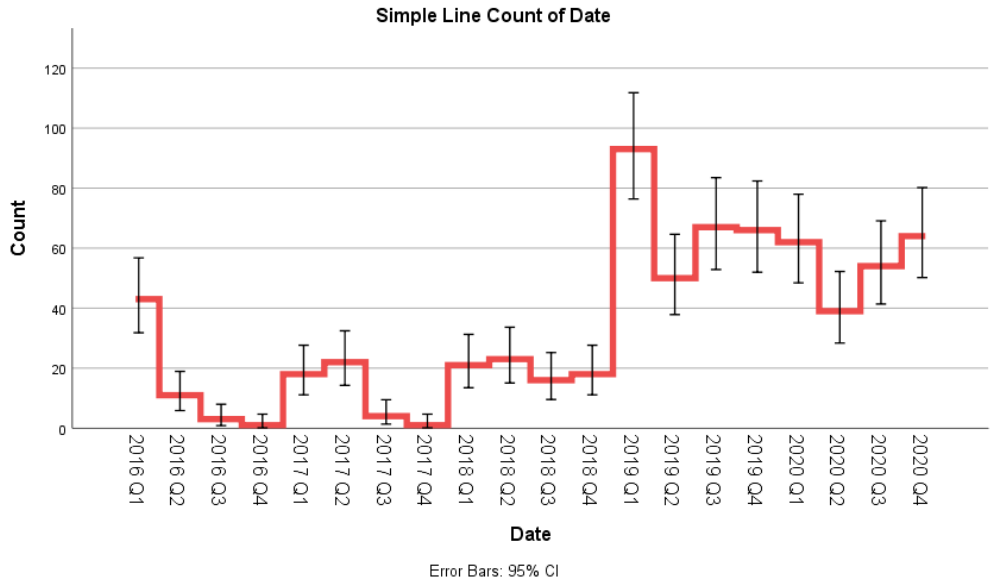
Median (Table 3)

Diagnosis	Age
Other anxiety disorders	41.00
Phobic anxiety disorders	35.00
Obsessive-compulsive disorder	34.00
Total	39.50

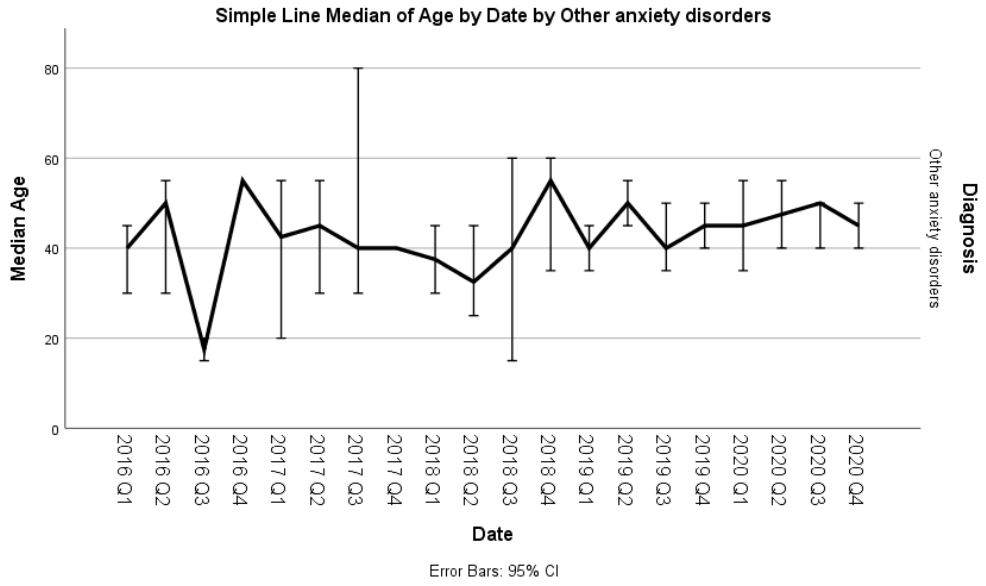
(Table 3) From 2016 to 2020, the peak age for other anxiety disorders, phobic anxiety disorders, and obsessive-compulsive disorder was at 41, 35, and 34 years of age, respectively. The overall median age of anxiety disorders was 39.5 years.



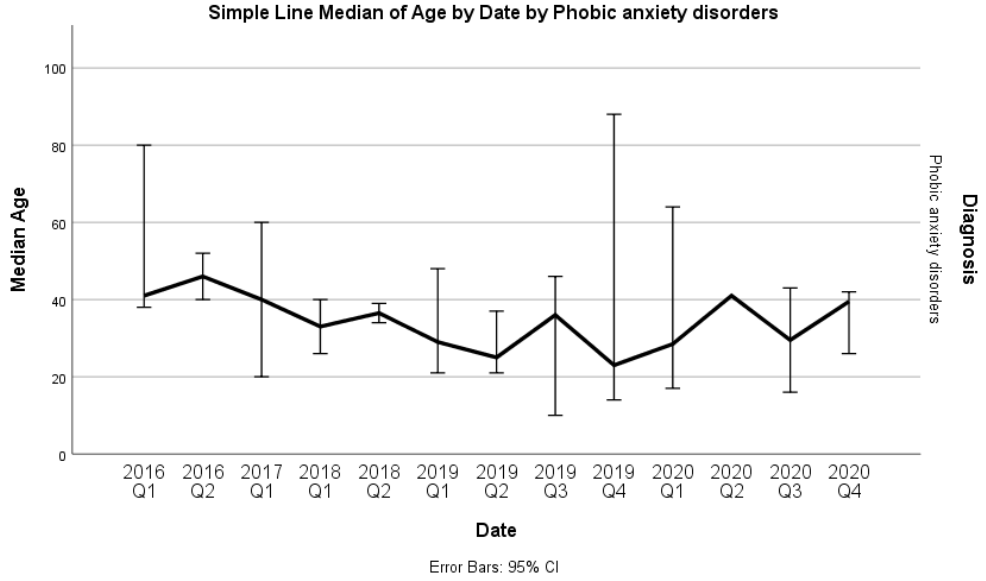
(Figure 1) The average age (± standard deviation) for other anxiety disorders was 42.8 ± 17.4 years. Compared to other anxiety disorders, phobic anxiety disorders and obsessive-compulsive disorder had a lower average age of incidence, specifically by 7 ± 15.4 years and 7 ± 13.2 years, respectively.



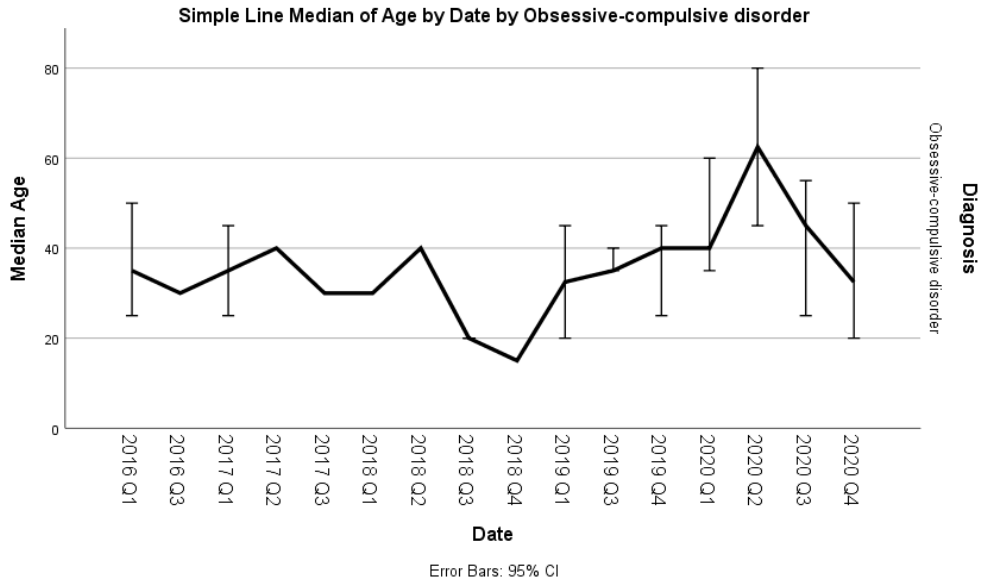
(Figure 2) From 2016 to 2018, the incidence of anxiety disorders was around 20 cases per quarter. By beginning of the 1st quarter of 2019, a major spike took place, with the incidence reaching around 90 cases, then dropping to around 60 cases throughout 2019 and 2020.



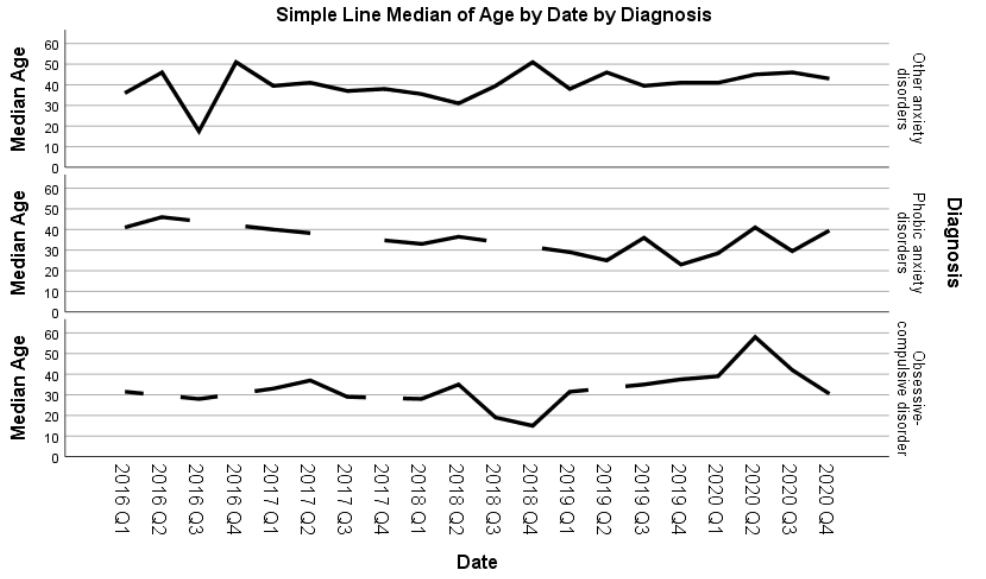
(Figure 3) Other anxiety disorders had a constant peak age at 41 years old, with no significant changes per quarter of each year from 2016 to 2020.



(Figure 4) Phobic anxiety disorders had a constant peak age at 35 years old, with no significant changes per quarter of each year 2016 to 2020.



(Figure 5) Obsessive-compulsive disorder had a peak age of around 60 years at the 2nd quarter of 2020, which was significantly different compared to that in 2016 to 2019, but not compared to the other quarters of 2020.



(Figure 6) The continuous incidence of other anxiety disorders in each quarter from 2016 to 2020 is shown in Figure 6. Phobic anxiety disorders and obsessive-compulsive disorder had some gaps in the graph, since there were 0 incidents during those quarters. Nevertheless, phobic anxiety disorders formed a continuous line from the 4th quarter of 2018 to the end of 2020. The line of obsessive-compulsive disorder gradually prolonged (i.e., had less gaps) over the course of time.

Discussion

Anxiety disorders can possibly be chronic, with patients suffering from years to decades; majority of cases subside only after 65 years of age [5]. In previous studies, different disorders had a significant difference in their age of onset [9]. In particular, anxiety disorders had an earlier onset in countries with good educational systems, suggesting that public awareness is crucial for detecting these disorders [10]. The most prevalent disorder was anxiety disorder in adults, whereas these were phobias and social anxiety in adolescents [5].

Around 85% of anxiety cases in Hera General Hospital involved panic disorder, generalized anxiety disorder, mixed anxiety and depressive disorder, other mixed anxiety disorder, and unspecified anxiety disorder. Our reported percentage is higher than that estimated by Bandelow et al. [11], who reported a highest percentage of 73.2% with panic disorder/agoraphobia.

The incidence rates of other anxiety disorders, phobic anxiety disorders, and obsessive-compulsive disorders in our public general hospital are usually about 114.8, 9.8, and 10.6 cases per year, respectively. Multiple studies estimated incidence per 1000 or 100,000 people, which is unfortunately not possible in our study due to a lack of data on the general population.

A large-scale meta-analysis by Solmi et al. found that the median age of disorders associated with stress, fear-related disorders, and obsessive-compulsive disorder developed at a median age 30, 17, and 18 years, respectively [12]. In contrast, we found that anxiety disorders, phobic anxiety disorders, and obsessive-compulsive disorder developed at a median age of 41, 35, and 34 yearos, respectively.

Comment [J9]: Carried out by Solmi et al;

In 2019, there was a significant spike in the incidence of anxiety disorders. This happened shortly after mental health providers were employed, resulting in an increased awareness regarding such conditions. These improved the capabilities of mental health clinics at the hospital, and thus increased the number of

patients. This could also explain the continuous incidence of phobic anxiety disorders and obsessive-compulsive disorder from start of 2019.

The median age of other anxiety disorders and phobic anxiety disorders did not significantly change over five years. However, by the beginning of the 2nd quarter of 2020, there was a significant spike to a median age of 60 years, which could be an early sign of dementia with Lewy bodies [13,14] or a very late onset of obsessive-compulsive disorder [15].

Limitation:

This study has a few limitations. First, the ICD-10 codes used in encoding diagnoses, due to an outdated hospital health information system, made it difficult to find other publications using similar categories (i.e., other anxiety disorders and phobic anxiety disorders) as those in our study. Second, there was also a lack of local literature regarding the incidence rates, making it difficult to find significant points of comparison to our study.

Comment [J10]: Other limitations " lack of data on the general population"

Conclusion

Anxiety disorders are the second most dysfunctional mental disorder in Saudi Arabia. In our general hospital, this had an incidence rate of approximately 135 cases per year and an average onset at around 41 years old. Our findings can help establishing an optimal age for the screening of anxiety disorders at primary health care centers.

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