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The Prevalence and Influencing Factors for Anxiety among Health Care Workers during the period of COVID-19 in KSMC, Riyadh, Kingdom of Saudi Arabia.

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Abstract:

Keywords: COVID -19, HCWs, MERS-CoV, SDS, SCSQ.

Background: Anxiety among healthcare workers in periods of outbreaks is considered a usual response. In period of COVID-19 all healthcare workers were dealing with serious physical and emotional stress; this stress may lead to psychological disorders such as anxiety, fear, and stigmatization each one of these disorders may have negative effects on quality of healthcare provided.

Objective: to investigate the prevalence and influencing factors for anxiety among health care workers during the period of COVID-19 in KSMC, Riyadh, Saudi Arabia.

Methodology: This is a descriptive quantitative cross-sectional study. Data was collected in April 2020 in Riyadh KSMC during the COVID-19 pandemic. Informed consent was provided by subjects before study commencement. Data was analyzed using SPSS.

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Results: A total of 153 healthcare workers in KSMC in Riyadh were finally enrolled in the current study, most of them were females (66.7%), within the age group of 25-34 years (80.4%) and physicians (62.1%). 58 (37.9%) of the participants have been suspected to have COVID-19 and had the screening test. The average score of the respondents on the Zung Self-rating Anxiety Scale (SAS) was 41.9 ± 11.4. More than two third of the participants (77.1%) had normal scores, while 23 (15%) had mild anxiety, 10 (6.5%) had moderate anxiety and only 2 (1.3%) had severe anxiety. There were significant associations between age, marital status and job title in relation to anxiety (P = 0.000, 0.011, 0.029 respectively). The highest anxiety level was found among the age group of 45 - 54 years and divorced or widowed participants. Nurses had the highest anxiety level followed by physicians. Gender, department and current rotation did not have any significant impact on level of anxiety, as the calculated P values were recorded as 0.524, 0.621 and 0.352 respectively.

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Conclusion: More than two third of respondents had normal scores of anxiety, while nearly a quarter of the participants showed symptoms of anxiety which ranged from mild to severe symptoms. Factors associated with anxiety included age, marital status and job title. The highest anxiety level was recorded among the age group of 45 - 54 years, divorced or widowed participants and nurses.

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الملخص البحثي

معلومات أساسية: الفيروسات التاجية هي مجموعة كبيرة من الفيروسات التي يمكن أن تصيب الحيوانات أو الإنسان، وقد تتسبب في إلتهابات الجهاز التنفسي للبشر وتختلف الأعراض حيث يمكن أن تكون أعراض بسيطة مثل نزلات البرد إلى أمراض أكثر حدة مثل متلازمة الشرق الأوسط التنفسية (MERS) ومتلازمة الالتهاب الرئوي الحاد (SARS). في الآونة الأخيرة ، تم اكتشاف نوع جديد من الفيروسات التاجية المسمى بفيروس كورونا المستجد -19 (COVID-19) وهو المسؤول عن الوباء المنتشر محليًا ودوليًا منذ نهاية شهر ديسمبر 2019 ، بدءًا من مدينة ووهان الصينية.

وفقاً لمنظمة الصحة العالمية فقد وصل عدد المرضى المصابين في جميع أنحاء العالم إلى 723,740 حالة مصابة و 34018 حالة وفاة في 202 دولة.

سرعة انتشار الفيروس وتزايد أعداد الحالات المصابة به في جميع أنحاء العالم قد أدى إلى ظهور الكثير من الإضطرابات الجسدية و النفسية على الطاقم الطبي حيث أن هذا التأثير السلبي قد يؤدي في نهاية المطاف إلى انخفاض في مستوى جودة الرعاية المقدمة وقد تمتد إلى آثار نفسية مزمنه على المدى الطويل.

الأهداف: تحديد معدل انتشار القلق ,الأعراض النفسية والعوامل المؤثرة بين العاملين في مجال الرعاية الصحية في مدينة الملك سعود الطبية في الرياض خلال فترة جائحة فيروس كورونا المستجد.

المنهج المتبع للدراسة: دراسة مستعرضة كمية وصفية في مدينة الملك سعود الطبية بالرياض, شاملة لثلاثة أقسام وهم: طب الأسرة, طب الطوارئ, والطب الباطني. تم جمع البيانات من خلال استبيانات

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إلكترونية تعبئ ذاتيًا عن طريق العاملين في مجال الرعاية الصحية خلال جائحة كورونا المستجد COVID-19.

تقرير نتائج البحث لعوامل القلق المؤثرة على العاملين في المجال الصحي أثناء انتشار وباء كورونا المستجد (Covid-19)

- تم تعبئة الاستبيان الإلكتروني لهذا البحث من قبل 153 عامل/ة في مجال الرعاية الصحية في مدينة الملك سعود الطبية بالرياض في الدراسة الحالية، موضحاً الآتي:

- (66.7٪) من المشاركين هم من النساء.

- (80.4%) من المشاركين من كلا الجنسين، هم من الفئة العمرية 25-34 عامًا.

- (62.1%) من الأطباء والطبيبات.

- تم الاشتباه بإصابة (37.9%) ب Covid-19 وقد تم إجراء اختبار الفحص لهم.

- من المشاركين لديهم درجات طبيعية، (15٪) لديهم قلق بنسبة خفيفة، (6.5٪) لديهم قلق (77.1٪) بنسبة متوسطة و (1.3٪) لديهم قلق بنسبة شديدة.

- كانت هناك ارتباطات ذات دلالة إحصائية بين العمر والحالة الاجتماعية والمسمى الوظيفي فيما يتعلق بالقلق (P= 0.000, 0.011, 0.029) على التوالي.

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- تم العثور على أعلى مستوى للقلق بين الفئة العمرية 45 - 54 سنة والمطلقات أو الأرامل المشاركين. حيث كان لدى التمريض أعلى مستوى من القلق يليه الأطباء. لم يكن للجنس والقسم والدورة التدريبية أي تأثير معنوي على مستوى القلق، حيث تم تسجيل قيمة P المحسوبة على أنها 0.524 و0.621 و0.352 على التوالي.

الخلاصة: أكثر من ثلثي المشاركين لديهم درجات طبيعية من القلق، بينما أظهر ما يقارب من ربع المشاركين أعراض القلق التي تراوحت بين الخفيفة إلى الشديدة. وشملت العوامل المرتبطة بالقلق العمر والحالة الاجتماعية والمسمى الوظيفي. حيث تم تسجيل أعلى مستوى للقلق لدى الفئة العمرية 45 - 54 سنة، والمطلقات والأرامل والعاملين في التمريض..

Introduction

Coronaviruses are a large family of viruses that can affect animals or humans. These include several coronaviruses that are causing respiratory infections in humans vary between the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).

Recently, a newly discovered coronavirus causes coronavirus disease COVID-19. COVID-19 is an infectious disease caused by the newly discovered coronavirus. This new virus and coronavirus disease

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COVID-19 were unknown before the pandemic began in Wuhan, China, in December 2019 (1).

The most common symptoms of COVID-19 are fever, tiredness, dry cough, aches, nasal congestion, runny nose, sore throat or diarrhea. Some patients may have mild symptoms and are usually begin gradually. Other people become infected but asymptomatic and feel well; four out of five of the confirmed cases recover from the disease without any treatment. Around 16% of cases who get infected develop shortness of breath and become very ill. Especially older patients and those with medical problems including high blood pressure, heart disease or diabetes (1, 2).

It is estimated that the number of infected patients worldwide are more than 723,740 cases, with 34,018 deaths spread through 202 countries. As of 30th of March 2020 in the United States confirmed cases are 122,653 and in Italy 97689 cases. In China, the number of infected patients is 82,356 cases, while in Middle East countries Saudi Arabia takes the 1st place of the announced number of confirmed cases of 1453 with COVID-19 (1).

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According to current evidence the main transmission way of COVID-19 virus between people is through respiratory droplets and contact routes. Airborne transmission may be possible in specific circumstances in which procedures that generate aerosols are performed (i.e. open suctioning, administration of nebulized treatment, cardiopulmonary resuscitation, endotracheal intubation, disconnecting the patient from the ventilator, manual ventilation before intubation, non-invasive positive-pressure ventilation, bronchoscopy, and tracheostomy) (3).

Various implemented measures executed by all government authorities worldwide and health authorities including quarantines, reducing the use of public transportations and temporarily canceling work and school with a lot of numerous efforts to control this disease (4).

Health care workers are all people engaged in actions whose primary intent is to enhance, protect and improve the health of their communities (1). While Medical staffs are on the front line workers to treat infected patients but with a higher risk of exposure. The current study has found

the proportion of infected medical staff is 3.8%, which is mainly due to early non-protected contact with infected patients (5, 6).

During this critical situation of COVID-19, Medical staff who are involved in the diagnosis, management, and direct contact with patients are all at high risk of experience psychological distress and symptoms(7). The factors that may contribute to the psychological burden of these health care workers are the growing number of confirmed and suspected cases, occupational burnout, running out of personal protection equipment, extensively wide media coverage, lack of specific drugs, and feelings of being Insufficiently supported (7).

During this situation All medical staff were dealing with serious physical and emotional stress, which is an extraordinary crisis in the history of the hospitals, several previous studies reported that medical staff might suffer unpleasant psychological disorders, such as anxiety, fear, and stigmatization, which occurred during the SARS and Ebola and MERS outbreaks, and could exert an unfavorable impact on care quality (8, 9).

According to WHO’s recommendations for the rational use of personal protective equipment (PPE) in health care and community settings, as

well as during the handling of cargo; PPE includes medical masks, face shield gloves, goggles, and gowns, as well as for specific procedures, respirators (i.e. FFP2 standard or equivalent or N95) (3, 10).

All can contribute in making it much more difficult to carry out medical operations or procedures than under normal conditions. Moreover, the current global stockpile of PPE is lacking, particularly for respirators medical and masks; the supply of goggles and gowns is soon expected to be inadequate also (3, 10). These factors, together with the fear of being contagious and infecting other people especially their families, could increase the possibility of psychological distress among medical staff (10).

A study was conducted in Mecca, Medina and Jeddah in the Kingdom of Saudi Arabia in 2015 included 1216 health care workers found that two-thirds of the HCWs (61.2%) reported anxiety about contracting MERS-CoV from patients (16).

A Gansu (China) study found that the prevalence rate of anxiety and depression symptoms among doctors was 11.4% and 45.6%,

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respectively, and the prevalence rate of anxiety and depression symptoms among nurses was 27.9% and 43.0%, respectively (11).

A study in Fuyang (China) found that the incidence of anxiety in medical staff was 23.04%. Among them, the incidence of severe anxiety, moderate anxiety and mild anxiety was 2.17%, 4.78% and 16.09%, respectively with a higher incidence of anxiety in female medical staff than that in males (12).

Previous Studies showed that healthcare workers have some issues during the outbreaks as fear of contagion and infection of their family, friends, and colleagues (14), and felt uncertainty and stigmatization, 5, 6 reported reluctances to work or contemplating resignation (15), and reported a high level of stress, anxiety, and depression symptoms (13), which could extend the harm to be long-term psychological implications (13).

Similar concerns now arising about mental health, psychological adjustment, and recovery of health care workers who are dealing with COVID-19 patients (7).

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Consequently, it is very crucial to study the mental health status of medical staff, to our knowledge Studies discuss the prevalence of anxiety among medical staff during the COVID-19 outbreak in Saudi Arabia are limited (10).

The aim of our study to explore the prevalence of the anxiety levels of health care workers and identify its risk factors in Riyadh during the COVID-19 pandemic (10).

Our findings might help health authorities or governments to recognize the factors that contribute in anxiety in healthcare workers, thereafter establish early effective actions plans to reduce that anxiety by early recognition of the high risk of anxiety among medical staff, and execute a well-defined psychological intervention program, to avoid medical staff from developing psychological disorders that could potentially exert an unpleasant impact on the fight against pandemic COVID-19 (10, 11).

Literature Review

In outbreak situations, health care workers have a major role, and the risk of exposure and infection will be high (17). In such an event many health care workers experience anxiety and depressive symptoms (18).

There are few known studies to date about the psychological impact of an infectious disease outbreak on health care workers (19). The available studies have assessed the association between outbreaks and psychological disorders (18).

In 2003, At the peak of Severe Acute Respiratory Syndrome (SARS), a study has been done in Hong Kong to assess the psychological impact of SARS outbreak on health care workers showed the high-risk health care workers (who worked at SARS isolation units) had high-stress level (PSS-10 score = 17) and they reported fatigue, worry about health, sleep difficulty and fear of social contact 70.3%, 57.3% 30.2% and 41.7% respectively. One year later, high-risk health care workers were reassessed again, the stress levels remained the same and associated with higher levels of depression and anxiety scores (20).

A cross-sectional study was done in Saudi Arabia 2014 aimed to assess the level of concerns among health care workers regarding MERS

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outbreaks showed 87.8% of participants felt unsafe at work using standard precautions and 70.4% felt at risk of contracting a MERS-CoV infection (17). A similar study of 1216 health care workers 56.5% of them are nurses and 22% are physicians and almost (61.2%) reported anxiety about contracting MERS-CoV from patients (16).

In October 2019, one study has been published aimed to assess the level of anxiety among health care workers in Saudi Arabia regarding MERS found the main anxiety score was 3/5 and non-physicians HCWs have higher anxiety regarding MERS -CoV to their families with a score of 4/5 (21).

During an Ebola outbreak 2013-2016 in Guinea, Liberia and Sierra, the health care workers were at high risk of poor psychological disorders. Caring of patients who are severely ill, high mortality rates and health care systems were severely disrupted as almost 900 health-care workers were infected and more than 500 died due to Ebola all these factors increased the risk of anxiety, depression, and post-traumatic stress disorder (22.23).

A cross-sectional study was done in Gansu (China) aimed to assess the mental health among medical staff in the COVID-19 outbreak. A total of 79 doctors and 86 nurses who were working as the first-line medical staff in specific hospitals and fever clinics of novel coronavirus pneumonia in Gansu Province were included in the study and investigated by using self-rating anxiety scale (SAS), self-rating depression scale (SDS) and the simplified coping style questionnaire (SCSQ) they found that the prevalence rate of anxiety and depression symptoms among doctors was 11.4% and 27.9% among nurses. Having a history of depression or anxiety is a risk factor for developing anxiety and depression symptoms in both doctors and nurses (10).

Another study was done in Hubei province (China) involving 512 health care workers and 164 of them had contacted COVID-19 patients during the treatment period. The prevalence of anxiety was 12.5% ranging from mild (10.35%), moderate (1.36%) and severe (0.78%). The highest anxiety score was seen in those who had a history of taking care of infected patients compared to those who didn't (11). A similar study was done in Fuyang city (China,) they found that the incidence of anxiety in

female medical workers is higher than males and the incidence of anxiety in nurses was higher than doctors (12).

In a cross-sectional study involving 34 hospitals in China where health care workers are covering fever clinics and wards for COVID19 patients and some of them worked in Wuhan hospitals. The result of the study found that nurses, females, frontline medical staff, and those who work in Wuhan were having a more severe degree of all measurements of mental health symptoms compared to the other healthcare providers. On the other hand, frontline healthcare providers who were involved in the diagnosis and management of patients with COVID-19 were associated with a higher risk of having symptoms of depression (7).

A web-based cross-sectional study that has been done to assess the population's mental health related to COVID19 showed that prevalence of anxiety 34.0%, depressive symptoms18.1% and sleep quality18.1% and the healthcare workers were at higher risk for mental illness compared to the general population (24).

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Methods:

Study design: This is a cross-sectional study.

Study setting: This study was conducted in King Saud Medical City in Riyadh, Saudi Arabia.

Study Period: The study was conducted from 1st of April 2020 to 30th of Dec 2020

This is a descriptive quantitative cross-sectional study used to investigate the prevalence and factors linked to anxiety in medical staff during the period of COVID 19.

Data was collected in April 2020 in Riyadh KSMC during the COVID-19 pandemic after obtaining ethical approval from the Research Ethics Committee and informed consent from 3 departments: family medicine, emergency, and internal medicine. Informed consent was provided by subjects before study commencement. After that, we distributed online

self-reported questionnaires to healthcare workers. Electronic copy available at https://0i.is/7hZk

Study participants: healthcare staff included doctors, nurses and administrative workers at KSMC in Riyadh.

Inclusion criteria:

All Health Care Workers in KSMC working in Family Medicine, Emergency Medicine, and Internal Medicine Departments.

Exclusion criteria:

1. Non-KSMC health care workers.
2. KSMC staff who decided not to participate in the study.

Potential risk: Nil.

Potential benefit: The participants were benefited by knowing about their level of anxiety and the risk factors that lead to their condition and then who to deal with it depending on their risk.

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The questionnaire consisted of three parts: 1st include demographic characteristics, such as gender, age, marital status, level of education, department, job title 2nd include Questions included the following: (e.g. Have you ever directly treated a patient with COVID-19; Are you a suspect case who had direct contact with a confirmed case or do you have a fever, fatigue, cough?; Did you adhere to the preventive and control measures in your community?; Do you need psychological treatment?, 3rd part consists of The Zung Self-rating Anxiety Scale (SAS) used to assess medical staff anxiety levels. In SAS, there are 20 items ranked on a 1-4 scale, 15 negative items and 5 positive items which scored reversely from 4 to 1 (items: 5, 9, 13, 17 and 19).

The total raw scores ranging from 20-80, the higher the score, the higher the degree of anxiety. The SAS scores were classified into four categories, including normal (≤49), mild anxiety (50-59), moderate anxiety (60-70), and severe anxiety (≥70). Previous studies have shown that SAS internal consistency reliability was 0.66–0.80 and the Cronbach's alpha was 0.8715.

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Data analysis: Data was coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 23. Qualitative data was expressed in the form of number and percentage (No. & %). Chi-square (χ^2) test was used to examine qualitative data between two groups.

Reliability: Reliability analysis was conducted and revealed that the scale is reliable among the studied population, as Cronbach's coefficient alpha for the total scale was 0.913.

Validity: convergent validity: We measured convergent validity by assessing the relationship between each item and the total score. All the items examined were significant, where correlation between each domain ranged from 0.209-0.797, $p<0.05$.

Ethical permission: Ethical permission was obtained from the Research Ethics Committee, Riyadh, Saudi Arabia.

Results

Socio-demographic characteristics of the participants

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A total of 153 health care workers in KSMC in Riyadh were voluntarily enrolled in this study, majority of them were females (66.7%), 123 (80.4%) were within the age group (25-34) while 18 (11.8%) belonged to the age group (35-44). When marital status was considered, 80 (52.3%) of the participants were married, 66 (43.1%) were single and 7 (4.6%) were Divorced or widowed. Majority of the participants were physicians (62.1%) and worked in family medicine department (58.2%). Concerning the current rotation, most of them worked in family medicine of PHC (17.6%) or family medicine of KSMC (15.7%) **(Table 1)**.

Table 1: Socio-demographic characteristics of the participants (*n* = 153)

Variable	Category	Frequency	Percent
Gender	Male	51	33.3%
	Female	102	66.7%
Age in years	<25	3	2%

	25-34	123	80.4%
	35-44	18	11.8%
	45-54	8	5.2%
	55 and above	1	0.7%
Marital status	Single	66	43.1%
	Married	80	52.3%
	Divorced/widowed	7	4.6%
Job title	Administrative	2	1.3%
	Coordinator	2	1.3%
	Nurse	54	35.3%
	Physician	95	62.1%
Department	Emergency Medicine	20	13.1%
	Family Medicine	89	58.2%
	Internal Medicine	44	28.8%

Current rotation	Cardio	1	0.7%
	Derma	1	0.7%
	Emergency medicine	9	5.9%
	Family medicine KSMC	24	15.7%
	Family medicine PHC	27	17.6%
	General surgery	1	0.7%
	Internal medicine	8	5.2%
	Management	2	1.3%
	Obstetrics & Gynecology	8	5.2%
	Orthopedics	1	0.7%
	Pediatrics	5	3.3%

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	Radiology	2	1.3%
	Not mention	64	41.8%

In this study, 108 (70.6%) of the participating healthcare workers encountered with patients suspected to have COVID-19, 112 (73.2%) come across patient suspected to have COVID-19 and later the case was negative while 84 (54.9%) come across patient suspected to have COVID-19 and later the case was positive.

In addition, 58 (37.9%) of the participants have been suspected to have COVID-19 and had the screening test. Moreover, the vast majority of the participants (93.5%) adhere to the prevention and control measures of COVID-19 in their community. More details are provided in **Table 2**.

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Table 2: Encountering with COVID-19 suspected patients and adherence to prevention and control measures

Question	Yes	No
Do you usually come across patients who are suspected to have COVID-19?	108 (70.6%)	45 (29.4%)
Have you come across patient who was suspected to have COVID-19 and later the case was negative?	112 (73.2%)	41 (26.8%)
Have you come across patient who was suspected to have COVID-19 and later the case was positive?	84 (54.9%)	69 (45.1%)
Have you ever been suspected to have COVID-19 and had the screening test (Nasopharyngeal swab RT-PCR)?	58 (37.9%)	95 (62.1%)
Do you adhere to the prevention and control measures in your community?	143 (93.5%)	10 (6.5%)

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Prevalence of Anxiety among health care workers during COVID-19 pandemic in KSMC, Riyadh, Saudi Arabia

With a range of 20 to 80, the average score of the participants on the Zung Self-rating Anxiety Scale (SAS) was 41.9 ± 11.4. More than two third of the participants (77.1%) had normal scores, while nearly quarter of the participants showed symptoms of anxiety which ranged from mild to severe symptoms. 23 (15%) had mild anxiety, 10 (6.5%) had moderate anxiety and only 2 (1.3%) had severe anxiety. **Figure 1** summarizes this result.

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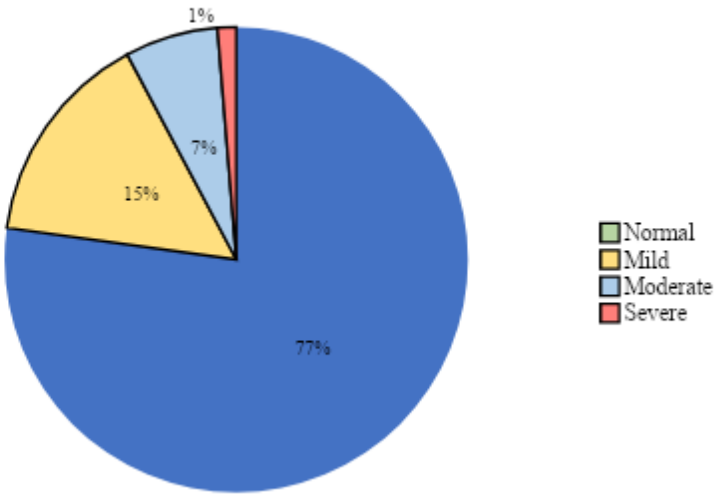
Figure 1: Prevalence of Anxiety among the participants stratified by severity



Factors associated with Anxiety among health care workers during the period of COVID-19 in KSMC, Riyadh, Saudi Arabia

A chi-square test showed that there is a significant association between age and anxiety (P = 0.000), the highest anxiety level was recorded among the age group of 45 - 54 years. We also found that there is a significant relation between marital status and anxiety (p = 0.011), divorced or widowed participants had the highest anxiety level when compared to others. A significant association was also found between job title and anxiety (P = 0.029), nurses had the highest anxiety level

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followed by physicians. On contrary, gender, department and current rotation did not have any significant impact on level of anxiety, as the calculated P values were recorded as 0.524, 0.621 and 0.352 respectively. **Table 3** summarizes this result.

Table 3: Factors associated with Anxiety among health care workers during the period of COVID-19

Variable	Category	Anxiety		P value
		Normal/mild	Moderate/severe	
		N (%)	N (%)	
Gender	Male	48 (94.1%)	3 (5.9%)	**0.524**
	Female	93 (91.2%)	9 (8.8%)	
Age in years	<25	3 (100%)	0	**0.000**
	25-34	118 (95.9%)	5 (4.1%)	
	35-44	15 (83.3%)	3 (16.7%)	

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	45-54	4 (50%)	4 (50%)	
	55 and above	1 (100%)	0	
Marital status	Single	65 (98.5%)	1 (1.5%)	**0.011**
	Married	71 (88.8%)	9 (11.3%)	
	Divorced/widowed	5 (71.4%)	2 (28.6%)	
Job title	Administrative	2 (100%)	0	**0.029**
	Coordinator	2 (100%)	0	
	Nurse	45 (83.3%)	9 (16.7%)	
	Physician	92 (96.8%)	3 (3.2%)	
Department	Emergency Medicine	18 (90%)	2 (10%)	**0.621**
	Family Medicine	81 (91%)	8 (9%)	
	Internal Medicine	42 (95.5%)	2 (4.5%)	
Current rotation	Cardiology	1 (100%)	0	**0.352**
	Dermatology	1 (100%)	0	

	Emergency medicine	9 (100%)	0	
	Family medicine KSMC	18 (75%)	6 (25%)	
	Family medicine PHC	25 (92.6%)	2 (7.4%)	
	General surgery	1 (100%)	0	
	Internal medicine	8 (100%)	0	
	Management	2 (100%)	0	
	Obstetrics & Gynecology	8 (100%)	0	
	Orthopedics	1 (100%)	0	
	Pediatrics	5 (100%)	0	
	Radiology	2 (100%)	0	
	Not mention	60 (93.8%)	4 (6.3%)	

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Discussion

Prevalence of anxiety among healthcare workers during the period of COVID-19 should be determined as anxiety which is a natural body response to stress; can affect healthcare worker's activity and overall performance and as result it is directly related to effectiveness and quality of healthcare service provided by healthcare workers.

The main aim of the current study was to assess the prevalence and influencing factors for anxiety among health care workers during the period of COVID-19 in KSMC, Riyadh, Saudi Arabia.

Most of respondents in this study were females and they are represented by nearly two thirds and one third of them were males. The majority of respondents were within the age group of 25-34 years old. Half of respondents were married. Nearly two thirds of them were physicians. Socio-demographic characteristics of health care workers can affect anxiety level and severity.

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Prevalence of anxiety among healthcare workers in period of COVID-19 was assessed using Zung Self-rating Anxiety Scale (SAS); More than two third of respondents had normal scores, while nearly quarter of the participants showed symptoms of anxiety which ranged from mild to severe symptoms. Fifteen percent of them had mild anxiety, six percent had moderate anxiety and only one percent had severe anxiety. This study revealed significantly higher prevalence of anxiety when compared to other parallel study which conducted in china showing lower prevalence of anxiety among healthcare workers fighting COVID-19 pandemic (11).

More than two thirds of the participating healthcare workers encountered with patients suspected to have COVID-19 and about three quarters of them come across patient suspected to have COVID-19 and later the case was negative while half of them come across patient suspected to have COVID-19 and later the test revealed positive results. This can affect anxiety as when a patient suspected to have COVID-19 and tested positive this could bring uncomfortable feeling or more fear of infection for someone who was in contact with the patient and this was

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demonstrated in other study which conducted by Chen-Yun Liu et al showing increased anxiety among healthcare workers when suspected case confirmed to be COVID-19 positive (10).

About one third of the participants have been suspected to have COVID-19 and had the screening test. The vast majority of the respondents adhere to the prevention and control measures of COVID-19 in their community. Higher numbers of suspected cases among healthcare workers may also contribute to the level of anxiety among healthcare workers and subsequently more adherence to prevention and control measures.

Regarding factors associated with anxiety among health care workers during the period of COVID-19 in KSMC, Riyadh, Saudi Arabia; there was significant association between age and anxiety, the highest anxiety level was recorded among the age group of 45 - 54 years. Also found that there is a significant relation between marital status and anxiety, divorced or widowed participants had the highest anxiety level when compared to others. Significant association was also found between job

title and anxiety, nurses had the highest anxiety level followed by physicians and this could be attributed to the fact that nurses are more in direct contact with patients when compared to physicians; the same finding was found in other study conducted by J Z Huang et al showing nurses have higher anxiety than other healthcare workers fighting COVID-19 pandemic (12).

Gender, department and current rotation did not found to be significantly associated with the level of anxiety. This finding was found to be contradictory to other study conducted in china showing increased anxiety levels among females compared to males (7).

Conclusion

More than two third of respondents had normal scores of anxiety, while nearly a quarter of the participants showed symptoms of anxiety which ranged from mild to severe symptoms. Nearly one third of the respondents have been suspected to have COVID-19 and had the

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screening test. Concerning factors associated with anxiety among health care workers included age, marital status and job title. The highest anxiety level was recorded among the age group of 45 - 54 years, divorced or widowed participants and nurses. Other factors as gender, department and current rotation was not found to be significantly associated with the level of anxiety.

Recommendation

Anxiety prevalence could be reduced by invention and application of more protective measures and after discovery of COVID-19 vaccines more studies need to be done in order to reveal the level of anxiety among healthcare workers after vaccination but anxiety as a general concept is subjective and widely variable even if we assumed protection is nearly hundred percent.

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Authors'curriculum vitae :

1/ Ahlam Almalki : Ahlam.m.almalki@gmail.com , Education: Bachelor's Degree, umm alqura University, Family Medicine Resident 3 at KSMC, Riyadh, Saudi Arabia.

Research Experience: at pre-graduation level Conducted primary source research at numerous archives, with publication history.

2/ Fatima Alghazwani : fatmah.g93@gmail.com , Education: Bachelor's Degree, Kind Saud University, Family Medicine Resident 3 at KSMC, Riyadh, Saudi Arabia.

Research Experience: at pre-graduation level Conducted primary source research at numerous archives, with publication history.

3/ Eman Alfaraj : dr.eemalfaraj@gmail.com , Education: Bachelor's Degree, AlMaarefa University, Family Medicine Resident 3 at KSMC, Riyadh, Saudi Arabia.

Research Experience: at pre-graduation level Conducted primary source research at numerous archives, with publication history.

4/ Nouf Alfulayyih : Nouf.alfleih@hotmail.com , Education: Bachelor's Degree, Kind Saud University, Family Medicine Resident 3 at KSMC, Riyadh, Saudi Arabia.