



## Association between socio-demographical characteristics, comorbidities and anxiety burden during COVID-19 lockdown in Saudi Arabia

Hussain Gadelkarim Ahmed<sup>1, 2✉</sup>, Emad Abboh Abdallah Abboh<sup>1</sup>, Rania Abdeen Hussain Abdalla<sup>1</sup>, Gamal eldin Mohamed Osman Elhussein<sup>1</sup>

<sup>1</sup>College of Medicine, University of Ha'il, Saudi Arabia

<sup>2</sup>Department of Histopathology and Cytology, FMLS, University of Khartoum, Sudan

### ✉Correspondence to:

Prof. Hussain Gadelkarim Ahmed, College of Medicine, University of Ha'il, Saudi Arabia. Email: Hussaingad5@gmail.com

### Article History

Received: 28 August 2020

Reviewed: 29/August/2020 to 30/September/2020

Accepted: 01 October 2020

E-publication: 08 October 2020

P-Publication: September - October 2020

### Citation

Hussain Gadelkarim Ahmed, Emad Abboh Abdallah Abboh, Rania Abdeen Hussain Abdalla, Gamal eldin Mohamed Osman Elhussein. Association between socio-demographical characteristics, comorbidities and anxiety burden during COVID-19 lockdown in Saudi Arabia. *Medical Science*, 2020, 24(105), 3709-3716

### Publication License



This work is licensed under a Creative Commons Attribution 4.0 International License.

### General Note



Article is recommended to print as color digital version in recycled paper.

### ABSTRACT

**Background:** During COVID-19, the majority of the globe nations have experienced horrible difficult times during the COVID -19 outbreak. Thus, the present study aimed to assess the association between socio-demographical characteristics, comorbidities and anxiety burden during COVID-19 lockdown in Saudi Arabia. **Methodology:** In the present descriptive survey, 422 persons (living in the City of Ha'il, Northern Saudi Arabia) were recruited. Both Saudi and non-Saudi persons were included during the COVID-19

lockdown (May 2020). The study was designed to assess the Psychological influence of the COVID-19 outbreak on the community of northern Saudi Arabia. *Results:* Approximately, 84% of the study population was found with some sorts of anxiety. About 206/257(80%) of the males have claimed some sorts of the anxiety of whom 118/206(57%) were found with anxiety level  $\geq 5$ . About 150/165(91%) of the females have claimed some sorts of the anxiety of whom 102/150(68%) were found with anxiety level  $\geq 5$ . The risk of anxiety associated with female gender and the relative risk (RR) the 95% confidence interval (95% CI); RR (95% CI) = 0.4581(0.2666 to 0.7873),  $P = 0.0047$ ,  $z$ -statistic = 2.826. Higher levels of anxiety (level  $\geq 5$ ) were detected in 178/336(53%) Saudi and 42/86(49%) of the non-Saudi participants. The risk of anxiety associated with Saudi participant, RR (95% CI) = 0.8702 (0.5149 to 1.4707),  $P = 0.6036$ ,  $z$  statistic = 0.519. *Conclusion:* Sociodemographic characteristics (especially, gender, job status, and age) are important factors affecting the community during an epidemic crisis, and should be considered by health policymakers. Especial psychologic support is deemed important for patients with chronic comorbidities, particularly hypertensive patients and those with respiratory and cardiovascular diseases.

**Keywords:** COVID-19, anxiety, comorbidities, Saudi Arabia, Sociodemographic.

## 1. INTRODUCTION

The major global outbreak of severe acute respiratory syndrome in late 2019 was caused by coronavirus 2 (SARS-CoV-2), widely termed novel coronavirus 19 (nCOVID-19) (Wang et al., 2020; Lu et al., 2020). COVID-19 disease spread all over the world like a pandemic tragedy affecting all ways of life worldwide. The global health systems faced an impressive complicated situation and many fail to address the catastrophe (RemuzziandRemuzzi, 2020).

This COVID-19 pandemic has several harmful influences ranging from first-line concerns, the medical staff to individuals in the general community. The medical staff was significantly affected as exposed to several pressurized factors including stress, anxiety, and sleep quality (Xiao et al., 2020). At community levels, COVID-19 caused worldwide psychosocial influences strongly linked to panic, financial and pathologic problems.

The COVID-19 forced quarantine applied bycountrywide lockdowns resulted in variable levels of anxiety, fear, obsessive behaviors, depression, and stress. Such factors were intensively powered by information spread by diverse social media. However, the health caregivers at the frontline are intensively influenced as they are at high-risk, experiencing adversative psychologic effects including fear, anxiety, feeling of unsuitability, depression, and bigger material-reliance. The community originated developed programs to combat COVID19 are likely to upset children's habitual lifestyle and may result in florid mental stress. Special attention is needed to older people, people with comorbidities, health care providers, and relegated societies are influenced by this pandemic in diverse means (Dubey et al., 2020).

As many countries have undertaken several quick preventive measures, Saudi Arabia has taken early strict preventive actions including a travel ban, closing borders, and subsequent complete lockdown. Though these actions have reduced the terrible burden of the fatal virus effects, it has some social impacts. Thus, the present study aimed to assess the association between socio-demographical characteristics or comorbidities and anxiety burden during COVID-19 lockdown in Saudi Arabia.

## 2. MATERIALS AND METHODS

In the present descriptive survey, 422 persons (living in the City of Ha'il, Northern Saudi Arabia) were recruited. Both Saudi and non-Saudi persons were included during the COVID-19 lockdown (May 2020). The study was designed to assess the Psychological influence of the COVID-19 outbreak on the community of northern Saudi Arabia. A purposeful electronic questionnaire was planned and dispersed over various social media clusters irrespective of age or gender. The psychological influence of the COVID-19 outbreak was identified through anxiety determinant factors. Every single cognitive question was rated by the participant from 0-10 scores. Zero represented none, and 10 being the greatest. Most of these psychiatric measures in the questionnaire were validated from (Beidas et al., 2015).

### Statistical Analysis

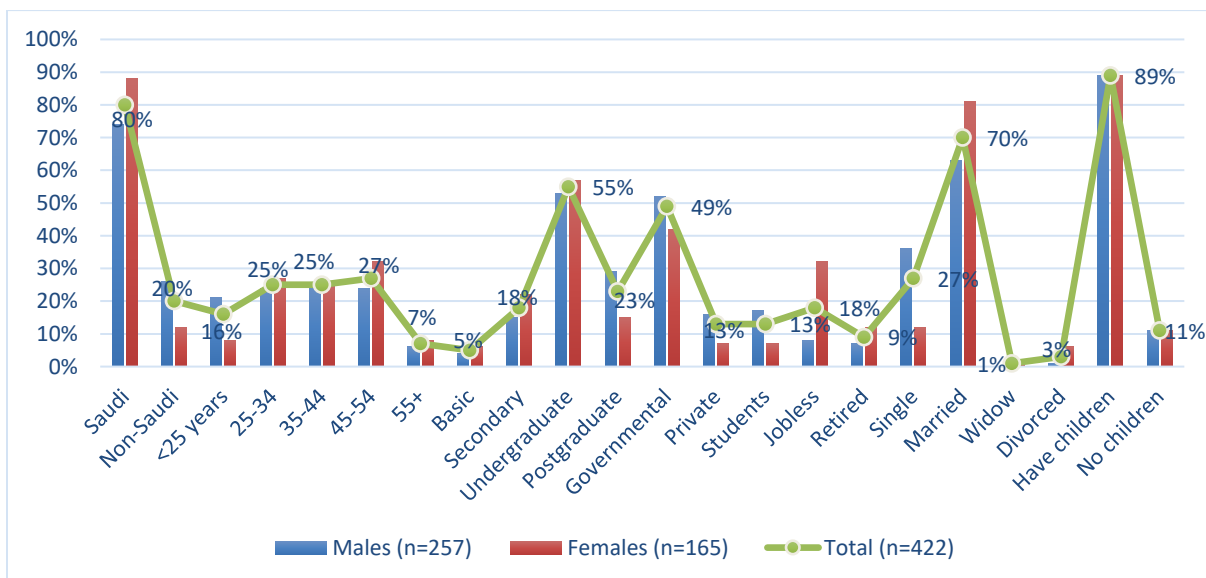
Obtained data were collected in an Excel sheet, then relocated to the SPSS program and analyzed to get frequencies, percentages, and statistically significant values. A Chi-square test was done ( $P$ -value  $< 0.05$  was considered statistically significant). Relative risk was fixed by variables cross-tabulations.

### 3. RESULTS

The present study assessed 422 volunteers their ages ranging from 18 to 65 years with a mean age of  $38 \pm 11.5$  years. The bulk of the study population was aged between 25 to 50 years. Out of the 422 participants, 336/422(80%) were Saudi and the remaining 86/422(20%) were non-Saudi. Most participants were with the undergraduate level of education 230/422(54.5%). Most of the study population were governmental employees 202/422(48%). About 296/422(70%) of the participants were married, as indicated in Table 1, Fig 1.

**Table 1.** Distribution of the study population by demographical characteristics

Category	Variable	Males (n=257)	Females (n=165)	Total (n=422)
<b>Nationality</b>	Saudi	191	145	336
	Non-Saudi	66	20	86
<b>Age</b>	<25 years	55	13	68
	25-34	61	45	106
	35-44	63	42	105
	45-54	62	52	114
	55+	16	13	29
<b>Education</b>	Basic	9	10	19
	Secondary	38	37	75
	Undergraduate	136	94	230
	Postgraduate	74	24	98
<b>Occupation</b>	Governmental	133	69	202
	Private	41	12	53
	Students	44	12	56
	Jobless	21	53	74
	Retired	18	19	37
<b>Marital status</b>	Single	92	20	112
	Married	163	133	296
	Widow	0	2	2
	Divorced	2	10	12
<b>Having children</b>	Yes	229	147	376
	No	28	18	46

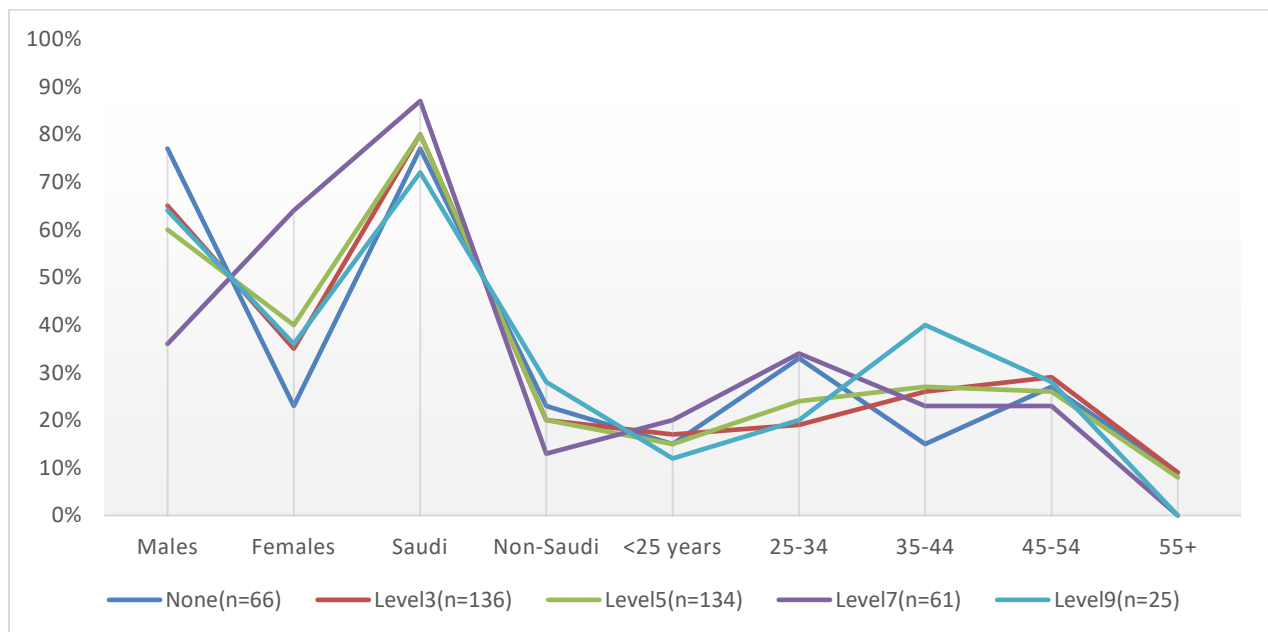


**Figure 1** Study population by demographical characteristics

Approximately, 84% of the study population was found with some sorts of anxiety. About 206/257(80%) of the males have claimed some sorts of the anxiety of whom 118/206(57%) were found with anxiety level  $\geq 5$ . About 150/165(91%) of the females have claimed some sorts of the anxiety of whom 102/150(68%) were found with anxiety level  $\geq 5$ . The risk of anxiety associated with female gender and the relative risk (RR) the 95% confidence interval (95% CI); RR (95% CI) = 0.4581(0.2666 to 0.7873),  $P = 0.0047$ ,  $z$  statistic = 2.826. Higher levels of anxiety (level  $\geq 5$ ) were detected in 178/336(53%) Saudi and 42/86(49%) of the non-Saudi participants. The risk of anxiety associated with Saudi participant, RR (95% CI) = 0.8702 (0.5149 to 1.4707),  $P = 0.6036$ ,  $z$  statistic = 0.519. The levels of anxiety have a relatively similar distribution among all age groups, as indicated in Table 2, Fig 2.

**Table 2.** Distribution of the study population by gender, nationality, age, and anxiety level

Variable	Anxiety level					Total (n=422)
	None (n=66)	Level 3 (n=136)	Level 5 (n=134)	Level 7 (n=61)	Level 9 (n=25)	
<b>Gender</b>						
Males	51	88	80	22	16	257
Females	15	48	54	39	9	165
<b>Nationality</b>						
Saudi	51	107	107	53	18	336
Non-Saudi	15	29	27	8	7	86
<b>Age</b>						
<25 years	10	23	20	12	3	68
25-34	22	26	32	21	5	106
35-44	10	35	36	14	10	105
45-54	18	40	35	14	7	114
55+	6	12	11	0	0	29

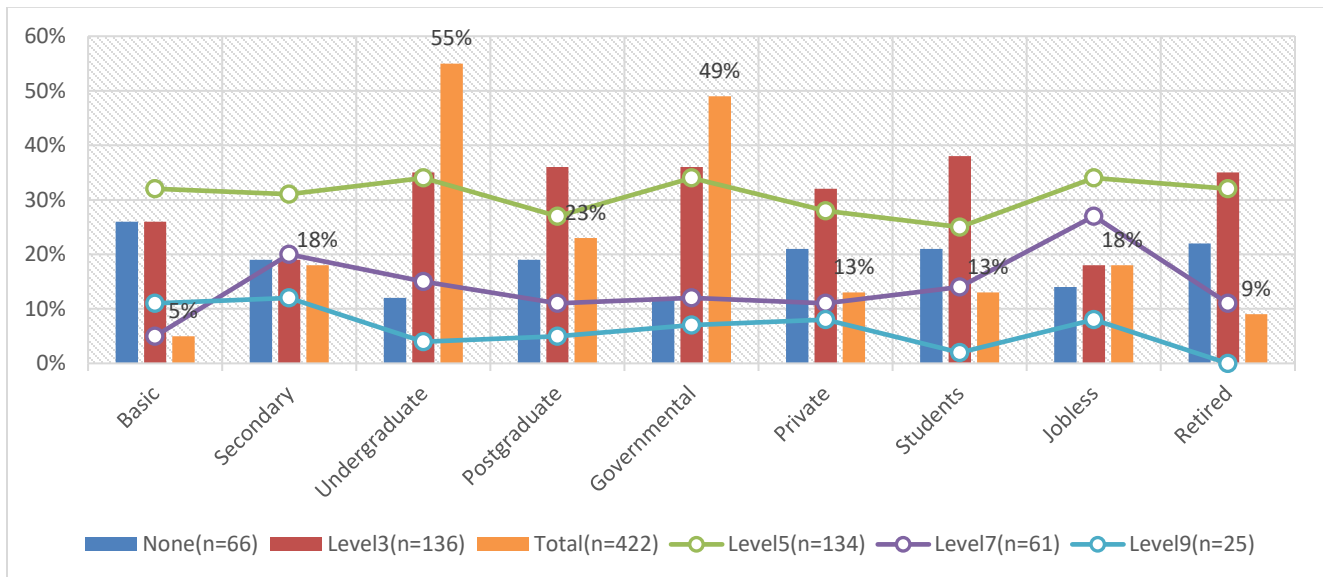


**Figure 2** The study population by gender, nationality, age, and anxiety level

Concerning the education, when calculating the percentages within each education level, the basic education level has the least percentage of anxiety, as indicated in Table 3, Fig 3. On the other hand, governmental employees and jobless showed much higher anxiety levels, as indicated in Table 3, Fig 3.

**Table 3** Distribution of the study population by education level, occupation, and anxiety level

Variable	Anxiety level					Total (n=422)
	None (n=66)	Level 3 (n=136)	Level 5 (n=134)	Level 7 (n=61)	Level 9 (n=25)	
<b>Education</b>						
Basic	5	5	6	1	2	19
Secondary	14	14	23	15	9	75
Undergraduate	28	81	78	34	9	230
Postgraduate	19	36	27	11	5	98
<b>Occupation</b>						
Governmental	25	72	68	23	14	202
Private	11	17	15	6	4	53
Students	12	21	14	8	1	56
Jobless	10	13	25	20	6	74
Retired	8	13	12	4	0	37

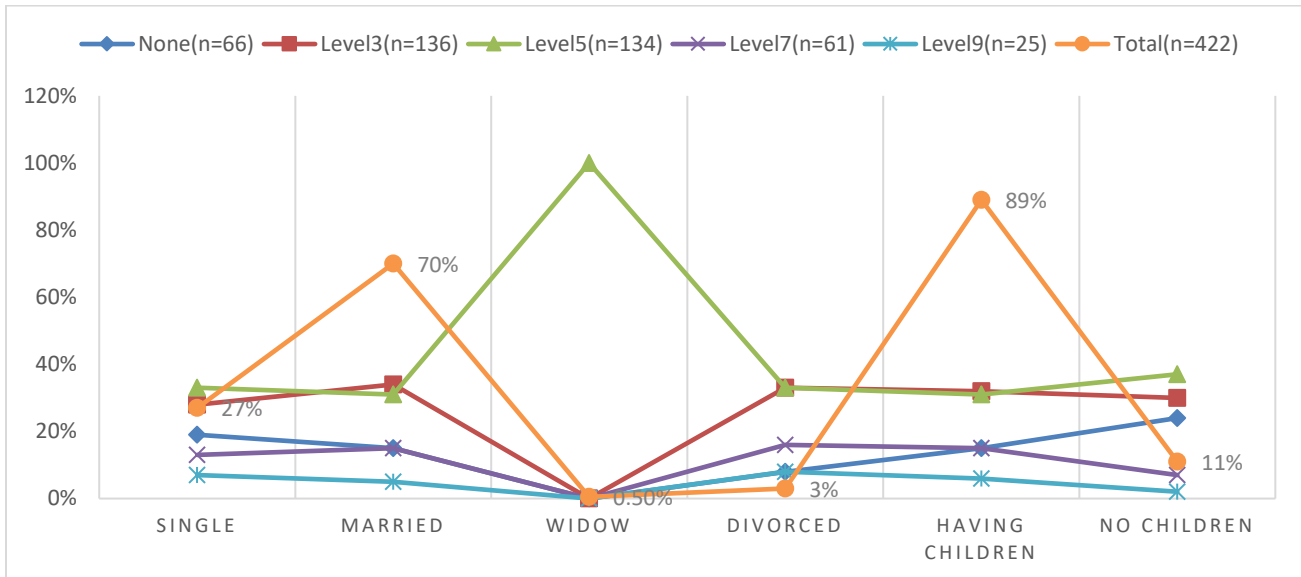


**Figure 3** The study population by education level, occupation, and anxiety level within each variable group

Table 4, Fig 4, summarized the distribution of the study population by marital status, having children, and anxiety level. About 91/112(81.3%), 252/296(85%), 2/2(100%), and 11/12(92%) of the single, married, widow, and divorced, respectively were found with some portions of anxiety. Moreover, 321/376(85%) of those having children and 35/46(76%) of those without children have reported some forms of anxiety.

**Table 4** Distribution of the study population by marital status, having children, and anxiety level

Variable	Anxiety level					Total (n=422)
	None (n=66)	Level 3 (n=136)	Level 5 (n=134)	Level 7 (n=61)	Level 9 (n=25)	
<b>Marital status</b>						
Single	21	31	37	15	8	112
Married	44	101	91	44	16	296
Widow	0	0	2	0	0	2
Divorced	1	4	4	2	1	12
<b>Having children</b>						
Yes	55	122	117	58	24	376
No	11	14	17	3	1	46

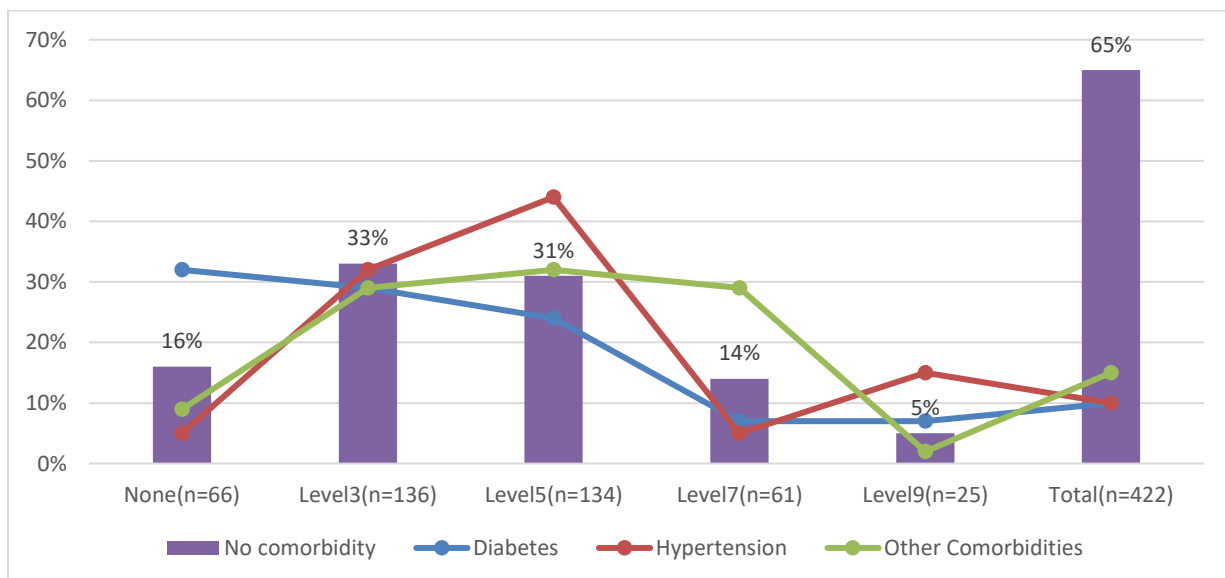


**Figure 4** The study population by marital status, having children, and anxiety level within each variable group

Out of 41 diabetic patients in this study, 28/41(68%) were found with some sorts of anxiety. The risk of Diabetic, RR (95%CI) = 0.8154 (0.6577 to 1.0109), P = 0.0627, z statistic = 1.861. Out of 41 hypertensive patients, 39/41(95%) were found with some sorts of anxiety. The risk of hypertension, RR (95%CI) = 1.1357 (1.0415 to 1.2384), P = 0.0040, z statistic = 2.881. Out of 63 patients with other comorbidities, 57/63(90%) were found with some sorts of anxiety. The risk of chronic diseases, RR (95%CI) = 1.0803 (0.9819 to 1.1884), P = 0.1129, z statistic = 1.585, as indicated in Table 5, Fig 5.

**Table 5** Distribution of comorbidities with anxiety level

Variable	Anxiety level					
	None (n=66)	Level 3 (n=136)	Level 5 (n=134)	Level 7 (n=61)	Level 9 (n=25)	Total (n=422)
Diabetes	13	12	10	3	3	41
Hypertension	2	13	18	2	6	41
Other Comorbidities	6	18	20	18	1	63
No comorbidity	45	93	86	38	15	277



**Figure 5** Comorbidities within the entire group and anxiety level

## 4. DISCUSSION

Difficult times have been experienced by almost every person in the globe during the horrible outbreak of COVID-19 in early 2020. This pandemic and its associated spread preventive measures (including lockdown and panic resulting from media amplification) resulted in several psychological outcomes such as stress, anxiety, and depression. Consequently, in the present study, we assessed the association between socio-demographical characteristics, comorbidities and anxiety burden during COVID-19 lockdown in Saudi Arabia. Our prior hypothesis, whether a particular socio-demographic characteristic or chronic illness can increase or decrease the COVID-19 associated anxiety.

The findings of the present study showed that a large section of the people living in Northern Saudi Arabia has experienced a certain level of anxiety (mild, moderate, or severe). Worldwide mental problems including stress, anxiety, depression, insomnia, and fear were widely reported (Torales et al., 2020). A substantial section of health care workers has experienced psychological and sleep disorders during the outbreak (Pappa et al., 2020).

In the current study, the risk of anxiety associated with female gender and the relative risk (RR) the 95% confidence interval (95% CI); RR (95% CI) = 0.4581(0.2666 to 0.7873),  $P = 0.0047$ ,  $z$  statistic = 2.826. Although females are less likely to be infected particularly in Saudi Arabia (less exposure probability), there scarcely of literature in this regard. However, it was reported that being female is a factor that elevates the psychological disturbances associated with the COVID-19 outbreak (Zhang et al., 2020).

Many people from numerous countries working and living in Saudi Arabia, some with their families and others away from families, locked in the country during the stressed measures. However, no statistically significant differences were noticed between these two groups.

With regard to education, higher anxiety proportions were noticed among less-educated individuals. Such a section of the population is more suitable to engulf roomers and media related false news. Jobless and private sector employees were noticed with higher anxiety levels. This might be associated with the financial burden of the diseases. Moreover, marital status and having children seemed to have no amendment in the anxiety situation.

The association between COVID-19 anxiety and comorbidities have shown variable findings. Although 68% of diabetic patients were found with some sort of anxiety, there was no statistically significant relationship between having diabetes and anxiety during COVID-19 related lockdown. However, Patients with hypertension have showed considerable statistical significance, the RR (95%CI) = 1.1357 (1.0415 to 1.2384),  $P = 0.0040$ ,  $z$  statistic = 2.881. Though other diseases have showed an elevated risk, the overall association was insignificant, the RR (95%CI) = 1.0803 (0.9819 to 1.1884),  $P = 0.1129$ ,  $z$  statistic = 1.585. The results of the present study support several studies in this context, that people with chronic diseases are more suitable for psychiatric problems (Picaza et al., 2020; Shneider et al., 2020).

Although the present has provided valuable data for further measures in this context, it has some limitations including its cross-sectional setting, relatively small sample size, and demonstration of only anxiety as an indication of psychological disturbance.

## 5. CONCLUSION

Sociodemographic characteristics (especially, gender, job status, and age) are important factors affecting the community during an epidemic crisis and should be considered by health policymakers. Especial psychologic support is deemed important for patients with chronic comorbidities, particularly hypertensive patients and those with respiratory and cardiovascular diseases.

### Acknowledgment

The authors would like to thank students at the College of Medicine, University of Ha'il (Sulaiman Saud Eissa Alsamaan, Abdulaziz Saad S Alshammri) for their assistant in data collection.

### Funding

This research has been funded by the Scientific Research Deanship at the University of Ha'il, Saudi Arabia, through project number COVID-1911.

### Ethical approval

All procedures performed in studies involving human participants were following the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards (ethical approval number HREC 00123/CM-UOH.04/20).

**Informed consent**

Informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

**Data and materials availability**

All data associated with this study are present in the paper.

**Peer-review**

External peer-review was done through double-blind method.

**REFERENCES AND NOTES**

1. Beidas RS, Stewart RE, Walsh L, et al. Free, brief, and validated: Standardized instruments for low-resource mental health settings. *CognBehavPract*. 2015;22(1):5-19.
2. Dubey S, Biswas P, Ghosh R, Chatterjee S, Dubey MJ, Chatterjee S, Lahiri D, Lavie CJ. Psychosocial impact of COVID-19. *Diabetes MetabSyndr*. 2020; 14(5):779-788.
3. Lu R, Zhao X, Li J, et al. Genomic characterization and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *Lancet*. 2020; 395(10224):565-574.
4. Pappa S, Ntella V, Giannakas T, Giannakoulis VG, Papoutsis E, Katsaounou P. Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain Behav Immun*. 2020; 88:901-907.
5. Remuzzi A, Remuzzi G. COVID-19 and Italy: what next? *Lancet*. 2020; 395(10231):1225-1228.
6. Shneider A, Kudriavtsev A, Vakhrusheva A. Can melatonin reduce the severity of COVID-19 pandemic? *Int Rev Immunol*. 2020; 39(4):153-162.
7. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatry*. 2020; 66(4):317-320.
8. Wang H, Li X, Li T, Zhang S, Wang L, Wu X, Liu J. The genetic sequence, origin, and diagnosis of SARS-CoV-2. *Eur J ClinMicrobiol Infect Dis*. 2020; 39(9):1629-1635.
9. Xiao H, Zhang Y, Kong D, Li S, Yang N. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Med SciMonit*. 2020; 26:e923549.
10. Zhang WR, Wang K, Yin L, et al. Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China. *PsychotherPsychosom*. 2020; 89(4):242-250.
11. PicazaGorrochategi M, EigurenMunitis A, Dosil Santamaria M, OzamizEtxebarria N. Stress, Anxiety, and Depression in People Aged Over 60 in the COVID-19 Outbreak in a Sample Collected in Northern Spain. *Am J Geriatr Psychiatry*. 2020; 28(9):993-998.