

# Burnout during pandemic COVID-19 in Saudi and non-Saudi nurses in King Abdulaziz hospital, Makkah

Majda Rashed Khairi<sup>1\*</sup>, Mashael Abdunasser Ahmad Abdulrahman<sup>1</sup>, Mohammed Salah Alshmemri<sup>1</sup>, May Hassan Bagadood<sup>1</sup>, Sanaa Awwad Alsulami<sup>1</sup>

<sup>1</sup>Faculty of Nursing, Umm Al-Qura University, Makkah 24382, Saudi Arabia.

\*Corresponding to: Majda Rashed Khairi, Faculty of Nursing, Umm Al-Qura University, Makkah 24382, Saudi Arabia. E-mail: just4u.mom.233@gmail.com.

## Author contributions

MRK participated in the study design and wrote the first draft of the manuscript. MAA and MRK collected and processed the samples, then analyzed the data. MSA revised and supervised the manuscript. MHB and SAA reviewed the final manuscript. All authors agreed to the final manuscript.

## Competing interests

The authors declare no conflicts of interest.

## Acknowledgments

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

## Peer review information

Nursing Communications thanks all anonymous reviewers for their contribution to the peer review of this paper.

## Abbreviations

KAAH, King Abdulaziz hospital; EE, emotional exhaustion; DP, depersonalization/loss of empathy; ANOVA, analysis of variance; KSA, Kingdom of Saudi Arabia.

## Citation

Khairi MR, Ahmad Abdulrahman MA, Alshmemri MS, Bagadood MH, Alsulami SA. Burnout during pandemic COVID-19 in Saudi and Non-Saudi nurses in King Abdulaziz hospital, Makkah. *Nurs Commun.* 2023;7:e2023001. doi: 10.53388/IN2023001.

Executive editor: Guang-Ze Ma.

Received: 02 November 2022; Accepted: 07 December 2022;

Available online: 05 January 2023.

© 2022 By Author(s). Published by TMR Publishing Group Limited. This is an open access article under the CC-BY license. (<https://creativecommons.org/licenses/by/4.0/>)

## Abstract

**Background:** COVID-19 put the global health system in a disastrous situation. Nursing plays a vital role in healthcare services. The ratio of burnout increased during this period. In the context of Saudi Arabia, nurses' whether these are Saudi or non-Saudi the burnout due to emotional exhaustion, depersonalization, and personal accomplishment, the situation of burnout could be there. It is, therefore, important to understand the phenomenon of nurse burnout and the factors that contribute to it. This study aims to understand burnout among nurses and the factors that affect nurses during the COVID-19 pandemic. **Methods:** The design of this study was quantitative cross-sectional and correlational. This study population included 255 nurses working in the King Abdulaziz hospital, Makkah, in 2021. Self-administered questionnaire (google forms) was distributed through email and WhatsApp. Statistical analysis system version 9.4 for data analysis and reporting. **Result:** Most of the nurse participants were in the age range 31–40, were females and were Saudi nationals. A Chi-square analysis showed a significant burnout level on the sub-scale of emotional exhaustion and personal accomplishment, while a partial burnout level was observed on the sub-scale of depersonalization. The level of burnout was higher and more significant among Saudi nurses compared to non-Saudi nationals. The impact of demographic variables on burnout showed that nationality, level of education, and duty type were the most influential and significant variables in burnout among Saudi and non-Saudi nurses. **Conclusion:** The findings indicated that nurses' burnout is higher during COVID-19 and is closely related to their working hours. In addition, when nurses are more nervous and depressed, a higher level of burnout will be witnessed. Since depression and frustration are influenced by working hours, attention should be given to this factor, focusing on interventions to alleviate the causes that lead to nurses' burnout.

**Keywords:** burnout; COVID-19; nurses; Saudi nurses; non-Saudi nurses

## Background

Working in harmful conditions is when people try to escape as the pressure builds. In a fearful and stressful situation such as the COVID-19 pandemic, healthcare workers, especially nurses, may try to escape in the form of burnout [1]. In recent years, burnout syndrome has become a significant psychosocial problem caused by the inadequate management of chronic stress in the workplace. It is characterized by emotional exhaustion, depersonalization, and low personal fulfillment. Nurses are particularly susceptible to burnout, given the demanding nature of their profession and work environment. In the context of the COVID-19 pandemic, nurses working on the front line are exposed to various stressful situations. Therefore, they are at a high risk of developing burnout syndrome [2].

Burnout is a common phenomenon in various situations affecting an individual's health in all aspects. Burnout is a syndrome that affects not only individual health but also the psychological, physiological, environmental, social, intellectual, and cognitive health around the globe. Prolonged stress and burnout negatively affect an individual's functioning in their duties [3]. Burnout is often observed in healthcare departments where the staff executes their duties in harsh and difficult environments. Working in these challenging conditions for a prolonged period hinders the job performance, state of mind, and well-being of frontline nurses, who are especially prone to burnout [4].

Burnout occurred in 65–75% of nurses during the worst of the COVID-19 pandemic. This disease has led to a massive death toll, inducing fear, terror, and horror among the world's population, especially among nurses working in proximity to it [5]. Because of the potentially deadly nature of the disease, nurses and other medical staff have experienced considerable stress, worry, and vigilance around the concern to protect their health and life, which has led to a high burnout rate among these professionals. The long and sustained work shifts during this crisis have increased their psychological and physical distress [6]. Certain goals provide information regarding the healthcare responses of nurses who perform their duties during a crisis [7]. It is crucial to understand the phenomenon of burnout that nurses can experience working in these situations.

Quantitative cross-sectional research was conducted to evaluate the psychological state of nurses working during a pandemic. The findings indicate that nurses in this situation were susceptible to psychological harm, such as anxiety and depression [5]. Similarly, a large study was conducted on the post-traumatic growth among nurses related to the conditions they experienced during the COVID-19 period, which helped motivate them to provide effective healthcare services to patients. The findings indicate that post-traumatic growth was uncommon among nurses who provided ongoing positive and beneficial healthcare services during the pandemic [8].

It is important to understand that the burnout process among nurses is due to work-related stress and fatigue, which can lead them toward emotional exhaustion and leaving their jobs [9]. The recent research describes nurses' experiences concerning COVID-19 in various countries compared to the Kingdom of Saudi Arabia [10]. It provides information regarding emotional and works fulfillment regarding healthcare services and patient health. Achieving the goals outlined in "Health Vision 2030" requires an understanding of the mental health issues affecting healthcare workers to minimize the risk levels of burnout, especially among nurses, who are the backbone of the Saudi Arabian healthcare system. Therefore, it is vital to understand the differences between nurses regarding their characteristics, duties, management skills, and empathetic skills [11]. The current research will contribute to a better understanding of burnout among nurses by comparing Saudi and non-Saudi nurses in King Abdulaziz hospital (KAAH), Makkah.

## Objectives of the study

This study aims to examine the burnout level among nurses during the COVID-19 pandemic in KAAH in Makkah. The specific aims include

examining the burnout level among nurses working in KAAH in Makkah and exploring the factor that affect nurses' burnout in KAAH during COVID 19 pandemic.

## PICOT question

P = Burnout among Saudi and non-Saudi nurses.

I = Identify the process of burnout among the nurses.

C = Comparison between two distinct populations of nurses: Saudi and non-Saudi.

O = There will be a difference between these two groups of Saudi and non-Saudi nurses.

T = During the period February 2022 to May 2022.

## Research questions

The main research question of this study is "What is the level of burnout among nurses in KAAH in Makkah during the COVID-19 pandemic?" The specific research questions are:

1. What is the level of burnout among nurses Working in KAAH in Makkah?
2. What factors affect nurses' burnout in KAAH in Makkah during the COVID-19 pandemic?

## Key research terms

**Burnout.** Burnout refers to exhaustion, depletion, and functional collapse caused by excessive and prolonged workload, stress, and energy and resource mismanagement. It leads to the withdrawal of people from the workforce due to their inability to cope, resulting in a labour shortage, increasingly heavy workloads of existing staff, and more eradication of certain work tasks [12].

**Pandemic.** A period of crisis in which a serious disease spreads around the globe with severely harmful effects and consequences [13].

**COVID-19 pandemic.** The COVID-19 pandemic is an emergency that started in 2019 when the coronavirus began to infect people on a massive scale and spread rapidly around the globe. The virus spreads from person to person, severely affecting the lungs and other organs and sometimes leading to death [14].

**Nurse.** A healthcare professional who works in various clinical settings to restore and preserve patients' health. Nurses are highly qualified and skilled members of the healthcare department who perform effective treatments and execute management plans around patient care, community development, and protection services [15].

## Methodology

### Research approach

The researcher used a purely quantitative research approach as appropriate for the objectives and research questions of the study.

### Research design

The design of this study was a cross-sectional and correlational one.

### Data collection method

The convenient sampling method was used for the data collection using a survey questionnaire. Informed consent was attached with questionnaires. Ethical and data collection approval was obtained from the relevant departments. The first step involved testing the tool for validation on selected students and gathering the data through a pilot study. Official permission to conduct the study online was obtained from the responsible authorities of the Faculty of Nursing College of Umm Al-Qura University and the Ministry of Education. Approval from the principal of each school was also secured before the data gathering.

### Instruments of data collection

**Social demographic sheet.** The researcher formulated a social demographic questionnaire to obtain information regarding the social demographic variables of the research participants. It included questions related to the gender, age, education level, nationality, and

job title of the participants, their clinical unit section, professional experience, and income level.

**Copenhagen burnout inventory.** Thrush et al. (2021) developed this inventory, which is used to measure burnout in general across all settings. It has been tested in various countries, including the United States [16], Turkey [17], and Canada [18]. It comprises 19 items, three sub-scales of emotional exhaustion (EE), depersonalization/loss of empathy (DP), and personal accomplishment assessment, rated on a 7-point Likert scale ranging from 0 = never to 6 = every day. Its validity and reliability related to the personal burnout scale is 0.90, the client-related burnout 0.93, and the work-related burnout 0.76 [19].

#### Instrument validity and reliability

**Reliability analysis.** In this study, three scales showed adequate to acceptable internal consistency, as Cronbach's alpha reliability coefficient was above 0.7 for each (Table 1). However, there were some deleted questions from the Knowledge scale and the Experience scale, which is the Experience 1 question.

**Validity analysis.** In this study, Pearson's correlation coefficient was appropriately used. The analysis shows that each question has a significant bivariate correlation with at least one sub-scale item of the same scale, with the values of substantial correlations ranging between 0.295 and 0.554. The questionnaire was validated using face validity. In this regard, the study questionnaire was reviewed by a health ethics committee. A valid and reliable questionnaire can produce better results. The analysis showed acceptable internal consistency, as Cronbach's alpha is above 0.7 for all sub-scales of the Copenhagen burnout inventory. In contrast, the validity analysis showed a positive association, as the Pearson correlation coefficients ranged between 0.295 and 0.554.

#### Research setting

The study was conducted in KAAH in Makkah, located in Al-Zahir, on the road leading to Madinah. This important facility has 272 beds serving most general and sub-medical specialties. It also contains intensive care departments, major operations, and a dialysis unit. It has all the auxiliary departments, such as radiology, laboratory, pharmacy and physical therapy.

#### Research population

**Targeted population.** This study population included nurses working in the KAAH, Makkah in year 2021. Only nurses were targeted for the current study.

**Sample size.** An automated method created by Soper (2017) was used to determine the sample size of this study [20]. With a power of 0.8, an  $\alpha$  value of 0.05, a medium effect size of 0.15, and eight descriptive parentheses (nationality, gender, age, marital status, educational level, professional experience, department, profession), the minimum sample size needed in this study was 255 participants.

**Eligibility Criteria:** Inclusion Criteria. Nurse practitioners have Saudi health specializations certificate (registered nurse), are fully vaccinated, nurses familiar with English language and both males and females will be included. Exclusion criteria. Non-registered nurses who have not completed vaccination and nurses who are unable to read, write and speak the English language will be excluded.

**Recruitment Method.** The data collection was taking place over two weeks in March 2022. The questionnaire items were in different formats, including multiple-choice, and used Likert scale questions. Further, the recruitment process was performed through WhatsApp messages and work emails, which the nursing services department sent out to eligible participants. However, due to the circumstances of the COVID-19 outbreak in the hospital, the questionnaire was changed from paper-based to electronic-based after consultation with the nursing director. Then, the Google form of the self-administered questionnaire was appropriately arranged in an effective and safe way to collect and facilitate the management and analysis of data. This questionnaire was provided in English, the nurses' professional language.

#### Data analysis method

After the data collection was completed, the data was exported from the Google form platform in Excel format and uploaded into the statistical analysis system version 9.4 for data analysis and reporting. Uploaded data were screened to identify variables with missing data and outliers were excluded from the analysis.

Furthermore, the sections in the questionnaire that assessed gender, age, education level, nationality, participant's technical title, their section of clinical unit, number of working years, and income as categorical variables were expressed as frequencies and proportions. Moreover, associations between the socio-demographic variables, the Copenhagen Burnout Inventory, and the variables that evaluated the gender, age, education level, nationality, technical title of the participant, section of clinical unit, number of working years, and income questions were determined using either the Chi-square test or Fisher's exact test. The statistical significance was set at the  $P$ -value < 0.05.

#### Ethical and Administrative Consideration

The researcher ensured the anonymity of the participants and the confidentiality of all collected data. The researcher obtained ethical approval from Institutional Review Board, the general director for research and study, and from the Ministry of Health Makkah (IRB # H-02-K-076-0322-671). The Data were kept confidential at Umm Al-Qura university and will be used only for research purposes.

#### Informed consent

Informed consent was obtained from all participants before the data collection. In this study, those who consented to take part were provided comprehensive information on the front page of the electronic questionnaire and gave consent for their voluntary participation.

#### Results

Table 2 shows the demographic statistics of the study variables. The findings revealed that most of the nursing participants were in the age range 31–40 years with  $f = 86$ , representing 62.3% of the total participants. Most nurses were young, female, married, and had bachelor's degrees. See Table 2 for more details.

Table 3 shows the percentage frequency of each item's responses regarding their seven-point Likert scale options. The Chi-Square analysis for overall occupational exhaustion scores among the participants on the emotional exhaustion subscale showed that only seven items of this sub-scale are significant. The values show that item number 1 ( $X^2 = 28.58, P = 0.00$ ), item number 6 ( $X^2 = 31.21, P = 0.00$ ), item number 7 ( $X^2 = 29.79, P = 0.00$ ), item number 9 ( $X^2 = 32.73, P = 0.00$ ), which indicates that the level of significance is less than 0.05, and the difference between the observed and expected values are greater than the rest. The rest of the values are significant with a low level of difference. A higher level of the percentage above 50% indicates a greater level of burnout.

Table 4 shows the percentage frequency of each item's responses regarding their seven-point Likert scale options. The segregation of scores shows that item numbers 2 and 3 indicate higher scores, whereas item number 5 shows the lowest scores. The Chi-square analysis for overall occupational exhaustion scores among the participants on the subscale of depersonalization shows that only three items of this sub-scale are significant. The value shows that item number 1 ( $X^2 = 21.17, P = 0.00$ ) and item number 4 ( $X^2 = 14.27, P = 0.00$ ).

**Table 1 Results of Reliability Analysis on Factors and the Whole Copenhagen Burnout Inventory**

Factor	Description	Cronbach's alpha
Personal burnout	Sub-scale 1	0.731
Work-related burnout	Sub-scale 2	0.741
Client-related burnout	Sub-scale 3	0.796

**Table 2 Social demographic questionnaire (n = 138)**

Variables	Categories	f	%
Age	20–30 years	27	19.6
	31–40 years	86	62.3
	41–50 years	21	15.2
	51–60 years	4	2.9
Gender	Female	100	72.5
	Male	38	27.5
Nationality	Saudi	82	59.4
	Non-Saudi	56	40.6
Marital status	Single	47	34.1
	Married	81	58.7
	Divorced	10	7.2
Education level	Diploma	26	18.8
	Bachelor	93	67.4
	Postgraduate	19	13.8
Experience	< 5	13	9.4
	5–10	46	33.3
	10–15	50	36.2
	15–20	18	13.0
	20–25	7	5.1
	> 25	4	2.9
Job title	Staff Nurse	85	61.6
	Head or charge nurse	18	13.0
	Nursing supervisor	12	8.7
	Others	23	16.7
	< 5000 Saudi Riyal	28	20.3
Level of income	5000 < 10.000 Saudi Riyal	60	43.5
	> 10.000 Saudi Riyal	50	36.2
	No	39	28.3
Dependent adult	Yes	99	71.7
	No	72	52.2
Dependent children	Yes	66	47.8
	Critical & emergency units	47	34.1
Sections	General units	28	20.3
	Nursing office & Out patient department	35	25.4
	Others	28	20.3

**Table 3 Chi-square analysis for overall occupational exhaustion scores among participants on a sub-scale of emotional exhaustion (n = 138)**

		Overall score for emotional exhaustion							% of burnout	Chi-square	
		Never	At least a few times a year	At least once a month	Several times a month	Once a week	Several times a week	Every day		X <sup>2</sup>	p
1	I feel emotionally exhausted because of my work.	n 8	17	18	37	26	11	21	54.23	28.58	0.000
	%	5.8%	12.3%	13.0%	26.8%	18.8%	8.0%	15.2%			
2	I feel worn out at the end of a working day.	n 7	15	21	28	32	18	17	55.68	21.07	0.002
	%	5.1%	10.9%	15.2%	20.3%	23.2%	13.0%	12.3%			
3	I feel tired as soon as I get up in the morning and see a new working day stretched out in front of me.	n 14	17	23	30	26	10	18	50.12	14.88	0.021
	%	10.1%	12.3%	16.7%	21.7%	18.8%	7.2%	13.0%			
4	Working with people the whole day is stressful for me.	n 24	28	15	27	17	18	9	42.39	14.58	0.024
	%	17.4%	20.3%	10.9%	19.6%	12.3%	13.0%	6.5%			
5	I feel burned out because of my work.	n 14	18	16	28	25	17	20	53.02	7.78	0.254
	%	10.1%	13.0%	11.6%	20.3%	18.1%	12.3%	14.5%			
6	I feel frustrated by my work.	n 13	27	17	38	20	16	7	45.53	31.21	0.000
	%	9.4%	19.6%	12.3%	27.5%	14.5%	11.6%	5.1%			
7	I get the feeling that I work too hard.	n 6	11	19	33	24	15	30	60.27	29.79	0.000
	%	4.3%	8.0%	13.8%	23.9%	17.4%	10.9%	21.7%			
8	Being in direct contact with people at work is too stressful.	n 20	25	18	31	17	13	14	44.81	12.34	0.055
	%	14.5%	18.1%	13.0%	22.5%	12.3%	9.4%	10.1%			
9	I feel as if I am at my wits' end.	n 14	19	20	38	28	10	9	46.98	32.73	0.000
	%	10.1%	13.8%	14.5%	27.5%	20.3%	7.2%	6.5%			

= 0.00) indicate that the level of significance is less the 0.05, and the difference between the observed and expected values is greater than the rest. The rest of the values are significant with a low level of difference. A majority of percentages lower than 50% indicate a lower burnout level.

Table 5 shows the percentage frequency of each item's responses regarding the seven-point Likert scale options. The segregation of scores shows that item numbers 1 and 3 indicate higher scores, whereas item numbers 2 and 7 show the lowest scores. A majority with a percentage level greater than 50% indicates a higher level of burnout.

Table 6 shows the descriptive statistics of all three sub-scales of burnout along with the total burnout. The results show that on the subscale of EE, the scoring range was 1–54, and the majority of scores fell in the high degree with  $n = 58$  and  $\% = 42$ . Similarly, on the sub-scale of DP, the range was 0–30, and the majority of the participants' scores also fell in a high degree, with  $n = 89$  and  $\% = 64.5$ . On the subscale of accomplishment assessment, the majority of the participants' scores achieved a low degree level as  $n = 90$  and  $\% = 65.2$ . The overall total score of burnout scale had a moderate degree level of the participants' responses, with  $n = 67$  and  $\% = 48.6$ , with a potential scoring range of 19–132 (Figure 1).

**Table 4 Chi-square analysis for the overall score for depersonalization/loss of empathy with Likert scale (n = 138)**

		Overall score for depersonalization/loss of empathy							% of burnout	Chi-square	
		Never	At least a few times a year	At least a once a month	Several a times a month	Once a week	Several times a week	Every day		$\chi^2$	p
1	I get the feeling that I treat some clients/colleagues impersonally as if they were objects.	n 30 % 21.7%	13 9.4%	19 13.8%	29 21.0%	23 16.7%	17 12.3%	7 5.1%	43.12	21.174	0.002
2	I influence other people positively through my work.	n 21 % 15.2%	12 8.7%	17 12.3%	27 19.6%	24 17.4%	18 13.0%	19 13.8%	51.57	7.275	0.296
3	I am afraid that my work makes me emotionally harder.	n 20 % 14.5%	17 12.3%	16 11.6%	32 23.2%	17 12.3%	17 12.3%	19 13.8%	49.76	9.507	0.147
4	I'm not really interested in what is going on with many of my colleagues.	n 27 % 19.6%	15 10.9%	25 18.1%	33 23.9%	15 10.9%	14 10.1%	9 6.5%	42.03	22.797	0.001
5	I have the feeling that my colleagues blame me for some of their problems.	n 28 % 20.3%	28 20.3%	18 13.0%	22 15.9%	19 13.8%	11 8.0%	12 8.7%	40.22	14.275	0.027

**Table 5 Chi-square analysis for the overall score Personal accomplishment assessment with Likert scale (n = 138)**

		Overall score personal accomplishment assessment							% of burnout	Chi-square	
		Never	At least a few times a year	At least a once a month	Several a times a month	Once a week	Several times a week	Every day		$\chi^2$	p
1	I can easily understand the actions of my colleagues/supervisors.	n 4 % 2.9%	5 3.6%	16 11.6%	34 24.6%	15 10.9%	24 17.4%	40 29.0%	67.51	57.493	0.000
2	I deal with other people's problems successfully.	n 6 % 4.3%	9 6.5%	16 11.6%	27 19.6%	31 22.5%	22 15.9%	27 19.6%	62.56	28.174	0.000
3	I feel that I influence other people positively through my work.	n 2 % 1.4%	5 3.6%	18 13.0%	30 21.7%	23 16.7%	31 22.5%	29 21.0%	66.67	43.797	0.000
4	I feel full of energy.	n 3 % 2.2%	10 7.2%	21 15.2%	35 25.4%	18 13.0%	27 19.6%	24 17.4%	61.35	34.667	0.000
5	I find it easy to build a relaxed atmosphere in my working environment.	n 7 % 5.1%	8 5.8%	16 11.6%	31 22.5%	33 23.9%	22 15.9%	21 15.2%	60.51	31.623	0.000
6	I feel stimulated when I work closely with my colleagues.	n 3 % 2.2%	6 4.3%	20 14.5%	28 20.3%	32 23.2%	25 18.1%	24 17.4%	63.65	37.203	0.000
7	I have achieved many rewarding objectives in my work.	n 8 % 5.8%	19 13.8%	18 13.0%	37 26.8%	18 13.0%	20 14.5%	18 13.0%	53.86	22.594	0.001
8	In my work, I am very relaxed when dealing with emotional problems.	n 6 % 4.3%	11 8.0%	15 10.9%	39 28.3%	31 22.5%	18 13.0%	18 13.0%	57.97	40.145	0.000

**Table 6 Descriptive statistics of the study variables (n = 138)**

	Low degree		Moderate degree		High degree		Score	
	n	%	n	%	n	%	Range	Mean $\pm$ SD
EE	33	23.9	47	34.1	58	42.0	1–54	27.818 $\pm$ 12.287
DP	20	14.5	29	21.0	89	64.5	0–30	13.818 $\pm$ 6.969
PA	90	65.2	31	22.5	17	12.3	6–48	29.818 $\pm$ 8.437
Total burnout	54	39.1	67	48.6	17	12.3	19–132	70.818 $\pm$ 21.963

EE, emotional exhaustion; DP, depersonalization/loss of empathy; PA, accomplishment assessment; SD, standard deviation.

Table 7 and Figure 2 indicate that the correlation between the research variables is significant, with  $P < 0.05$ . There is a strong correlation between emotional exhaustion and depersonalization ( $r = 0.81, P < 0.05$ ), whereas a weak correlation exists between emotional exhaustion and personal accomplishment ( $r = 0.235, P < 0.05$ ) and between personal accomplishment and depersonalization ( $r = 0.207, P < 0.05$ ).

Table 8 indicates mixed values of analysis of variance (ANOVA) and T-test in the same table. The table shows a significant relationship between EE and nationality (higher in Saudi than non-Saudi) where ( $t = 3.769$  and  $P$ -value = 0.00) and a significant relationship between EE and gender (higher in females than in males) where ( $t = -1.371$  and  $P$ -value = 0.173). There is a significant relationship between EE and marital status (higher in Saudi than non-Saudi) where ( $f = 1.352$  and  $P$ -value = 0.262). There is a significant relationship between EE and education level where ( $f = -6.532$  and  $P$ -value = 0.002).

Table 9 indicates the mixed values of ANOVA and T-test in the same table. The T-test value for nationality ( $t = 4.059, P < 0.05$ ), Saudi and non-Saudi, and independent adult ( $t = -2.128, P < 0.05$ ) are significant. The ANOVA for educational level ( $f = 3.548, P < 0.05$ ) and duty section ( $f = 3.370, P < 0.05$ ) are significant for the demographic variables across depersonalization.

Table 10 indicates mixed values of ANOVA and T-test in the same table. The T-test value for nationality ( $t = 0.798, P < 0.05$ ) and independent adult ( $t = 1.897, P < 0.05$ ) are significant. The ANOVA for educational level ( $f = 0.696, P < 0.05$ ) and for section ( $f = 1.205, P < 0.05$ ) are significant for the demographic variables across depersonalization. The T-test values for the research variables are not significant. The ANOVA is also non-significant for the demographic variables across personal accomplishments.

Table 11 indicates mixed values of ANOVA and T-test in the same table. The T-test value for nationality ( $t = 3.013, P < 0.05$ ) and independent adult ( $t = 0.234, P < 0.05$ ) are significant. The ANOVA for educational level ( $f = 3.122, P < 0.05$ ) and section ( $f = 0.991, P < 0.05$ ) are significant for the demographic variables across depersonalization. The table indicates mixed values of ANOVA and T-test in the same table. The T-test value for nationality ( $t = 3.013, P < 0.05$ ) is significant. The ANOVA for educational level ( $f = 3.122, P < 0.05$ ) and job title ( $f = 2.764, P < 0.05$ ) are significant for the demographic variables across the burnout.

## Discussion

This study aimed to examine the level of burnout during the COVID-19 pandemic among nurses in KAAH in Makkah. Objectives were added to achieve this aim, and the data were analyzed concerning these. The majority of the participants were between the ages of 31–40, most were female 72.5%, and 59.4% were Saudi nurses.

The current study's first objective was to examine burnout among nurses working in KAAH in Makkah. We found Emotional Exhaustion significant on each of the items, as shown in the results. This indicates that emotional exhaustion is the basic and leading element in burnout. This result is similar to the research evidence. Soto-Rubio et al. (2021) found in their cross-sectional research among 250 nurses that the effect of emotional exhaustion on burnout was significantly high [21]. Similarly, the findings of Inocian et al. (2021) also proved that in the era of COVID-19, emotional exhaustion due to psychological and physical work pressure triggered nurses toward burnout [22].

Similarly, DP, a sub-scale of burnout, was partially significant. The possible reason for the low score here might be that females are usually more polite and empathetic, and the majority of the nurses were females. Also, the majority of the nurses were Muslims, for whom the level of empathy is much higher. These results also are supported by Günüşen et al. (2018), who conducted a study in Turkey with the same sample characteristics [23]. The depolarization score was also slightly low, as reported in the current study.

The third sub-scale of burnout was the personal accomplishment assessment; the level of burnout was significantly high. This result

aligns with the theory of achievement, which holds that a person unable to fulfill the desired need and/or achieve a certain goal usually develops a negative attitude and pattern of avoidance that, over time, can contribute to burnout [24]. Moreover, Havens et al. (2018) showed the same findings in a cross-sectional study of nursing burnout, as personal accomplishment assessment was also observed as high [25].

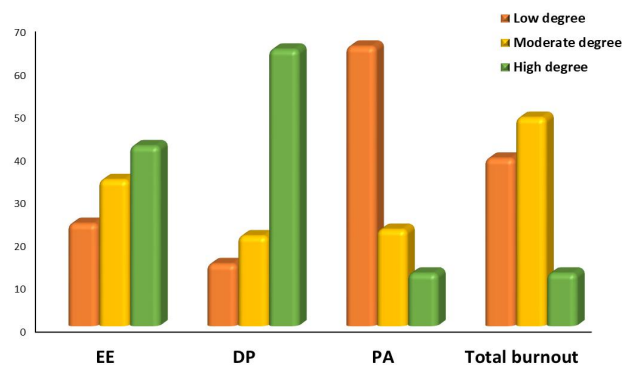


Figure 1 Pie chart for descriptive statistics of the EE, DP, PA and total burnout scale. The graph shows that on EE and DP, the majority of the response scores achieved a high degree, whereas on PA, it was a moderate degree. Overall, on the total burnout scale, the response scores achieved a moderate level. EE, emotional exhaustion; DP, depersonalization/loss of empathy; PA, accomplishment assessment.

Table 7 Correlation analysis between the sub-scales of burnout (n = 138)

		Correlations	
		EE	DP
DP	r	0.810	
	P	< 0.001*	
PA	r	0.235	0.207
	p	0.006*	0.015*

\*, significant value. EE, emotional exhaustion; DP, depersonalization/loss of empathy; PA, accomplishment assessment.

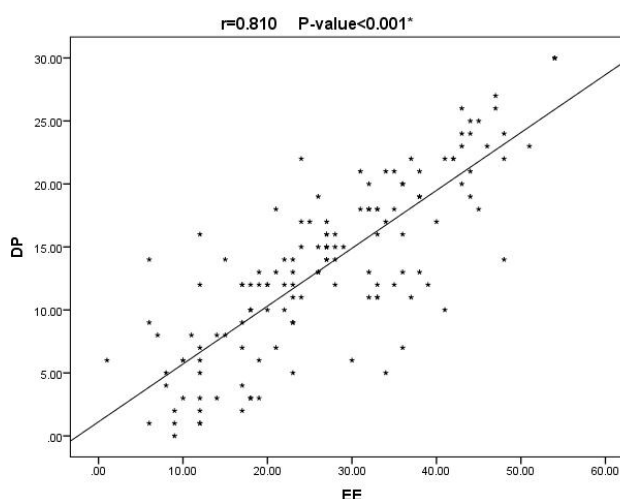


Figure 2 The scatter between emotional exhaustion and depersonalization. Scatter plot indicates that the dispersion of responses aligns with the correlation values, suggesting a strong and significant relationship between emotional exhaustion and depersonalization. EE, emotional exhaustion; DP, depersonalization/loss of empathy.

**Table 8 Mean differences of demographic variables with emotional exhaustion using T-test and ANOVA (n = 138)**

Items	f	Emotional exhaustion			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	P	
Age	20–30 years	27	24.185	±	13.468	F	1.107	0.349
	31–40 years	86	28.570	±	11.855			
	41–50 years	21	25.143	±	12.571			
	51–60 years	4	28.250	±	10.966			
Gender	Female	100	26.300	±	12.956	T	-1.371	0.173
	Male	38	29.500	±	10.112			
Nationality	Saudi	82	30.293	±	11.931	T	3.769	< 0.001*
	Non-Saudi	56	22.625	±	11.438			
Marital status	Single	47	29.191	±	12.612	F	1.352	0.262
	Married	81	26.543	±	12.265			
	Divorced	10	22.900	±	10.137			
Education level	Bachelor	93	24.763	±	12.367	F	6.532	0.002*
	Diploma	26	30.577	±	11.193			
	Postgraduate	19	34.368	±	9.587			
Experience	< 5	13	25.385	±	13.188	F	1.113	0.357
	5–10	46	25.696	±	12.274			
	10–15	50	29.180	±	12.542			
	15–20	18	30.111	±	10.255			
	20–25	7	21.429	±	12.191			
	> 25	4	22.000	±	14.048			
Job title	Staff nurse	85	24.988	±	12.003	F	2.468	0.065
	Head or charge nurse	18	30.056	±	13.964			
	Nursing supervisor	12	31.667	±	10.586			
	Others	23	30.696	±	11.578			
Level of income	< 5000 SAR	28	23.321	±	11.814	F	1.914	0.151
	5000 < 10.000 SAR	60	27.567	±	12.720			
	> 10.000 SAR	50	28.880	±	11.778			
Dependent adult	No	39	27.718	±	13.169	T	0.321	0.749
	Yes	99	26.970	±	11.985			
Dependent children	No	72	25.431	±	12.907	T	-1.762	0.080
	Yes	66	29.091	±	11.364			
Sections	Critical & emergency units	47	24.404	±	12.804	F	2.344	0.076
	General units	28	29.857	±	12.932			
	Nursing office & OPD	35	30.371	±	9.506			
	Others	28	25.179	±	12.942			

ANOVA, analysis of variance; SD, standard deviation; \*, significant value; SAR, Saudi Riyal; OPD, out patient department.

**Table 9 Mean differences of demographic variables with depersonalization using T-test and ANOVA (n = 138)**

Items	f	DP			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	P	
Age	20–30 years	27	12.889	±	8.097	F	0.346	0.792
	31–40 years	86	13.535	±	6.675			
	41–50 years	21	14.905	±	6.678			
	51–60 years	4	13.000	±	8.524			
Gender	Female	100	13.200	±	7.458	T	-1.099	0.274
	Male	38	14.658	±	5.424			
Nationality	Saudi	82	15.488	±	6.650	T	4.059	0.001*
	Non-Saudi	56	10.839	±	6.539			
Marital status	Single	47	14.957	±	6.991	F	1.415	0.247
	Married	81	12.988	±	6.931			
	Divorced	10	12.200	±	6.877			
Education level	Bachelor	93	12.538	±	7.040	F	3.548	0.031*
	Diploma	26	16.192	±	6.229			
	Postgraduate	19	15.263	±	6.632			
Experience	< 5	13	13.769	±	8.136	F	0.904	0.480
	5–10	46	12.370	±	7.215			
	10–15	50	14.260	±	7.039			
	15–20	18	15.556	±	5.316			
	20–25	7	13.857	±	5.367			
	> 25	4	9.750	±	8.461			
Job title	Staff nurse	85	12.447	±	6.902	F	2.166	0.095
	Head or charge nurse	18	14.778	±	8.164			
	Nursing supervisor	12	15.667	±	4.539			
	Others	23	15.870	±	6.690			

**Table 9 Mean differences of demographic variables with depersonalization using T-test and ANOVA (n = 138) (continued)**

Items	f	DP			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	P	
Level of income	< 5000 SAR	28	12.607	±	7.656	F	0.467	0.628
	5000 < 10.000 SAR	60	13.567	±	6.885			
	> 10.000 SAR	50	14.200	±	6.743			
Dependent adult	No	39	11.615	±	7.047	T	-2.128	0.035*
	Yes	99	14.384	±	6.815			
Dependent children	No	72	12.625	±	7.000	T	-1.732	0.086
	Yes	66	14.667	±	6.828			
Sections	Critical & emergency units	47	11.617	±	7.054	F	3.370	0.021*
	General units	28	15.321	±	6.810			
	Nursing office & OPD	35	15.771	±	4.923			
	Others	28	12.500	±	8.212			

ANOVA, analysis of variance; SD, standard deviation; DP, depersonalization/loss of empathy; \*, significant value; SAR, Saudi Riyal; OPD, out patient department.

**Table 10 Mean differences of demographic variables with Personal accomplishment using T-test and ANOVA (n = 138)**

Items	f	PA			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	p	
Age	20–30 years	27	28.481	±	9.321	F	0.840	0.474
	31–40 years	86	29.337	±	8.102			
	41–50 years	21	31.857	±	9.090			
	51–60 years	4	32.500	±	5.196			
Gender	Female	100	29.990	±	8.473	T	0.778	0.438
	Male	38	28.737	±	8.385			
Nationality	Saudi	82	29.171	±	8.419	T	-0.798	0.426
	Non-Saudi	56	30.339	±	8.490			
Marital status	Single	47	28.106	±	8.641	F	1.991	0.140
	Married	81	30.827	±	8.222			
	Divorced	10	27.300	±	8.367			
Education level	Bachelor	93	30.075	±	8.554	F	0.696	0.500
	Diploma	26	27.885	±	9.193			
	Postgraduate	19	29.947	±	6.696			
Experience	< 5	13	29.462	±	7.468	F	0.992	0.425
	5–10	46	29.087	±	9.261			
	10–15	50	28.880	±	8.098			
	15–20	18	33.556	±	6.176			
	20–25	7	30.571	±	7.807			
	> 25	4	27.000	±	14.629			
Job title	Staff nurse	85	28.835	±	8.739	F	0.829	0.480
	Head or charge nurse	18	31.444	±	8.521			
	Nursing supervisor	12	29.500	±	7.013			
	Others	23	31.304	±	7.928			
Level of Income	< 5000 SAR	28	28.071	±	8.472	F	1.527	0.221
	5000 < 10.000 SAR	60	31.033	±	8.059			
	> 10.000 SAR	50	28.860	±	8.767			
Dependent Adult	No	39	31.795	±	8.279	T	1.897	0.060
	Yes	99	28.798	±	8.389			
Dependent Children	No	72	30.222	±	8.133	T	0.839	0.403
	Yes	66	29.015	±	8.775			
Sections	Critical & emergency units	47	30.915	±	9.397	F	1.205	0.311
	General units	28	28.500	±	7.351			
	Nursing office & OPD	35	27.914	±	6.767			
	Others	28	30.821	±	9.464			

ANOVA, analysis of variance; SD, standard deviation; PA, accomplishment assessment; SAR, Saudi Riyal; OPD, out patient department.

**Table 11 Mean differences of demographic variables with the total score of burnout using T-test and ANOVA (n = 138)**

Items	f	Total burnout			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	P	
Age	20–30 years	27	65.556	±	27.392	F	0.561	0.642
	31–40 years	86	71.442	±	20.565			
	41–50 years	21	71.905	±	21.269			
	51–60 years	4	73.750	±	15.966			
Gender	Female	100	69.490	±	22.568	T	-0.812	0.418
	Male	38	72.895	±	20.365			
Nationality	Saudi	82	74.951	±	22.433	T	3.013	0.003*
	Non-Saudi	56	63.804	±	19.629			
Marital status	Single	47	72.255	±	24.597	F	0.829	0.439
	Married	81	70.358	±	21.077			
	Divorced	10	62.400	±	14.585			
Education level	Bachelor	93	67.376	±	22.364	F	3.122	0.047*
	Diploma	26	74.654	±	21.912			
	Postgraduate	19	79.579	±	16.913			
Experience	< 5	13	68.615	±	26.406	F	1.168	0.329
	5–10	46	67.152	±	21.747			
	10–15	50	72.320	±	22.138			
	15–20	18	79.222	±	18.422			
	20–25	7	65.857	±	13.044			
	> 25	4	58.750	±	30.739			
Job title	Staff nurse	85	66.271	±	21.605	F	2.764	0.044*
	Head or charge nurse	18	76.278	±	26.641			
	Nursing supervisor	12	76.833	±	15.183			
	Others	23	77.870	±	19.571			
Level of income	< 5000 SAR	28	64.000	±	24.290	F	1.517	0.223
	5000 < 10.000 SAR	60	72.167	±	20.483			
	> 10.000 SAR	50	71.940	±	22.109			
Dependent adult	No	39	71.128	±	21.257	T	0.234	0.815
	Yes	99	70.152	±	22.336			
Dependent children	No	72	68.278	±	20.796	T	-1.203	0.231
	Yes	66	72.773	±	23.101			
Sections	Critical & emergency units	47	66.936	±	23.177	F	0.991	0.399
	General units	28	73.679	±	24.308			
	Nursing office & OPD	35	74.057	±	16.241			
	Others	28	68.500	±	23.587			

ANOVA, analysis of variance; SD, standard deviation; SAR, Saudi Riyal; OPD, out patient department; \*, significant value.

Similarly, to check the overall burnout level among nurses by including the statements of all three sub-scales, the findings of descriptive analysis showed that burnout was high among nurses during the COVID-19 period. This is supported by the findings of Galanis et al. (2021) and Kisa (2020), which showed that COVID-19 had disastrous effects on healthcare workers [2, 26]. In leading from the front, nursing healthcare workers were in the hotbed of COVID-19, which is why this research also observed a significantly high level of burnout among nurses. Based on the arguments, theories, and research evidence, it was concluded that on all three sub-scales and overall, on the burnout scale, the nurses in KAAH showed a high level of burnout. Therefore, the first objective of the current study was achieved.

T-test analyses were run to measure burnout among Saudi and non-Saudi nurses. Overall, a significant difference was observed, as the mean score on burnout level was higher among the Saudi nurses compared to the non-Saudi nurses. A possible reason for this may be that Saudi nurses are new in this role and are in a learning phase. Recently they have been taking over the healthcare field as a nursing role, which in the recent past was not adequate. COVID-19 was a

disastrous situation, the impact of which rapidly affected the new nursing force, which mainly consisted of Saudi nationals. This logic is supported by recent research, such as Alsulimani et al. (2021), who showed that among Saudi nurses, the burnout level was quite high compared to foreign nurses who were working in Kingdom of Saudi Arabia (KSA) during the pandemic [27]. Moreover, during the Middle East respiratory syndrome outbreak, it was also observed that Saudi nurses showed a significantly higher mean score as compared to non-Saudi nurses [28]. Based on logic and past research evidence, the second objective of the current study was also achieved.

The second objective of the current study was to find out the factor affecting nurse burnout in KAAH during COVID 19 pandemic. On the overall scores of the burnout scale, significant differences were observed for nationality and education. The reason for this significance and the evidence have been discussed in relation to nationality. For education, the possible reason for this significance might be that a higher education level means more experience and a level of maturity. A higher educational level was also helpful in developing coping strategies. Guixia and Hui (2020) suggested that

during COVID-19, the nurses who faced the SARS virus or had an educational background around that specific disease showed significantly different results in relation to emotional exhaustion [1]. This shows the significant role of education as a demographic variable in burnout.

Similarly, job/duty type also showed a significant impact as a demographic variable on the overall burnout scores, as frontline nursing staff interact more directly with COVID-19 patients than nursing heads or other designations. According to Wan et al. (2021), during the COVID-19 period, most of the nursing staff was observed with job burnout compared to other nursing staff, such as nursing heads and supporting staff [29]. This also showed the influence of demographical variables, such as job title, nationality, and education level. Based on this study's findings and support from other research, the third objective of the current study was also achieved.

### Limitations

Like any research, this study had some limitations. First, the sample size was not as representative as it could have been. While thousands of nurses have faced the challenges of working in the COVID-19 environment, in this research, only 138 nurses completed the data collection process. Since the sample size was a small proportion of the larger population, it may affect the generalization of the results. Secondly, this study was conducted in one selected hospital, King Abdul Aziz Hospital, KSA, and only the nurses from this hospital were part of the study. Therefore, the findings and results cannot be generalized to the other nurses working in different hospitals in KSA. Thirdly, this research only focused on burnout.

In contrast, many key aspects related to burnout, such as quality of work life, lack of incentives, social support, and management support, were also not applied. Burnout is not a single element that stands on its own, as there are many psychological drives and reasons behind it, depending on the context. Therefore, this study's focus on the variable of burnout was a limitation.

### Recommendations

Despite these limitations, this study has many strengths, which allow us to give recommendations based on the outcomes. These suggestions can be divided into the following three areas.

#### For nurses and nursing staff

This study suggests that nursing staff should receive more ethical, moral, financial, and educational support. Nurses are the frontline soldiers in healthcare systems across the globe, and they bear the brunt of dealing with disastrous situations. Therefore, nurses' mental strength matters tremendously in dealing with and coping with such demanding conditions. This study also suggests that Saudi nurses need to take on more responsibilities in situations such as the COVID-19 pandemic to gain more exposure and experience dealing with such threats.

#### For hospitals

It is suggested that hospitals need to provide more healthcare facilities such as psychological services, physiotherapy to provide relaxation and other economic incentives to their healthcare staff, especially nurses, to protect them from burnout during the COVID-19 virus. Hospital administrations should prepare a report on the burnout of every nurse and should endeavour to alleviate the conditions causing it to avoid future burnout and loss of vital members of the hospital team. Similarly, hospital administrations should rotate the nursing staff and relax the duty hours to prevent nurses' emotional exhaustion and burnout.

#### For healthcare policymakers

In keeping the nursing staff safe from burnout, the role of healthcare policymakers is very important. It is therefore suggested that policymakers provide adequate knowledge, psychological support,

and training to the nursing staff and hospital administration so that they know what kinds of strategies to apply in the event of a disaster. It is suggested that a psychologist or counsellor be appointed in the hospitals to support the mental health of the nursing staff in coping with crises such as COVID-19.

It is also suggested that psychological and counselling studies be part of the nursing curriculum for nurses to develop effective coping strategies and build mental strength and resilience. In KSA, such revolutionary steps also need to be introduced. Burnout is a serious issue in healthcare systems worldwide, so the KSA "Health Vision 2030" should be supported by policies that address this issue to achieve its goals.

### Conclusion

The main study aim was to measure the difference in burnout levels among Saudi and non-Saudi nurses, and this overall aim was broken into sub-objectives.

Descriptive demographic analysis showed that most nurse participants were in the age range 31–40, were females and were Saudi nationals. Furthermore, a chi-square analysis showed a significant burnout level on the sub-scale of emotional exhaustion. Similarly, a significant burnout level was observed on the sub-scale of personal accomplishment, while a partial burnout level was observed on the sub-scale of depersonalization. The study findings also revealed that burnout was higher and thus more significant among Saudi nurses than non-Saudi nationals. Similarly, regarding the impact of demographic variables on burnout, the findings showed that nationality, level of education, and duty type were the most influential and significant variables on the level of burnout among Saudi and non-Saudi nurses.

The findings showed that Saudi nationals' burnout was significantly higher than in non-Saudis. Therefore, it is recommended to enact better policies and improvements in the nursing structure and management in Saudi Arabia to overcome this problem.

### References

- Guixia L, Hui Z. A Study on Burnout of Nurses in the Period of COVID-19. *Psychol Behav Sci* 2020;9(3):31. Available at: <http://doi.org/10.11648/j.pbs.20200903.12>
- Galanis P, Vraka I, Fragkou D, Bilali A, Kaitelidou D. Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *J Adv Nurs* 2021;77(8):3286–3302. Available at: <http://doi.org/10.1111/jan.14839>
- Dincer B, Inangil D. The effect of Emotional Freedom Techniques on nurses' stress, anxiety, and burnout levels during the COVID-19 pandemic: A randomized controlled trial. *Explore* 2021;17(2):109–114. Available at: <http://doi.org/10.1016/j.explore.2020.11.012>
- Jribi S, Ben Ismail H, Doggui D, Debbabi H. COVID-19 virus outbreak lockdown: What impacts on household food wastage? *Environ Dev Sustain* 2020;22(5):3939–3955. Available at: <http://doi.org/10.1007/s10668-020-00740-y>
- Hacimusalar Y, Kahve AC, Yasar AB, Aydin MS. Anxiety and hopelessness levels in COVID-19 pandemic: A comparative study of healthcare professionals and other community sample in Turkey. *J Psychiatr Res* 2020;129:181–188. Available at: <http://doi.org/10.1016/j.jpsychires.2020.07.024>
- Bontempi E. First data analysis about possible COVID-19 virus airborne diffusion due to air particulate matter (PM): The case of Lombardy (Italy). *Environ Res* 2020;186:109639. Available at: <http://doi.org/10.1016/j.envres.2020.109639>
- Choi KR, Skrine Jeffers K, Cynthia Logsdon M. Nursing and the novel coronavirus: Risks and responsibilities in a global outbreak. *J Adv Nurs* 2020;76(7):1486–1487. Available at: <http://doi.org/10.1111/jan.14369>
- Chen R, Sun C, Chen J, et al. A Large-Scale Survey on Trauma,

- Burnout, and Posttraumatic Growth among Nurses during the COVID-19 Pandemic. *Int J Mental Health Nurs* 2020;30(1):102–116. Available at: <http://doi.org/10.1111/inm.12796>
9. Hu D, Kong Y, Li W, et al. Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. *eClinicalMedicine* 2020;24:100424. Available at: <http://doi.org/10.1016/j.eclinm.2020.100424>
  10. Alsaleh AS, Almotairi AI, Alim BM, Alroqi AS. Prevalence of workplace-related violence among otorhinolaryngology residents in Riyadh, Saudi Arabia. *J Nat Sci Med* 2021;4(2):165. Available at: <https://www.jnsmonline.org/article.asp?issn=2589-627X;year=2021;volume=4;issue=2;spage=165;epage=169;aulast=Alsaleh>
  11. Roslan NS, Yusoff MSB, Asrenee AR, Morgan K. Burnout Prevalence and Its Associated Factors among Malaysian Healthcare Workers during COVID-19 Pandemic: An Embedded Mixed-Method Study. *Healthcare* 2021;9(1):90. Available at: <http://doi.org/10.3390/healthcare9010090>
  12. Yilmaz A. Burnout, job satisfaction, and anxiety-depression among family physicians: A cross-sectional study. *J Family Med Prim Care* 2018;7(5):952. Available at: [http://doi.org/10.4103/jfmpe.jfmpe\\_59\\_18](http://doi.org/10.4103/jfmpe.jfmpe_59_18)
  13. Nochaiwong S, Ruengorn C, Awiphan R, et al. Mental health circumstances among health care workers and general public under the pandemic situation of COVID-19 (HOME-COVID-19). *Medicine* 2020;99(26):e20751. Available at: <http://doi.org/10.1097/MD.00000000000020751>
  14. Daniel SJ. Education and the COVID-19 pandemic. *Prospects* 2020;49(1–2):91–96. Available at: <http://doi.org/10.1007/s11125-020-09464-3>
  15. Shen X, Zou X, Zhong X, Yan J, Li L. Psychological stress of ICU nurses in the time of COVID-19. *Crit Care* 2020;24(1):1–3. Available at: <http://doi.org/10.1186/s13054-020-02926-2>
  16. Thrush CR, Gathright MM, Atkinson T, Messias EL, Guise JB. Psychometric Properties of the Copenhagen Burnout Inventory in an Academic Healthcare Institution Sample in the U.S. *Eval Health Prof* 2020;44(4):400–405. Available at: <http://doi.org/10.1177/0163278720934165>
  17. Ogotlu H, McNicholas F, Turkcapar H. STRESS AND BURNOUT IN PSYCHIATRISTS IN TURKEY DURING COVID-19 PANDEMIC. *Psychiat Danub* 2021;33(2):225–230. Available at: <http://doi.org/10.24869/psyd.2021.225>
  18. Montgomery AP, Azuero A, Patrician PA. Psychometric properties of Copenhagen Burnout Inventory among nurses. *Res Nurs Health* 2021;44(2):308–318. Available at: <http://doi.org/10.1002/nur.22114>
  19. Piperac P, Todorovic J, Terzic-Supic Z, Maksimovic A, Karic S, Pilipovic F, Soldatovic I. The Validity and Reliability of the Copenhagen Burnout Inventory for Examination of Burnout among Preschool Teachers in Serbia. *Int J Env Res Public Health* 2021;18(13):6805. Available at: <http://doi.org/10.3390/ijerph18136805>
  20. Soper DS. A-priori Sample Size Calculator for Structural Equation Models (Software); 2022. Available at: <https://www.danielsoper.com/statcalc>
  21. Soto-Rubio A, Giménez-Espert M del C, Prado-Gascó V. Effect of Emotional Intelligence and Psychosocial Risks on Burnout, Job Satisfaction, and Nurses' Health during the COVID-19 Pandemic. *Int J Env Res Public Health* 2020;17(21):7998. Available at: <http://doi.org/10.3390/ijerph17217998>
  22. Inocian EP, Cruz JP, Saeed Alshehry A, Alshamlani Y, Ignacio EH, Tumala RB.. Professional quality of life and caring behaviours among clinical nurses during the COVID-19 pandemic. *J Clin Nurs* 2021;10.1111/jocn.15937. <http://doi.org/10.1111/jocn.15937>
  23. Günüşen NP, Wilson M, Aksoy B. Secondary Traumatic Stress and Burnout Among Muslim Nurses Caring for Chronically Ill Children in a Turkish Hospital. *J Transcult Nurs* 2017;29(2):146–154. Available at: <http://doi.org/10.1177/1043659616689290>
  24. Burr J, Beck Dallaghan GL. The Relationship of Emotions and Burnout to Medical Students' Academic Performance. *Teach Learn Med* 2019;31(5):479–486. Available at: <http://doi.org/10.1080/10401334.2019.1613237>
  25. Havens DS, Gittel JH, Vasey J. Impact of Relational Coordination on Nurse Job Satisfaction, Work Engagement and Burnout. *J Nurs Adm* 2018;48(3):132–140. Available at: <http://doi.org/10.1097/NNA.0000000000000587>
  26. Kisa S. Burnout among Physicians and Nurses during COVID-19 Pandemic. *Eur J Env Public Health* 2020;4(2):em0055. Available at: <http://doi.org/10.29333/ejeph/8447>
  27. Alsulimani LK, Farhat AM, Borah RA, et al. Health care worker burnout during the COVID-19 pandemic. *Saudi Med J* 2021;42(3):306–314. Available at: <http://doi.org/10.15537/smj.2021.42.3.20200812>
  28. Alenezi, A. *The effects of a burnout prevention program on mental health nurses in the Kingdom of Saudi Arabia (KSA)*. University of Salford (United Kingdom); 2017. Available at: <https://usir.salford.ac.uk/id/eprint/43851>
  29. Wan Z, Lian M, Ma H, Cai Z, Xianyu Y. Factors associated with burnout among Chinese nurses during COVID-19 epidemic: a cross-sectional study. *BMC Nurs* 2022;21(1):1–8. Available at: <http://doi.org/10.1186/s12912-022-00831-3>