

# Nurses' Risk Perception And Perceived Stress During Covid-19 Outbreak In Saudi Arabia

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## Abstract

**Background:** Nurses with other healthcare providers have positioned at the frontlines of the battle against COVID-19 disease which increased their perceived stress. There is a little awareness of factors influencing perceptions of the risk of new emerging infectious diseases such as COVID-19 and how perceptions of risk can lead to perceived stress among nurses.

**Aim:** The aim of this study is to examine the perception of risk and perceived stress of nurses in Saudi Arabia during the outbreak of the COVID-19 pandemic.

**Methods:** A cross-sectional study was applied using online self-administered questionnaire. A convenient sample of 680 nurses in Saudi Arabia were participated in the study. The risk perception scale validated in previous studies was used, including questions to assess participants' risk perception of COVID-19, and the perceived stress scale also was used to identify participants' immediate psychological status and perception of risk. Data analysis was done using descriptive and inferential statistics.

**Results:** The results indicated that nurses have high risk perception regarding COVID-19 and moderate level of perceived stress regarding the new emerging COVID-19 with weighted mean  $\pm$  SD= 3.04 $\pm$ 0.63. The results show that there is a significant correlation between risk perception and perceived stress among nurses ( $r = 0.27$ ,  $p < 0.01$ ).

**Conclusion:** According to the findings of the study, nurses had a moderate degree of stress and a high risk perception level, with a significant correlation between perceived stress and risk perception. To reduce perceived stress among nurses, health authorities and policymakers must investigate strategies to foster a positive perception of Covid risk through an awareness campaign and ongoing educational training.

**Keywords:** Nurses, Risk Perception, Perceived Stress, COVID-19

## Introduction:

Since December 2019 the COVID-19 outbreak has grown around the epicenter of Huanan Seafood Market, a local wet market, in Wuhan, Hubei Province, China (WHO 2019). The outbreak had spread rapidly in the following weeks, with the number of reported and confirmed cases steadily increasing, resulting in a distribution magnitude well exceeding that of the severe acute respiratory syndrome (SARS) in 2003. On 30 January 2020, the out-break of corona virus has been declared as a public health emergency internationally by the World Health Organization(WHO) and by that

time governments all around the world has taken measures and has been declared as in the emergency state. (Liliana Cori, 2020). A total of 307,280 confirmed cases had been recorded by March 22, 2020, 92,378 recovered cases and 13,049 deaths over all the world (WHO 2020). As the number of cases increased at a high rate, panics prevailed among the general population and the capacity of local fever clinics soon became overwhelmed. The rapidly growing number of COVID-19 cases prevented prompt care of any confirmed or suspected patients globally (WHO 2020).

The kingdom of Saudi Arabia faced its first contaminated patients on the first of March 2020 in Qateef, Eastern Regions of Saudi Arabia (MOH 2020). Meanwhile, Saudi Arabia documented 511 cases with 17 recovered cases and reported no mortality. The Saudi Ministry of Health has announced that 25 hospitals and 8000 ICU beds have been prepared to treat affected patients with corona as early as a disaster plan (MOH 2020). Currently, healthcare workers are facing a multitude of challenges in this medical and social context: a sudden outbreak of an epidemic, a steep-ascending workload, a significant risk of workplace injury and abuse, a high risk of infection for themselves and their family members, and inadequate availability of protective material. Nurses account for 50 percent of health workers in Saudi Arabia (MOH, 2018). The psychological reaction of overloaded nurses in terms of the impact of the protection against the epidemic is of great importance. Thus, in the early stages of the COVID-19 outbreak in Saudi Arabia, this research aims to examine nurses' understanding of risk and how this contributes to protective activities, as well as their psychological states.

The significance of understanding the risk associated with the control of infectious diseases has been well-founded in fact. While there is literature on risk perception, there is very little empirical research on the risk perception of the recent (emerging) infectious diseases. Since the outbreak of coronavirus disease in 2019 (COVID-19), more than 3000 (including clinical diagnosis) health care workers (HCWs) have been infected with COVID-19 worldwide (Cori et al. 2020). In confronting these problems and helping to address these concerns, we need to gain more insight into risk perception, precautionary actions and potential implications for promoting psychological well-being strategies for nurses so the aim of this study was to examine nurses' risk perception and perceived stress during the COVID-19 outbreak in Saudi Arabia through achieving the following objectives:

- Assessing the level of nurses' perceived stress and risk perception regarding new emerging infectious diseases such as COVID-19 in Saudi Arabia.
- Assessing the relationship between risk perception and socio-demographic variables such as age, gender, years of experience and direct contact with patients among nurses.
- Assessing the relationship between perceived stress and socio-demographic variables such as age, gender, years of experience and direct contact with patients among nurses.

## **Subjects and Methods:**

### **Research design:**

Cross sectional study design is applied.

### **Data Collection Tools:**

Data collection conducted using an online self-administered structured questionnaire, which included two scales; the risk perception scale, and the perceived stress scale.

### **Sample:**

Convenience sample of 680 nurses working in Ministry of Health facilities across 20 regions were participated in the study. According to Saudi Ministry of Health, the number of health facilities are 35 hospitals, 300 primary healthcare centres including approximately 97,000 nurses (MOH, 2018).

### **Recruitment procedure and ethical considerations:**

All Nurses invited from 35 large hospitals and 300 primary care centres across ministry of health sectors. Recruitment were through online survey system that circulated through all heads and nursing directors of healthcare facilities. Nurses who agreed to participate filled a questionnaire link.

### **Measurements:**

The questionnaire consisted of basic demographic data such as age, gender, marital status and work experience. The risk perception scale was used based on a previously developed scale COVID-19 risk perception questionnaire (Dai, et al., 2020), it focused on risk perception, exposure experiences for COVID\_19. It has 6 items questions which previously designed to investigate the participants' perception of risk to COVID-19, which were assessed on a five-point Likert scale (1. Strongly worried; 2. Worried; 3. Not sure; 4. Not too worried; 5. Not worried at all), with score points of 1 to 5 assigned, a lower score indicating a higher level of concern. The Perceived Stress Scale-10 (PSS-10) also was used it developed to measure the degree to which situations in one's life are appraised as stressful (Cohen & Williamson, 1988). This scale comprised 10 items, each of which is scored on a 5-point Likert-type scale, with

a higher score indicating higher perceived stress. In a systematic review of its measurement properties, Lee, (2012) found that the PSS-10 was short, easy to use, and exhibited acceptable psychometric properties. The present study was used the English version of the PSS-10 to measure the perceived stress of nurses. It exhibited excellent reliability and validity (Lee et al 2015).

**Data analysis:**

The data was analyzed by using Statistical Package for Social Sciences 22.0 (SPSS 22.0). For descriptive statistical analysis; frequencies, percentages, arithmetic means, and standard deviations was used to describe the demographic data. For inferential analysis, Kruskal-Wallis test and Pearson correlation coefficient (r) test was used to examine the relation and association between variables. The statistical test of significance was set at level 0.05.

**Results**

Table 1 shows that the majority of participants were females (91%). Mostly nurses fell within the younger age groups 21-40 (85%). The more than half of nurses were married (54%). Most of the participants (70.1%) had bachelor degree, regarding to job title most of participants (83.8%) were staff nurses

**Table 1:** Distribution of the participants according to socio-demographic characteristics (n=680)

PARAMETERS	FREQUENCY	(%)
<b>AGE (IN YEARS) :</b>		
21-30	295	43.4
31-40	286	42.1
41-50	74	10.9
51-60	16	2.4
>60	9	1.3
<b>GENDER:</b>		
MALE	64	9.4
FEMALE	616	90.6
<b>MARITAL STATUS:</b>		
SINGLE	287	42.2
MARRIED	370	54.4
DIVORCED	18	2.6
WIDOW	5	0.7
<b>EDUCATIONAL QUALIFICATION:</b>		
DIPLOMA	169	24.9
BACHELOR	477	70.1
MASTER	32	4.7
DOCTORATE	2	0.3
<b>JOB TITLE:</b>		
HEAD NURSE	99	14.6
STAFF NURSE	570	83.8
NURSING AID	11	1.6
<b>WITH PATIENT: DIRECT CONTACT:</b>		
YES	523	76.9
NO	157	23.1
<b>YEARS OF EXPERIENCE:</b>		
< 1 YEAR	40	5.9
1-5 YEARS	204	30.0
6-10 YEARS	212	31.2
> 10 YEARS	224	32.9

Table 2 shows the risk perceptions scale results, it clarifies that majority of nurses' responses were strongly worried and worried which indicates that nurses have high risk perception regarding COVID-19

**Table.2:** Distribution of the participants according to their risk perception (n=680)

Item	Strongly worried n (%)	Worried n (%)	Not sure n (%)	Not too worried n (%)	Not worried at all n (%)
1. Are you worried about getting infected with COVID-19 yourself?	281 (41.3)	219 (32.2)	44 (6.5)	100 (14.7)	36 (5.3)
2. Are you worried about your family members getting infected with COVID-19 from you?	356 (52.4)	174 (25.6)	24 (3.5)	52 (7.6)	74 (10.9)
3. Are you worried about medical violence?	221 (32.5)	260 (38.2)	96 (14.1)	77 (11.3)	26 (3.8)
4. Are you worried about colleagues at the frontline (direct contact with the COVID-19 patients)?	332 (48.8)	218 (32.1)	47 (6.9)	69 (10.1)	14 (2.1)
5. Are you worried about inadequate protective measure?	351 (51.6)	189 (27.8)	49 (7.2)	68 (10.0)	23 (3.4)
6. Are you worried about the current grassroots prevention and control strategy?	185 (27.2)	247 (36.3)	96 (14.1)	121 (17.8)	31 (4.6)

Table 3 indicates that the level of nurses' perceived stress regarding the new emerging COVID-19 disease moderate with weighted mean ± SD= 3.04±0.63.

**Table.3:** Distribution of the participants according to their perceived stress (n=680)

Item	Never n (%)	Almost Never n (%)	Some- times n (%)	Fairly Often n (%)	Very Often n (%)
1. How often have you been upset because of something that happened unexpectedly?	73 (10.7)	63 (9.3)	327 (48.1)	114 (16.8)	103 (15.1)
2. How often have you felt nervous and "stressed"?	46 (6.8)	60 (8.8)	355 (52.2)	123 (18.1)	96 (14.1)
3. How often have you felt confident about your ability to handle your personal problems?	58 (8.5)	44 (6.5)	261 (38.4)	171 (25.1)	146 (21.5)
4. How often have you felt that things were going your way?	53 (7.8)	52 (7.6)	353 (51.9)	164 (24.1)	58 (8.5)
5. How often have you found that you could not cope with all the things that you had to do?	92 (13.5)	136 (20)	326 (47.9)	86 (12.6)	40 (5.9)
6. How often have you been able to control irritations in your life?	48 (7.1)	74 (10.9)	317 (46.6)	162 (23.8)	79 (11.6)
7. How often have you found that you could not cope with all the things that you had to do?	93 (13.7)	142 (20.9)	342 (50.3)	69 (10.1)	34 (5.0)
8. How often have you felt that you were on top of things?	66 (9.7)	74 (10.9)	382 (56.2)	108 (15.9)	50 (7.4)
9. How often have you been angered because of things that were outside of your control?	72 (10.6)	96 (14.1)	378 (55.6)	102 (15.0)	32 (4.7)
10. How often have you felt difficulties were piling up so high that you could not overcome them?	94 (13.8)	137 (20.1)	342 (50.3)	83 (12.2)	24 (3.5)

Table 4 shows that there is a significant correlation between risk perception and perceived stress among nurses (r = 0.27, p< 0.01)

**Table (4):** The correlation between risk perception scores and perceived stress (n=680)

Total reported risk perception	Total reported perceived stress	
	r	P
	0.274	0.000*

Note. \* Correlation is significant at the 0.05 level (2-tailed).

The relationship between risk perception and socio-demographic variables has been illustrated in table 5. It shows that there is a statistical significant difference between risk perception and age ( $X^2$  11.70,  $p=0.02$ ), while it is highly statistical significant difference with marital status, educational qualification, and direct contact with patients. However, gender, job title, and years of experience are not significant.

**Table 5:** The relationship between risk perception and socio-demographic (age, gender, years of experience and direct contact with patients)

Parameter	$X^2$	P value
Age	11.70	0.02*
Gender	0.04	0.84
Job title	2.05	0.35
Years of experience	3.97	0.26
Marital status	11.71	0.008**
Educational qualification	23.75	0.000**
Direct interaction or contact with patients	14.79	0.000**

Note: Kruskal-Wallis test was used to assess significance statistics between variables

\* P value is significant at the 0.05 level.

\*\*P value highly significant at the 0.01 level.

The relationship between perceived stress and socio-demographic variables has been illustrated in table 6, which shows that there is a statistical significant difference between perceived stress and age & years of experience, while it is highly statistical significant difference with educational qualifications and direct contact with patients. However, the other variables have no significant relation with perceived stress.

**Table 6:** The relationship between perceived stress and socio-demographic variables such as age, gender, years of experience and direct contact with patients

Parameter	$X^2$	P value
Age	9.92	0.04*
Gender	2.15	0.14
Job title	0.67	0.71
Years of experience	8.64	0.03*
Marital status	6.32	0.09
Educational qualification	19.36	0.000**
Direct interaction or contact with patients	9.24	0.002**

Note: Kruskal-Wallis test was used to assess significance statistics between variables

\* P value is significant at the 0.05 level.

\*\*P value highly significant at the 0.01 level

## Discussion:

Caring in times of pandemics is extremely stressful (Graham Y, et al, 2020) and perception of risk is the intuitive evaluation of individuals based on the hazards that they will or are going to be exposed to, therefore risk perception is considered as an interpretation throughout the world for different stressful situations (D. Peres, 2020). The COVID-19 pandemic is considered a global public health concern since its emergence in December 2019. This study was conducted in Saudi Arabia during June 2020, three months after detection of the first confirmed case of COVID-19 in March 2020 in Qateef, Eastern Regions of Saudi Arabia (MOH 2020).

Based on the results of the present study, nurses' responses were strongly worried and worried for all risk perception items. Also nurses in this study reported moderate level of perceived stress, furthermore the study reported a significant correlation between perceived stress and risk perception. This result comes in concurrence with several studies (Al-Sahafi, A.J, 2016; Kim, Y, 2018; Al-Dossary, R., et al., 2020; and Taghrir, M.H., et al., 2020) which found that nurses had awareness and high perceptions during infectious disease pandemic as COVID-19. The epidemic has impacted the healthcare communities significantly. Thus, healthcare workers are being in the condition of stress as there is an uncertainty in the transmission of the current disease. This result comes in same line with the study done by (Puci, M., 2020; and Brug, J., 2009) who reported that the risk perception was high may be due to the way and the intensity of the communication offered by mass media, which amplified the information on the risk and its perception.

Different factors affecting the perception of risk, socio-demographic variables, the present study found that there is a statistical significant difference between risk perception and age, marital status, educational qualification, and direct contact with patients are the variables that are highly significant. However, gender, job title, and years of experience are not significant. The study done by (Al-Dossary, R., et al., 2020) also found that marital status significantly impacts risk perception regarding COVID-19. This affirms previous empirical information that married nurses working in hospitals care for patients and also care for their families (Fang, L., 2014). Therefore, married nurses might be extra careful when caring for COVID-19 patients to prevent transmitting the

disease to their families. (Al-Dossary, R., et al., 2020). Regarding to educational qualification, the study done by (Al-Dossary, R., et al., 2020 and Registered Nursing Organization, 2020) supported the same results mentioned in this study where it found that nurses with bachelor degree have better perception towards COVID-19 because of more exposure in bedside care are accountable for early patient monitoring assessment and nurturing patients towards recovery, while nurses holding master's degrees are in managerial and supervisory positions.

For effect of years of experiences on the risk perception, the present study asserted that there is no statistical significance difference between the two variables while the study done by (Kieft, de Brouwer, Francke, and Delnoij, 2014) stated that the nurses who had more work experience, had more opportunity to practice critically and provide quality patient care. Also study done by (Al-Dossary, R., et al., 2020) proposed that work experience can shape risk perception and create a strong nursing practice which can led to more positive patient experiences.

Regarding to stress, this study as mentioned above reported that nurses have moderate level of perceived stress. Consequences of the COVID-19 pandemic such as the state of lockdown and social distancing have led to increase anxiety, worry, and perceived stress among nurses (Xia, C., 2020 and Roy, D., et al., 2020). Adams and Walls (2020) asserted that during any infectious outbreak, nurses face risk exposure, immense workloads, and ethical dilemmas which increase their level of stress. The present study also reported a significance statistical relationship between stress level and age, years of experiences and education which conflicting the results found by (Sheroun, D., et al., 2020) who mentioned that stress was not affected by any of the socio demographic variables.

### **Conclusion:**

Nurses in this study reported moderate level of perceived stress, furthermore it is reported that they have a high risk perception level with a significant correlation between perceived stress and risk perception. Moreover, various determinants that has an impact on risk perception are identified and examined in detail. Further, the report deduce that it is important to take precautionary actions, along with understanding and managing the psychological state of nurses to bring them out of stress. Thus, sustainable and effective psychological counselling needs to be directed to reduce the risk associated with

psychological state of nurses. The survey proved that the relationship exist between the risk perception and perceived stress. Therefore, the study results will help the health officials and policy makers in developing new approaches for assisting nurses to reduce the stress they are facing because of Covid-19 crises. The study will add value to the existing literature regarding the Covid-19 pandemic and will be an additional source of knowledge for Kingdom of Saudi Arabia.

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