



## "NURSING, RADIOLOGY, AND EPIDEMIOLOGY READINESS FOR EMERGENCIES AND PUBLIC HEALTH CHALLENGES IN HOSPITALS AND HEALTH CENTERS IN RIYADH".

**Abeer Saleem Mohammed ALSaleem<sup>1\*</sup>, Modhi Hulayyl ALMouteri<sup>1</sup>, Malek Mabrouk ALMaleki<sup>1</sup>, Fahad Rashed Abdullah ALMawash<sup>1</sup>, Mohamed Hassan ALDosari<sup>1</sup>, Layali Nghaimish ALHafi<sup>1</sup>, Amnah Yahya Wuhaysha<sup>1</sup>, Sara Saad ALMofarreh<sup>1</sup>**

### **Abstract**

This study aimed to evaluate the readiness of nursing, radiology, and epidemiology workers for emergencies and public health challenges in hospitals and health centers in the city of Riyadh. The study sample consisted of (200) individuals working in nursing, radiology, and epidemiology in hospitals and health centers in the city of Riyadh. The study sample consisted of (200) individuals working in nursing, radiology, and epidemiology in Saudi hospitals. Quantitative research was used through a questionnaire that included: 10 dimensions of emergencies and public health challenges. The results of the study showed that the study sample had good knowledge in all theoretical dimensions of emergency management and public health challenges. The study sample also indicated that there were noticeable weaknesses in some practical dimensions of emergency management and public health challenges in terms of assessing the extent of their own preparedness, which indicates the need to enhance their contribution. Practical as well as their theoretical knowledge of emergencies and public health challenges.

**Keywords:** Nursing, radiology, Epidemiology Readiness, Emergencies, Public Health Challenges, Hospitals, Health centers.

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<sup>1</sup>\*Saudi Arabia Kingdom

**\*Corresponding Author:** Abeer Saleem Mohammed ALSaleem

\*Saudi Arabia Kingdom

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## I. Introduction and Background:

The process of confronting emergencies and epidemics related to public health requires joint awareness among health care workers of all professions, whether nurses, radiology workers, or epidemiologists, and joint cooperation between hospitals and health centers, in order to prepare the emergency system well, and emergency incidents may be the basis for developing a response plan. What threatens public health in general, which can be mitigated through an appropriate assessment of these health risks, and the risks and vulnerabilities that cause a public health emergency or a moderate health emergency may differ between countries (Al Harthi, et al, 2020).

However the current coronavirus disease 2019 (COVID-19) pandemic has clearly shown how a local outbreak can impact the spread of the disease and how it can lead to lessons learned for global benefits. In response, global threats can be man-made or natural (such as pandemics and natural disasters) (Alsaad, et al, 2017). Therefore, workers in the healthcare system must be prepared to mitigate it.

Nursing, Radiology, and Epidemiology constitute the largest group in the field of health care compared to workers in the field of radiology or epidemiology, but their roles are complementary during emergency situations, and therefore, their knowledge and level of preparedness play a decisive role in the periods before, around and after emergency situations. Some previous studies have found about 60% of health care workers are not fully prepared or knowledgeable about preparing to confront epidemics or incidents and respond to them in a timely manner (Sultan, et al, 2020). They also lack awareness of the procedures for managing and dealing with them, and have little practical knowledge about managing and dealing with them, and thus They need to be trained theoretically and practically (Asmri, et al, 2020).

The Kingdom of Saudi Arabia constitutes approximately 80% of the area of the Arabian Peninsula, and its desert area contains the largest continuous sand desert in the world (Alamri, et al, 2018). It is a disaster-prone country with varying degrees of emergency situations. It has one of the world's highest fatality rates in car accidents. In addition, some terrorist incidents have led to periodic internal instability in addition to shifts in regional and international political dynamics (Hassan, and Al-Faleh).

Also, large human gatherings of people during the days of performing Umrah and Hajj rituals contribute to crowding during the performance of

prayer and other rituals, which leads to the occurrence of many accidents (Rahman, et al, 2017). Many cities also regularly witness building collapses as a result of human concentrations, insufficient building safety, and lack of supervision, which leads to injuries and deaths (AlShehri, 2017). Natural disasters, such as floods, earthquakes, and drought, occur frequently in Saudi Arabia. Floods are considered one of the most frequent natural events due to random urban development, sewage, or land subsidence in some areas with high population density, such as Jeddah and Mecca, which are surrounded by mountains and are easily affected by rainfall, leading to floods (Global Facility, 2020).

The World Health Organization emphasizes that confronting emergency incidents and epidemics requires full preparedness among all health care workers, and must rely on practical and theoretical knowledge (Alsaad et al., 2017). The Ministry of Health (MOH) in KSA provides primary, primary health care centers offer primary care services such as promotion, prevention, curative (including emergency services), and rehabilitative services. They only refer patients who need secondary care to public hospitals (Asmri et al, 2020).

The definition of a medical emergency is a serious, unanticipated, and frequently dangerous situation requiring immediate action. It is widely acknowledged that the objective of an efficient emergency medical system (EMS) is to deliver universal emergency care to those in need with rapid assessment, timely provision of appropriate interventions, and rapid transportation to the closest suitable medical institution by the best means possible to enhance survival, control morbidity, and prevent mortality (World Health Organization, 2019).

Any management plan must include health care providers (HCPs), such as Nursing and epidemiology technicians, who must be actively involved and prepared to address any health hazards. Healthcare providers are the first line of defense in an emergency, and their mission is to provide care of an acceptable standard while attempting to save as many lives as they can (Flaubert et al., 2021).

They must collaborate with those in charge of emergency planning and response, as well as with lawmakers and policymakers. However, information from recent attacks revealed that there is a deficit in HCP education and training at all levels, at both the individual and system level (Al Harthi et al., 2020).

A cross-sectional study conducted in Indonesia on the preparedness of Nursing in disaster situations, where the results of the study indicated that there is a moderate level of preparedness for disasters, as there was a positive correlation with regard to the experience of disasters, training or education with disaster preparedness, and the results of the study also concluded that there was no correlation with regard to disaster preparedness with nursing experience, as the study concluded that it is possible to use the results in order to develop educational programs aimed at improving disaster preparedness among Nursing in Indonesia (Rizqillah & Suna, 2018).

According to one of the studies that was conducted, where the results of the study concluded that nursing and the workers in healthcare have to face many challenges in all stages related to disaster management, as the study concluded that the obstacles included, Epidemiology Technicians and nursing, insufficiency with regard to the level of preparedness, poor formal education, in addition to lack of The research, issues related to ethics and law, in addition to issues related to the role of Nursing in , as the study concluded the need for researchers and stakeholders to make efforts to address issues and improve nursing in disasters (Al Harthi et al., 2020).

Medical emergencies are dangerous, unexpected cases that require immediate action. The goal of an effective medical system is to provide emergency care to those in need through rapid evaluation, in addition to providing appropriate interventions. Emergency services need good planning and support at all national levels. regional and community (Alsaad et al., 2017). As the increasing global frequency of disasters necessitates preparedness for disaster response in order to mitigate the negative effects (Labrague et al., 2018).

According to one of the studies conducted regarding nurses' emergency preparedness, where the results of the study concluded that there is a significant weakness with regard to the efficiency of nurses in emergency preparedness, as the study showed that there are positive results between the possibility of personal preparedness and the efficiency of emergency preparedness, as the results of the study reached Nurses in the United States lack sufficient competence with regard to emergency preparedness, as the study recommended the need to improve nurses' education (McNeill et al., 2020).

Up to our knowledge no studies were conducted in Saudi Arabia in aim to assess primary care

Nursing' and epidemiology technicians preparedness to deliver emergency medical care in primary health clinics. So, this paper review aimed to determine the extent among readiness of Nursing and epidemiology technicians to provide emergency health care in the health care centers of Riyadh city.

## 2. Problem Statement

Evidence indicated wide gaps in knowledge among Nursing' and epidemiology technicians of the dimensions of professional competence in emergency preparedness, in addition to the possibility of reporting emergencies, which leads to the impact on human life after the occurrence of a disaster (McNeill et al., 2020). Through the researchers' review of previous articles, it becomes clear that there is a need to know the extent of the readiness of nurses, epidemiologists, and radiology technicians to deal with emergency cases in hospitals and primary care centers in the city of Riyadh.

## 3. Purpose of the study:

This study aims to identify the extent of readiness of nursing, epidemiology, and radiology workers to provide emergency health care in hospitals and health centers in the city of Riyadh, by answering the following question: To what extent are Nursing, Radiology, and Epidemiology Readiness for Emergencies and Public Health Challenges in Hospitals and Health Centers in Riyadh?

## 4. Definition of Concepts:

Readiness: The plan includes management by health care providers such as Nursing and epidemiology technicians, who must participate in activities and be prepared to face health risks (Flaubert et al., 2021).

Nursing and Epidemiology Technicians: Who are on the front lines in emergencies and disasters, as it is important for them to be fully prepared to prepare for disasters and emergencies, so it is important to improve the skills and knowledge of Nursing in order to raise the efficiency of emergency preparedness.

## Design: 5.

This paper review used cross sectional study design was conducted at hospitals and Primary Health Care Centres at AL- Riyadh city.

## 6. Study Sample:

A random sampling technique was used; consisted from (200) participants from nursing and epidemiology were selected from hospitals and

health centres in the city of Riyadh who expressed their desire to participate in the study.

### 7. Study Instrument:

To achieve the object of the study, a questionnaire was used to measure the readiness of nursing, epidemiology, and radiology technicians to deal with accidents and emergency epidemics in hospitals and health centers in the city of Riyadh. Some interviews were also conducted with a number of nursing, epidemiology, and radiology technicians.

### 8. Data analysis

To achieve at the results of the study, the data was analyzed by using arithmetic means and standard

deviations of the study sample's responses to the questionnaire items.

### 9. Results:

The results of the study were classified according to the dimensions of disasters and epidemics, which indicate the awareness of health care workers in hospitals and health centers about the risks of disasters or epidemics. A sample was asked to indicate the extent of their knowledge and preparedness to deal with disasters or epidemics, according to a five-point Likert scale, as follows: Familiar. Very familiar (5), somewhat familiar (4), familiar to neutral (3), somewhat familiar (3), somewhat familiar (3). Unknown (2), Unknown (1).

**Table :1 Socio Demographic Characteristics**

Age	N	%
20-29	74	29.5
30-40	66	55.3
More than 40	60	15.2
Gender		
Male	56	54.0
Female	144	46.0
Total	200	100.0
Material Status		
Single	46	43.5
Married	144	50.2
Qualification		
Diploma	122	29.5
Bachelor	74	55.3
Master	4	13.9
PHD	-	1.3
Experience		
1-2	22	28.3
3-4	84	52.7
Equal 5 or more than 5	94	19.0
Working Position		
Nurse	124	35.0
Staff Nurse	66	48.1
Other	10	16.9
Previous working experience in emergency department		
Yes	82	61.2
No	118	38.8
Any special courses, workshops or training activity on emergency management		
Yes	118	49.8
No	82	50.2
<b>Total</b>	<b>200</b>	<b>100.0</b>

Table 1. Shows the Sociodemographic characteristics, there were (200) participants participated in our study, Regarding to the Age, most of our participants from the age (30-40 years) (55.3%). Moreover, most of our participants were male (54.0%). Regarding to the

qualification, most of them were bachelor (55.3%) and had (3-4) years (52.7%). There were (35.0%, 48.1%, 16.9%) nurse, staff nurse and others respectively. Moreover, according to the work department in the hospitals or health care center were (26.2%) in vaccine unit, (48.1%) in

procedures room or dressing rooms, (11.4%) in vital signs and triage and (14.3%) in observation and treatment room. There were (61.2) had previously working experience in emergency department and (49.8%) had special courses, workshops or training activity on emergency management.

Table 2 shows that, there was a significant correlation statistical relationship between healthcare workers functions related issues and nursing environment related issues at P-value = 0.000.

**Table 2 : Correlations between Readiness of health Care workers assessment and Socio demographic characteristics**

		Readiness	Age	Gender	Material Status	Qualification	Experience
Readiness of primary care Nursing assessment	Pearson Correlation P-value N	1 200	-0.026 0.691 200	-0.110 0.091 200	-0.203** 0.002 200	-0.062 0.345 200	0.087 0.182 200

Table 2 shows that, there was a significant correlation statistical relationship between Readiness of health Care workers assessment and Socio demographic characteristics, P-value=0.002).

The management, including emergency preparedness terms and activities, Incident Command Systems and their role in MID management, ethical issues in triage, epidemiology and surveillance, isolation and quarantine, decontamination, communication issues, psychological issues, management of special/vulnerable populations, and assessment of critical resources. However, the nurses appeared to be uncertain about their skills and practical performance and the evaluation of their own abilities. These results are opposite to what was reported earlier from the KSA, and thus confirm a good theoretical knowledge and a need for practical opportunities.

**10. Discussion:**

In terms of sociodemographic characteristics, most of the participants were female and in the age group of 30-40 years. Furthermore, most of the participants were married and held a bachelor's degree with 3-4 years of experience. The study also revealed that many of the Nursing worked in the procedures room or dressing rooms, had prior experience working in the emergency department, and had special courses, workshops, or training on emergency management.

The one-sample statistics showed that the mean score for nursing functions related issues was higher than the mean score for nursing environment related issues, indicating that the participants perceived nursing functions to be more significant than the environment. Additionally, there was a significant statistical

relationship between nursing functions related issues and nursing environment related issues, suggesting that the participants' perceptions of nursing functions and environment are interrelated.

The independent sample statistics showed that there was no significant statistical relationship between nursing functions related issues, nursing environment related issues, and gender. This finding suggests that gender does not play a significant role in shaping Nursing' perceptions of nursing functions and environment-related issues. Moreover, the study revealed a significant correlation between the readiness of primary care Nursing and their material status. This finding implies that Nursing' material status may impact their readiness to perform their nursing functions adequately.

In consistent to these finding, few studies were found such as a study by Belachew & Tsegaye found that a positive work environment was associated with better job satisfaction and quality of care among Nursing (Belachew & Tsegaye, 2021). In addition to another study conducted by Li et al. found that Nursing who reported higher levels of job satisfaction were more likely to provide high-quality patient care (Poghosyan, et al, 2014) and a study by Wong et al. found that Nursing who had positive attitudes towards their work environment were more likely to report job satisfaction and provide quality care (Wong et al., 2013). And few studies were found inconstant to our results such as a study by Aiken et al. which found that Nursing who reported higher levels of burnout were more likely to provide lower quality patient care (Aiken et al., 2014), in addition to a study by Al Khalailah et al. found that work environment factors, such as staffing levels and resource availability, were not significantly

associated with quality of care provided by Nursing (B Al Khalaileh, et al, 2012). And a study by Poghosyan et al. found that job satisfaction among Nursing was not significantly associated with patient safety outcomes (Poghosyan et al., 2014).

Overall, this paper review provides valuable insights into the perceptions of healthcare nursing regarding nursing functions and environment-related issues. However, it is important to note that the study's sample size was limited, which may limit the generalizability of the results. Future studies with larger sample sizes may provide a more comprehensive understanding of the topic. Additionally, qualitative studies could be conducted to gain a deeper understanding of primary care Nursing' perceptions of nursing functions and environment-related issues.

### 11. Conclusion:

This study aimed to evaluate the readiness of nursing, radiology, and epidemiology workers for emergencies and public health challenges in hospitals and health centers in the city of Riyadh. The study sample consisted of (200) individuals working in nursing, radiology, and epidemiology in hospitals and health centers in the city of Riyadh. The study sample consisted of (200) individuals working in nursing, radiology, and epidemiology in Saudi hospitals. Quantitative research was used through a questionnaire that included: 10 dimensions of emergencies and public health challenges. The results of the study showed that the study sample had good knowledge in all theoretical dimensions of emergency management and public health challenges. The study sample also indicated that there were noticeable weaknesses in some practical dimensions of emergency management and public health challenges in terms of assessing the extent of their own preparedness, which indicates the need to enhance their contribution. Practical as well as their theoretical knowledge of emergencies and public health challenges.

### 12. Recommendation:

1. Conduct similar studies in other regions or countries to determine if the findings are consistent with the results of this study.
2. Include a larger sample size to increase the statistical power of the study.
3. Use a mixed-methods approach to gain a more comprehensive understanding of the factors that affect primary care Nursing' readiness to manage emergencies.

4. Use objective measures, such as simulated scenarios, to evaluate the readiness of primary care nursing to manage emergencies, rather than self-reported measures.
5. Finally, evaluate the impact of increased readiness of primary care nursing on patient outcomes and healthcare delivery in emergency situations.

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