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Family Medicine Physician Knowledge Of Their Roles In Disaster Health Management: A Cross-Sectional Study Conducted In Saudi Arabia

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Abstract:

Background: n light of the severe effects of floods, fires, storms, and terrorist attacks, our planet is about to enter its most perilous phase in recent decades. Furthermore, important occurrences overwhelm daily existence. The frequency of large-scale catastrophic events that result in significant property losses, human casualties, and a variety of other effects that are impossible to handle on one's own has dramatically increased in recent years. Giving healthcare professionals the resources they need to improve their odds of surviving and reduce their losses is known as disaster preparedness.
Aim of the study: The study aims to assess family medicine physician knowledge of their roles in disaster health management about emergency preparedness and compare the level of nurses' knowledge about emergency preparedness between governmental and private hospitals.
Setting of the study: This study was conducted in family practice clinics in priamarey care organization (N=30) in Saudi Arabia
Study subjects Convenient sampling includes family medicine physician who were working in the previously mentioned setting with experience more than 6 month and were available during time of data collection and distributed (n=230).
Results: the current study revealed that poor family medicine physician ' knowledge about their role in emergency preparedness with mean percent score (49.20 ± 11.11). The mean percentage of general knowledge about emergency preparedness was (56.12 ± 18.84) while the specific knowledge about emergency preparedness was (47.07 ± 12.76).
Conclusion: the present study concluded that the family medicine physician ' knowledge of their role about emergency preparedness is poor in both hospitals and nurses less prepared to deal with different victims of different type of large-scale emergency events.
Recommendation: Develop crisis training workshop proposal to Ministry of Health and Population for nurses before employment in healthcare settings.

Introduction:
A crisis prevention-based strategy was used in catastrophe management in the past, and Emergency services physicians and surgeons were the most needed physician group. However, a new medical group is required because risk management is at the core of the contemporary catastrophe management

approach. Family doctors can conduct risk management on a regional level and play a significant role in the field of medicine since they are aware of the population that is at risk before a crisis occurs (World Health Organization ,2019).

Additionally, public health doctors and authorities play a crucial role in many nations and are typically in charge of this sector first. Family physicians will definitely take part in a number of tasks during and after a disaster, such as the first detection of the event, the collection and distribution of critical information, effective interventions by triage, and referral chain and rehabilitative activities (Alamri, et. Al., (2021).). Roughly one sixth of physicians, who are at the core of the overall group of health professionals, are family physicians serving in primary healthcare services, although this differs for each country (Al-Ali, & Ibaid, (2015).).

Additionally, it might make sense for family doctors to operate differently in these situations. According to the British Medical Association (2020), these could include "a reduction or cancellation of non-essential services, a reduction or cancellation of home visits, widespread use of tele-phone triage, increased use of telephone and video consultation, greater use of email and messaging apps, and the cancellation of all non-urgent appointments (Yılmaz, et al., (2020).

According to Slepski (2005), emergency preparation encompasses all of the skills, information, abilities, and actions required to respond to and get ready for a threat, whether real or suspected. Physicians and nurses are in far higher demand than any other healthcare professionals during significant crisis situations (Bernstein, 2010) . To be a productive team member, the nurse needs to have the essential fundamental skills and have the knowledge (Gebbie, & Qureshi, (2002).).

Large scale emergency/disaster preparedness; is equipping healthcare providers with tools to increase victims chances of survival and to minimize their financial and other losses. Emergency preparedness is considered to be one of the vital components of disaster management. Large scale emergency preparedness includes plans that are made to save lives, evacuation plans, stocking food and water besides trainings for staff members about how to practice in different emergency situations with large number of victims Pinkowski, (2008); Coppola, (2015)a; Farazmand, (2014)**.** Successful large scale emergency preparedness requires sensing the urgency of the matter at hand, thinking creatively and strategically to solve the disaster with degrees, scopes, manifestations and impacts, taking bold decisions and acting courageously and sincerely, breaking away from the self-protective organizational culture and taking calculated risks that produce optimum solutions and maintaining a continuous vigil on the rapidly changing situations Farazmand, (2014)**.**

Physicians practicing family medicine should expect their roles to be enlarged during crisis events to include treating mass casualties, mass vaccinations, mass evacuations, infection control, triage, and contingency planning to avert additional harm **(**Farazmand, (2014). Many academic institutions, hospitals, professional associations, governments, and non-governmental organizations have created educational programs to equip the healthcare workforce and system to address the health requirements of populations affected by catastrophes. Organizations (Hussein, & Mahmoud, (2016).

The professional skill and emergency preparedness of healthcare providers during disaster response were investigated in the Singhal, et al., (2016) study. The most often cited response skills were basic clinical care and triage; disaster-specific response skills and systemic difficulties were the areas where respondents felt the least equipped (Baack, (2011).). Additionally, Veenema, T.G. (2006). assessed health care practitioners' crisis management proficiency to determine how comfortable workforces felt with 11 dimensions. Among these domains are emergency communication/ connectivity, psychological issues, care of special populations, accessing critical resources, and overall familiarity with emergency and disaster preparedness (Hussein, & Mahmoud, (2016).

Significant of the study :

Therefore, in order to respond to emergencies, healthcare professionals must possess the knowledge and abilities to use an efficient method. World Health Organisation (WHO, 2010); Ibrahim, 2014; Mitchell et al., 2016; Xu & Zeng, 2016; Park & Kim, 2017; Yi, George, Paul & Lin, 2010). The source of value is knowledge, which can only be preserved and renewed by consistent investment. It is also regarded as an important piece of equipment used in intervention. Furthermore, knowledge is regarded as one of the most crucial resources for gaining a competitive edge and creating a dynamic that calls for cautious catastrophe management. Hasani & Sheikhesmaeili (2016); De Toni, Fornasier & Nonino (2017); Park, Gardner, & Thukral (1988).

A study in this area conducted in India showed that over 80% of doctors and nurses have good fundamental understanding of hospital disaster planning and preparedness, whereas less(Singhal, Bhatnagar, Lal & Paliwal, 2016b) practice in relation to it. A study was conducted throughout the Middle East in 2017 to evaluate nurses' knowledge and preparedness for emergencies and disasters. Regarding disasters and emergency preparedness, the study found that 83.3% of participants had bad practices and 65.4% had good understanding (Habbir, Afzal, Sarwer, Gilani & Waqas, 2017).

The aim of this study

The aim of this study is to determine Family medicine physician knowledge of their roles in disaster health management in Saudi Arabia

Methods

Method: A descriptive research design was used to conduct this study. Setting:This study was conducted in family medcin clinics at the primary healthcare setting in SA. Participant A Convenient sampling includes family medicine physician who were working in the previously mentioned units and were available at the time of data collection (n=230) were included in the study. Inclusion criteria: family medicine physician who work in pre-determined settings at least six months experience in pre-identified working unit.

Tool: One tool was used in this study for data collection.

Tool I: Disaster Readiness Questionnaire

Disaster Readiness Questionnaire involved a tool that contains 47 questions divided into two main sections. The tool incorporates all the components of the Emergency Preparedness Information Questionnaire (EPIQ) developed by Wisniewski et al. (2004)(18) and adopted by the current researchers. It was used to assess participants' responses on the EPIQ to identify their familiarity with readiness in managing disaster and emergency situations though 45 items grouped under 11 dimensions: familiarity with emergency preparedness terms and activities (7 items), knowledge of the Incident Command System ICS and healthcare providers role within it (8 items), ethical issues in triage
items), epidemiology and surveillance (4 items), isolation/quarantine (2 items), decontamination (3 items), communication/ connectivity (7 items), psychological issues (4 items), care of special populations (2 items), accessing critical resources (3 items), and overall familiarity with emergency and disaster preparedness (1 item). The responses were measured using a 5-point rating scale ranging from strongly familiar (5) to strongly unfamiliar (1). The higher the score is, the higher the familiarity with readiness in managing disaster.

The second section of the tool was developed by the current researchers; it consists of 4 questions. The first question asked about training of the healthcare providers' readiness in managing disaster and emergency events. The second one asked about the recommendations training for improvement of participants' readiness in managing disaster and emergency events. In addition, demographic and professional data consist of work unit, age, sex, educational level, and both total year of experience and in work unit, attendance of previous training program about disaster and emergency preparedness and the subsequent areas included in this training.

In addition; family medicine physician socio-demographic data sheet included; age, gender, marital status, educational qualification, working unit, years of experience since graduation, years of

Method:

Method

Written approval was obtained from administrative authority in the identified setting to collect the necessary data. Each subject gave their informed consent to participate in the study prior to data collection. It was voluntary to participate. Data confidentiality and privacy were preserved.- The researchers translated the questionnaire into Arabic. To assess the statements' clarity, a pilot study involving 15 family medicine doctors employed by the family centers was conducted. Five experts in

the same field of the study evaluated the questionnaire's content validity, and any necessary changes were made.
Cronbach's alpha was used to assess the internal consistency of the EPIQ, and the results demonstrated its reliability (α0.893). A statistical significance criterion of $p < 0.05$ was established. Each participant in the morning and afternoon shifts spent roughly forty-five minutes filling out the questionnaire. It took almost three months to collect the data, beginning in mid-March and ending at the end of June 2024

Statistical analysis: The appropriate statistical analysis was used to determine nurses' knowledge about the emergency preparedness in governmental and private hospitals. Data was computerized using the SPSS (Statistical Package for the Social Science) version 21 to perform the tabulation and statistical analysis. The following statistical analysis techniques were done:

Results

Participants' demographic and professional characteristics

Distribution of family medicine physician according to their demographic characteristics Table 1 shows that the majority of family medicine physician (80.4%) were males and the mean score of family medicine physician ' age was (35.66 ± 9.82). More than one-third of them (38.3%) were between 20 to 30 years old while, the minority (7.4%) was more than 50 years old. According to marital status 61.3% of family medicine physician were married and the lowest percentage (2.6%) was widow. Concerning family medicine physician ' years of experience in medical profession about one-third of nurses (33.5%) had experience more than 20 years while, the lowest percentage of family medicine physician (14.3%) had experience ranged from 11 to less than 20 years. Moreover, the highest percentage of nurses (41.7%) had less than 5 years of experience in the current unit and the lowest percentage of them (13.0%) had experience ranged from 5 to 10 years in the current unit.

family medicine physician ' demographic characteristics	**Total (n = 230)**	
	No.	**%**
Gender		
Female	45	19.6
Male	185	80.4
Age (years)		
20 – 30	88	38.3
31 – 40	72	31.3
41 – 50	53	23.0
>50	17	7.4
Mean ± SD.	35.66 ± 9.82	
Marital status		
Single	72	31.3
Married	141	61.3
Widowed	6	2.6
Divorced	11	4.8
Educational qualification		
BScN	106	46.1
Post graduate	124	53.9
Experience in medical (years)		
<5	52	22.6
5 – 10	33	14.3
11 – 20	68	29.6
>20	77	33.5
Mean ± SD.	15.73±10.67	
Experience in unit (years)		

<5	96	41.7
5 – 10	30	13.0
11 – 20	46	20.0
>20	58	25.2
Mean ± SD.	12.18±11.20	

Table 2 indicate that 84.78% of the total participants, stated that they not Receiving Training on Disaster Medicine/Management in the Clinic. Also, 78.26% stated that they had not 180 (78.26).while only 4.34% of participants had Inclusion of Disaster Medicine/Management Lessons in Specialty Training Disaster Medicine/Management Lessons in Specialty Training. 95.65 of them had willingness to receive training about disasters. Also, 97.82% had Request of Including Disaster Medicine/Management in Specialty Training Curriculum

Table 2: Frequency distribution of emergency preparedness training received by the family medicine physician.

Items	**N(%)**
Receiving Training on Disaster Medicine/Management in the Clinic	
No	195 (84.78)
yes	35 (15.21)
Receiving Training on Disaster Medicine/Management at Any Point in Educational History (Before or After Graduation)	
No	180 (78.26)
yes	50 (21.73)
Inclusion of Disaster Medicine/Management Lessons in Specialty Training	
No	220 (95.65)
yes	10(4.34)
Willingness to Train on Disaster Medicine/Management	
No	10(4.34)
yes	220 (95.65)
Request of Including Disaster Medicine/Management in Specialty Training Curriculum	
No	25(10.8)
yes	225(97.82)

Family medicine physician ' knowledge about emergency preparedness in large scale emergency

Table 2a displays poor knowledge with the mean percent score of family medicine physician ' overall knowledge about emergency preparedness in large scale emergency in family medicine clinics was (49.20 ± 11.11), which classified in to the mean percent of general knowledge about emergency preparedness in large scale emergency (56.12 ± 18.84) and for specific knowledge (47.07 ± 12.76). All dimensions were considered as poor knowledge except "Accessing critical resources, Ethical issues and special population and Isolation and quarantine" were good knowledge with mean percent score (69.48 ± 29.88 - 62.34 ± 27.75 and 61.30 ± 25.22) respectively.

Table 2b shows the dimensions with the highest mean percentage score (69.48 ± 29.88) were "Accessing critical resources", followed by (62.34 ± 27.75) "Ethical issues and special population", and (61.30 ± 25.22) "Isolation and quarantine" which were considered as good knowledge. The lowest mean percent score dimensions were (36.22 ± 18.71) "Knowledge about activities in triage" and (35.55 ± 22.83) "Incident command system and their role within it".

Table (2a): Mean score percentage of family medicine physician ' knowledge about emergency preparedness in large scale emergency in governmental hospital

family medicine physician ' knowledge (dimensions)	Governmental Hospital (n=154)
	Mean ± SD.
Part I:General Knowledge	**56.12 ± 18.84**
Part II : Specific Knowledge	
Detection and Response to an event	40.13 ± 21.39
Incident command system and their role within it	35.55 ± 22.83
Knowledge about activities in triage	36.22 ± 18.71
Epidemiology and surveillance	40.69 ± 22.30
Isolation and quarantine	61.30 ± 25.22
Decontamination	40.48 ±23.33
Communication and connectivity	49.78 ± 32.84
Psychological issue	50.65 ± 35.23
Ethical issues and special population	62.34 ± 27.75
Accessing critical resources	69.48 ± 29.88
Overall Part II	47.07 ± 12.76
Overall knowledge	49.20 ± 11.11

The mean score percent if less than 60% it will be considered as poor knowledge.
The mean score percent from 60-80% it will be considered as good knowledge.
The mean score percent if more than 80% it will be considered as excellent knowledge.

I. Relation between family physician ' Knowledge about emergency preparedness in large scale emergency and their demographic characteristics

A significant difference was found between family physicians' marital status and their general knowledge of emergency preparedness in large-scale emergencies (Table 6a). The divorced family physician had the highest mean percent score (69.48 ± 22.15) and the single nurses had the lowest mean percent score (50.69 ± 24.98).

Additionally, family physicians with over twenty years of experience had the highest mean percent score (58.53±17.99) regarding general knowledge of emergency preparedness in large-scale emergencies, while those with less than five years of experience had the lowest mean score percent (47.12±24.14)

Table (6a): Relation between family physician ' general knowledge about emergency preparedness in large scale emergency and their demographic characteristics

Demographic characteristics (n=230)	general Knowledge Mean± SD.	Test of sig.	p
Gender			
Male	6.98±3.45	t= 1.596	0.112
Female	7.76±2.80		
Age (years)			
20 – 30	49.84±23.55	F= 2.303	0.078
31 – 40	56.75±20.02		
41 – 50	58.22±15.87		
>50	55.04±23.11		
Marital status			
Single	50.69 ± 24.98	F= 3.053*	0.029*
Married	54.61 ± 18.41		
Widowed	63.10 ± 12.30		
Divorced	69.48 ± 22.15		
Experience in medical (years)			
<5	47.12±24.14	F= 3.187*	0.025*
5 – 10	54.11±23.01		

11 – 20	55.15±19.70		
>20	58.53±17.99		
Experience in unit (years)			
<5	50.74±23.25	F= 1.732	0.161
5 – 10	54.76±23.68		
11 – 20	57.30±18.41		
>20	57.64±16.86		

t: Student t-test F: F for ANOVA test

p: p value for comparing between the studied groups

*: Statistically significant at $p \leq 0.05$

The mean score percent if less than 60% it will be considered as poor knowledge.

The mean score percent from 60-80% it will be considered as good knowledge.

The mean score percent if more than 80% it will be considered as excellent knowledge.

Discussion

Large scale emergencies are unfortunate realities in our world today. Well trained and knowledgeable healthcare providers especially in large scale emergencies helps to keep individuals, families and businesses safe when a disaster/large scale emergency strikes.**(Ayres, 2015**) High knowledge combined with proper skills is vital to physician be prepared for dealing with large scale emergency situations.(Desai, Doke & Mohanty, 2017)

Regarding the main aim of this study to assess the family physician knowledge about emergency preparedness in large scale emergency in the family center clinics . The current study revealed that majority of study participants has poor knowledge about emergency preparedness in large scale emergency. This result are sensible when considering some reasons as, bachelor degree graduated students did not equipped with specific subject in main educational curricula about large scale emergency preparedness. And there are no definite criteria for selecting emergency preparedness physician .

Moreover, it is recognized that doctors practice license did not frequently updated due to there are no laws that obligate nurses either to update their license continuously or to attend training about large scale emergency preparedness. Furthermore, the workshops in this field were very superficial and minimal in number in their working settings . Also, the managers' bias in nomination of the staff for training and workshops, as reported by the study participants.

Given that almost two-thirds of research participants stated they had never participated in any training pertaining to emergency preparedness and disaster setup and management, this conclusion makes sense.. Also, it was not well documented how and to what extent medical schools were teaching this content in their curricula and to what extent participants learned about disaster plans in their workplace. Other contributing reasons may include the absence of national standards and protocols of practice, a lack of integration within the hospital and with other healthcare organizations, a lack of work organization, and a shortage of personnel in the emergency department.

Consistent with this findings several authors approved it as Khan et al. (2017), Alasad et al. (2011) and Al-Ali et al. (2015) who concluded that healthcare providers were demonstrated low to moderate levels of disaster readiness with large gaps in their knowledge about large scale emergency preparedness which needed to function effectively in disasters/large scale emergencies.(Al-Ali & Ibaid, 2015; Al Khalaileh, Bond & Alasad, 2012; Khan, Kausar & Ghani, 2017) Also, it was in harmony with Rassin et al. (2007), Fung et al. (2014), Ibrahim F. (2014), Al-Thobaity et al. (2015), Satoh et al. (2016) and Hegazy et al. (2016) they found staff healthcare providers were below acceptable level of large scale emergency preparedness and had incompetent practice regarding disaster preparedness.(Al Thobaity, Plummer, Innes & Copnell, 2015; Hegazy, Taha, AbouZeid, El-Taher & Hassan, 2016; Ibrahim, 2014; Loke & Fung, 2014; Rassin et al., 2007; Satoh et al., 2018)

In contrast, Tabiee et al. (2016) and Ahayalimudin et al. (2016) claimed that the healthcare providers demonstrate high level of knowledge in dealing with large scale emergency victims and the majority of the healthcare providers had an adequate knowledge regarding to disaster/large scale emergency management. (Ahayalimudin & Osman, 2016; Tabiee & Nakhaee, 2016) In addition, Afzal et al. (2017) and Nofal et al. (2018) revealed that the physician ' level of knowledge was satisfactory

among healthcare providers regarding to large scale emergency preparedness.(Habbir et al., 2017; Nofal, Alfayyad, Khan, Al Aseri & Abu-Shaheen, 2018)

These findings might explain the insignificant associations of most of the demographic and professional characteristics of the participants and their overall familiarity in managing disasters. However, accurate data derived from self reports such as EPIQ can be compromised by the problem of subjectivity. To ensure accurate parameter estimates and valid research results, the problem of subjective data needs to use in addition other objective measures and assesses the views of different groups of participants such as managers and victims to compare the data to have more valid data.
Hsia et al. (2011) reported similar findings that as few as 14% of hospitals(and as high as 76%) among the surveyed hospitals in sub-Saharan Africa, these hospitals had no training and supervision in place(Nofal, Alfayyad, Khan, Al Aseri & Abu-Shaheen, 2018). Therefore, Kitt et al. (2005) found that much planning, drilling, evaluating, revising and preplanning are required to successfully handle sudden events that injure humans, destroy property, and overwhelm responders.

Conclusion

The current study findings concluded that family medicine physician had significant gaps in their familiarity with the emergency preparedness in disaster management and they less prepared to deal with victims in different types of large- scale emergencies. Thus it raised concerns about lack of training, unavailability of strategic and operational plans, and unfamiliarity with roles, procedures and assignment in disaster situations.

Implication of the study: Develop a proposal of crisis curriculum to be added in different educational qualification as basic requirements for graduation from BSC and how to communicate during disasters and introduce it to Ministry of Higher Education and Scientific Research. Develop crisis training workshop proposal to Ministry of Health and Population for family physician before employment in healthcare settings. Develop a handbook to facilitate acquiring knowledge regarding large scale emergencies for all healthcare providers.

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