

Original Research

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Corresponding author:

Abdulmajeed Mobrad,
Email amobrad@ksu.edu.sa.

Perception and Attitude of Medical Staff in the Saudi Red Crescent Authority Toward their Preparedness for Disaster Management and Response

Abdulmajeed Mobrad¹ , Hussien M. Almorairi², Anas A. Khan³, Ahmad Al-Wathinani¹ and Raied Alotaibi¹

¹EMS Department, Prince Sultan bin Abdulaziz College, King Saud University, Riyadh, Saudi Arabia; ²Saudi Red Crescent Authority, Saudi Arabia and ³Emergency Medicine Department, King Saud University, Riyadh, Saudi Arabia

Abstract

Objective: The Saudi Red Crescent Authority (SRCA) plays a major role in the event of disasters and crisis, as it is the main pre-hospital health-care provider. This study reports on the attitude and perceptions of SRCA medical staff concerning their knowledge of disaster management and response.

Method: This is a descriptive cross-sectional study performed in Riyadh, Saudi Arabia. An Arabic version of the Disaster Preparedness Evaluation Tool (DPET), a self-administered Likert-scale survey, was used to obtain data from SRCA medical staff to evaluate the current status of disaster preparedness.

Results: The population surveyed consisted of 302 participants; 20.9% had participated in a drill exercise or practical application of a regular disaster or emergency plan in their workplaces. Most of participants (85.3%) had incentives to extend their education regarding their role, scope of practice, and skills as medical staff in disaster situations.

Conclusion: Results indicate a lack of regular disaster drills available to prehospital care providers, although most of them are willing to participate in more training and education programs regarding preparedness for disaster management, especially concerning their role in a disaster situation.

According to the International Federation of Red Cross and Red Crescent Societies (IFRC), a disaster occurs suddenly, is disastrous, and seriously disrupts the way a community or society functions. Furthermore, it is usually associated with huge human, material, and economic or environmental losses than what the communities or societies can cope with on their own. Although disasters tend to occur by nature, they can also be man-made (IFRC).

Disaster preparedness, including hazard appraisal, and multidisciplinary management methodologies at all system levels, is basic to the delivery of powerful responses to the short-, medium-, and long-haul health needs of a disaster-stricken populace.¹

When a disaster involves humans, it usually results in a mass casualty incident, which is characterized by a great number of patients affected on 1 occasion than locally accessible resources can handle using routine techniques.² Such incidents require exceptional emergency arrangements and additional or exceptional help. Thus, the management of mass casualty incidents requires efforts over a wide assortment of agencies, some of which may have little understanding of working with the health sector.

Saudi Arabia, a young developing country, with a young population (40% of the population is less than 19 y old), has suffered from a high morbidity and mortality burden due to injuries.^{3–6} The second leading cause of death in the Kingdom of Saudi Arabia is preventable injuries, accounting for approximately a fifth of all reported fatalities in the country.⁷ According to the Global Burden of Disease report, 22.6% of years of potential life are lost in Saudi Arabia due to traumatic injuries.^{8,9} However, studies are lacking, evaluating emergency medical services (EMS), including the perceived knowledge and role awareness of EMS staff in Saudi Arabia, a nation that annually hosts 1 of the world's largest mass gatherings in the form of Hajj.¹⁰

The Saudi Red Crescent Authority (SRCA), renamed in 2008, was established in Saudi Arabia on behalf of the Saudi Red Crescent Society in 1963.^{11–13} The SRCA has several major objectives, the most important of which are the preparedness and action at peacetime and wartime, to aid the medical administration of the Armed Forces. This is done by means of cooperating with and integrating all civilian and military victims of war, as provided for in the Geneva Conventions. In particular, it includes the transfer of the sick and wounded, the setting up of the means of transportation, assisting war victims and prisoners of war, and mediating in the exchange of

their correspondence both within and without the Kingdom, to provide the necessary urgent assistance to victims of accidents, disasters, and public disasters.¹¹

The EMS in Saudi Arabia is a key initial point of contact for prehospital patients, rendering the duty of providing prehospital care and transport to the SRCA. This duty is comprehensive for the whole country, with a few exceptions. The prehospital care system in Saudi Arabia is still making progress regarding issues related to community awareness, attitude, and knowledge deficiencies on prehospital care providers.¹⁴

In Saudi Arabia, the EMS system is typically an Anglo-American emergency medical services system (AAS), which is involved in rapidly bringing of patients to the hospitals following life-saving prehospital interventions (load and go).^{15,16} At the National Association of Emergency Medical Technicians' (NAEMT) conference held in Las Vegas in 2017, a survey was conducted for the participants to measure their level of preparedness for disasters of all kinds. The major finding was that participants had significant knowledge gaps on preparedness responses to natural and man-made disasters. Moreover, regarding the training for chemical, biological, or radiological events, as well as pandemics, few practitioners had knowledge about the subjects.¹⁷ Thus, the purpose of the current study was to evaluate the level of disaster preparedness in the SRCA as the key initial point of contact providing the prehospital health care to patients. This was done by assessing the medical staff's attitude and perceptions, their level of knowledge of disaster management and response, and to determine their need for training on disaster management.

Methods

A descriptive cross-sectional survey was conducted in Riyadh, Saudi Arabia, among SRCA-employed medical staff working in prehospital care in 2018. With 34 stations distributed in the north, east, west, south, and central Riyadh, each station serves its surrounding area. Medical staff includes paramedics, EMS technicians, and physicians.

The participants in this study were all medical staff of the prehospital workforce in SRCA in Riyadh city, and were selected randomly. The survey was distributed to the entire medical staff, with 531 participants spread across the 34 stations. All nonmedical staff in SRCA in Riyadh city were excluded as well as those working in administration with medical certification

Data Collection

We received the approval of the institutional review board (IRB) committee of King Saud University and SRCA approval for the sharing of employee data. Social network technology and electronic communication were used to invite the prehospital health-care providers in SRCA to be research participants. The researcher conducted an online Google Forms survey to collect the data. Before completing the survey questions, participants were informed about the study; they completed the survey after providing informed consent. Prospective participants received the survey questions by means of email or by receiving a broadcast link. To encourage them to respond and participate, the link led to a survey in which data could be entered anonymously every 15 d. The collection of data was from March to April 2018.

Measures

The classic Arabic version of the Disaster Preparedness Evaluation Tool (DPET) was used in this study.¹⁸ The DPET's use was based

on the assertion that instruments used in basic research should have a reliability of 0.70 or greater.¹⁹ Cronbach's alpha for the whole questionnaire (45 items) was 0.958. The Arabic version of the DPET is a valid and reliable instrument to measure nurses' perception of disaster management.¹⁸ The questionnaire consists of 45 questions and 3 subscales. The first scale comprised the predisaster stage preparedness, the second scale concerns the response stage to disaster, while the third scale concerns the recovery and mitigation stages of disaster, and used to measure the postdisaster response. Responses to the different items of the questionnaire were measured on a Likert-like scale from 1 to 5 (strongly disagree to strongly agree).

To describe the strength of the perception on preparedness, descriptive statistics of participants' responses were applied as mean, standard deviation (SD), and relative important index (RII), according to the 5-point Likert scale equal interval.²⁰ A strong, moderate, and weak perceptions were reflected by mean scores ranging from 3.40 to 5.00, 2.60 to 3.39, and 1.00 to 2.59, respectively. RII analysis was selected in this study to rank the criteria according to their relative importance. The following formula was used to determine the RII:

$$RII = \sum \frac{W}{AN}$$

where (W) is the weighting assigned by each respondent on a 5-point scale, with 1 implying the least and 5 being the highest. (A) is the highest weight, and (N) is the total number of samples (163).

According to Akadiri,²¹ 5 important levels are transformed from RII values as: high (H) ($0.80 \leq RII \leq 1$), high-medium (H-M) ($0.60 \leq RII \leq 0.80$), medium (M) ($0.40 \leq RII \leq 0.60$), medium-low (M-L) ($0.20 \leq RII \leq 0.40$), and low (L) ($0 \leq RII \leq 0.20$).

Data Analysis

The IBM SPSS Statistics for Windows, version 23 (IBM Corp., Armonk, NY, USA) was used to analyze the data. We reported the mean score, SD, RII, ranking, and trend for all subscales of the questionnaire, as well as the frequencies and percentages for all demographic variables. The 5-point Likert scale was used to describe the mean scores for the options—strongly agree, agree, neutral, disagree, strongly disagree—in an ordinal scale. The numbers entered in the statistical program were as follows: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1. The arithmetic average (weighted average) was calculated using the length of the first interval—the sum of the divisions of 4-5.

Independent samples t-tests and 1-way analysis of variance (ANOVA) were performed to evaluate the differences in responses between the participants' demographic variables (age, level of EMS, years of experience, previous exposure to disaster situations, and previous disaster training) and their preparedness for disaster management; $P < 0.05$ was considered as the level of significance. Finally, chi-squared tests were conducted to test for associations between categorical variables, such as age and experience categories, in those who had experienced a real disaster.

Results

The demographic characteristics of the 302 participants, with a response rate of 56.9%, are shown in Table 1. Most of the participants were aged 27-31 y (49.7%), had an EMS provider diploma

Table 1. Demographic characteristics of the study participants

Characteristics (variables)	No.	%	
Age	22-26 years	16	5.3
	27-31 years	150	49.7
	32-36 years	82	27.1
	+ 37 years	54	17.9
Level of education	Diploma of EMS	241	79.8
	Bachelor degree	44	14.6
	Physician	17	5.6
Work experience as a medic	1-4 years	60	19.9
	5-8 years	112	37.1
	9-12 years	69	22.8
	+13 years	61	
Previous exposure to and participation in a real disaster situation	Yes	156	51.7
	No	146	48.3

(79.8%), had > 13 y of work experience as a paramedic (39.1%), and had previous exposure to and participation in a real disaster situation (51.7%) (Table 1).

The responses to the subscale on predisaster preparedness indicate that most of the participants believed themselves to be moderately prepared to use the predisaster protocol: the mean score for the overall subscale was 3.37 (SD 0.81), which is considered a moderate level based on the RII (RII = 67.42%; high-medium [H-M]) ($0.60 \leq \text{RII} \leq 0.80$), while the mean score of the items ranged from 2.39 (RII = 47.80%; medium [M]) ($0.40 \leq \text{RII} \leq 0.60$) up to 4.04 (RII = 80.80%; high [H]) ($0.80 \leq \text{RII} \leq 1$) (Table 2).

The results from the questions on the subscale concerning postdisaster management showed that most of the participants thought they possessed moderate skills on disaster management. The overall mean score for each subscale was 3.37 (SD 0.73), which is considered a moderate level with RII (RII = 67.40%; high-medium [H-M]) ($0.60 \leq \text{RII} \leq 0.80$), while the mean score of the items ranged from 2.63 (RII = 52.60%; medium [M]) ($0.40 \leq \text{RII} \leq 0.60$) to 3.87 (RII = 77.40%; high-medium [H-M]) ($0.60 \leq \text{RII} \leq 0.80$) (Table 3).

The results from the questions on the subscale concerning evaluation of disaster showed that most of the participants thought they possessed moderate evaluation abilities. The overall mean score for each subscale was 3.09 (SD 0.66), which is considered a moderate level with RII (RII = 61.82%; high-medium [H-M]) ($0.60 \leq \text{RII} \leq 0.80$), while the mean score of the items ranged from 2.72 (RII = 54.40%; medium [M]) ($0.40 \leq \text{RII} \leq 0.60$) to 3.68 (RII = 73.60%; high-medium [H-M]) ($0.60 \leq \text{RII} \leq 0.80$) (Table 4).

Additionally, the results showed that most participants (80.79%; $n = 244$) had motivation to further their education regarding their role, scope of practice, and skills as health-care providers in disaster situations. Of these, 50% ($n = 151$) desired additional education concerning the potential risks posed by a disaster to their communities and resources available in their communities, such as agencies for referral to the health departments, emergency contacts, the chain of command, and community shelters. Likewise, 48.6% ($n = 147$) expressed an interest in acquiring more knowledge about biological and chemical agents and the signs and symptoms of exposure to them. Another 46% ($n = 139$) desired further education regarding biological and chemical agents, their differential diagnoses, and treatments (Table 2).

We asked about their preparedness regarding what they would do in cases of terrorism disasters; only 48.7% of the participants reported officially having preparedness capability for terrorism

disasters. Regarding awareness whether their workplace had a disaster (emergency) plan, only 43.4% were aware. Furthermore, only 37.4% felt confident that the disaster (emergency) plan in their workplace would work well in a disaster situation. Finally, regarding whether they had taken a drill exercise and practical application of a regular disaster or emergency plan in their workplace, only 20.9% reported doing so. Among those who participated in such exercises, 61.3% believed that they were effective and helpful (Table 2).

An independent t-test was performed for previous exposure to and participation in a real disaster situation and their perceptions of preparedness in the 3 subscales. The results showed that preparations for the disaster and evaluation of the disaster did not differ ($P > 0.05$), except for postdisaster management. There was a statistically significant difference ($t = 1.892$; $P = 0.049 < 0.05$), between those who had previous experience of a real disaster (mean = 3.55; SD = 0.73) and those who did not (mean = 3.29; SD = 0.72). Participants who had previous experience of a real disaster reported higher postdisaster management scores than those without exposure to a real disaster (Table 5).

Moreover, we found a statistically significant association between age categories in those who had experienced a real disaster during their employment at prehospital level ($\chi^2 = 16.394$; $P = 0.001$). We also found a statistically significant association between experience categories in those who had experienced a real disaster during their employment at prehospital level ($\chi^2 = 36.497$; $P = 0.000$) (Table 6).

Furthermore, for all the 3 subscales, 1-way ANOVA showed statistically significant differences between participants who were confident that their workplace disaster or emergency plan would work well in disaster situations across all 3 subscales. The Bonferroni adjustment pairwise tests were used after controlling for type I error across these tests. Results showed that the participants who were confident that their workplace disaster or emergency plan would work well in disaster situations were more likely to perceive themselves to have preparedness, knowledge, and skills for disaster management than those who were not confident.

Finally, 1-way ANOVA showed no statistically significant differences according to demographic variables (age, education, and experience), and their perceptions of preparedness in the 3 subscales did not differ ($P > 0.05$).

Discussion

This is the first study conducted among the medical staff of SRCA to assess their knowledge, skills, and level of preparedness regarding disaster management, as well as to investigate the degree to which the medical staff perceived themselves as having preparedness, knowledge, and skills regarding disaster management.

In general, the current study's findings showed that most of the participants considered themselves to be moderately prepared, with moderate levels of knowledge and skills. The results of this study were consistent with those of previous studies by Rassin et al.²², Al Khalailah et al.,²³ and Spranger et al.²⁴ who found moderate perception of disaster preparedness among the participants on the preparedness and knowledge subscales.^{22,23,25} However, the results in the current study showed that participants perceived themselves as having only moderate skills, contradicting the literature that participants perceived themselves as having weak to moderate skills.

According to Rebmann,²⁶ knowledge of bioterrorism can be acquired when participants are involved in different disciplinary

Table 2. Descriptive statistics of the preparations for the disaster

Items	Mean	SD	RII (%)
1 I participate in disaster drills or exercises at my workplace (clinic, hospital, etc.) on a regular basis.	3.35	1.429	67
2 I have participated in emergency plan drafting and emergency planning for disaster situations in my community.	3.40	1.399	68
3 I know who to contact (chain of command) in disaster situations in my community.	3.81	1.307	76.2
4 I participate in 1 of the following educational activities on a regular basis: continuing education classes, seminars, or conferences dealing with disaster preparedness.	3.42	1.359	68.4
5 I read journal articles related to disaster preparedness.	3.23	1.346	64.6
6 I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or community.	3.60	1.242	72
7 I would be interested in educational classes on disaster preparedness that relate specifically to my community situation.	3.94	1.127	78.8
8 I find that the research literature on disaster preparedness and management is easily accessible.	2.78	1.304	55.6
9 I find that the research literature on disaster preparedness is understandable.	3.05	1.238	61
10 I consider myself prepared for the management of disasters.	3.56	1.237	71.2
11 Finding relevant information about disaster preparedness related to my community needs is an obstacle to my level of preparedness.	3.54	1.092	70.8
12 I know where to find relevant research or information related to disaster preparedness and management to fill in gaps in my knowledge.	3.22	1.183	64.4
13 I have a list of contacts in the medical or health community in which I practice. I know referral contacts in case of a disaster situation.	3.27	1.350	65.4
14 In case of a disaster situation I think that there is sufficient support from local officials on the county, region or governance level.	3.25	1.290	65
15 I participate/have participated in creating new guidelines, emergency plans, or lobbying for improvements on the local or national level.	2.39	1.869	47.8
16 I would be considered a key leadership figure in my community in a disaster situation.	3.51	1.227	70.2
17 I am aware of what the potential risks in my community are.	3.57	1.231	71.4
18 I know the limits of my knowledge, skills, and authority as an RN to act in disaster situations, and I would know when I exceed them.	4.04	1.042	80.8
19 In case of a bioterrorism/biological or chemical attacks, I know how to use personal protective equipment.	3.45	1.328	69
20 In case of a bioterrorism/biological or chemical attacks I know how to execute decontamination procedures.	2.95	1.383	59
21 In a case of bioterrorism/biological or chemical attacks I know how to perform isolation procedures so that I minimize the risks of community exposure.	3.10	1.336	62
22 I am familiar with the local emergency response system for disasters.	3.24	1.318	64.8
23 I am familiar with accepted triage principles used in disaster situations.	3.84	1.148	76.8
24 I have personal/family emergency plans in place for disaster situations.	3.48	1.219	69.6
25 I have an agreement with loved ones and family members on how to execute our personal/family emergency plans.	3.29	1.207	65.8
Preparations for the disaster	3.371	.8135	67.42

academic initiatives and bioterrorism exercises. Rebmann²⁶ and Manley et al.²⁷ recommended focusing on natural and large-scale accident disaster preparedness for registered nurses (RN), instead of focusing on biological disasters. The participants perceived themselves as being moderately prepared for disaster management due to the lack of drills for emergency plans in their workplaces, low level of experience in real disaster situations, and low awareness of terrorist attacks, consistent with our findings.²⁷ Meanwhile, Putra et al.²⁸ showed that nurses perceived themselves as having low preparedness level for disaster management.²⁸

In the evaluation of the perceptions of participants' knowledge in disaster management, as indicated in the second part of the DPET, the results showed moderate levels of preparedness. This result is consistent with those of Al Khalaileh et al.²³ and Al-Ali and Abu-Abaid²⁵ and others.^{24,29} In this part, the highest ranked answer by the participants was for the item "I know the limits of my knowledge, skills, and authority as an RN to act in disaster situations, and I would know when I have exceeded them." This is an important indication about the participants' awareness of the importance of disaster preparedness. This result is similar to the

findings of Al Khalaileh et al.²³ and Elgie et al.³⁰ The lowest ranked answer by the participants was for the item "I participate/have participated in creating new guidelines, emergency plans, or lobbying for improvements at the local or national level" This study result indicates a lack of research on disaster preparedness and management of SRCA that contradicts the finding of Al Khalaileh et al.,²³ who reported that participants had participated in drafting emergency plans for disaster situations.

However, Cox³¹ contradicted the finding of Elgie et al.,³⁰ and showed that participants acted appropriately in disaster planning and response. In this part, the highest ranked answer by the participants was for the item, "As an RN, I would feel confident as a manager or coordinator of a shelter." This result indicated that they had better skills in classifying and triaging disaster and emergency cases. However, their lowest ranked answer was for the item "I feel confident recognizing differences in health assessments indicating potential exposure to biological or chemical agents" This result indicates insufficient level of confidence in recognizing differences in health assessments. Different results obtained by Fothergill et al.³² and Al Khalaileh et al.²³ and revealed that participants perceived

Table 3. Descriptive statistics of post disaster management

Items	Mean	SD	RII (%)
26 I can identify possible indicators of mass exposure evidenced by a clustering of patients with similar symptoms.	3.34	1.190	66.8
27 I can manage the common symptoms and reactions of disaster survivors that are of affective, behavioral, cognitive, and physical nature.	3.30	1.214	66
28 I am familiar with psychological interventions, behavioral therapy, cognitive strategies, support groups, and incident debriefing for patients who experience emotional or physical trauma.	3.32	1.206	66.4
29 I am able to describe my role in the response phase of a disaster in the context of my workplace, the general public, media, and personal contacts.	3.63	1.124	72.6
30 I am familiar with the main groups (A, B, C) of biological weapons (anthrax, plague, botulism, smallpox, etc.), their signs and symptoms, and effective treatments.	2.80	1.384	56
31 I feel confident recognizing differences in health assessments indicating potential exposure to biological or chemical agents.	2.63	.979	52.6
32 As an RN, I would feel confident in my abilities as a direct care provider and first responder in disaster situations.	3.24	.697	64.8
33 As an RN, I would feel confident as a manager or coordinator of a shelter.	3.87	1.033	77.4
34 As an RN, I would feel reasonably confident in my abilities to be a member of a decontamination team.	3.44	1.171	68.8
35 In case of a bioterrorism/biological or chemical attacks, I know how to perform focused health history and assessment, specific to the biological or chemical agents that are used.	3.18	1.218	63.6
36 I feel reasonably confident I can care for patients independently without supervision of a physician in a disaster situation.	3.84	1.085	76.8
37 I am familiar with the organizational logistics and roles among local and national agencies in disaster response situations.	3.13	1.221	62.6
38 I would feel confident implementing emergency plans, evacuation procedures, and similar functions.	3.68	1.081	73.6
39 I would feel confident providing patient education on stress and abnormal functioning related to trauma	3.78	1.034	75.6
Post disaster management	3.370	.73091	67.4

Table 4. Descriptive statistics of disaster evaluation

Items	Mean	SD	RII (%)
40 I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they are able to manage themselves.	2.73	.591	54.6
41 I am able to differentiate the signs and symptoms of Acute Stress disorder and post traumatic stress disorders (PTSD).	2.85	.918	57
42 I am familiar with what the scope of my role as an RN in a post disaster situation would be.	3.66	1.278	73.2
43 I participate in peer evaluation of skills on disaster preparedness and response.	2.72	1.291	54.4
44 I am familiar with how to perform focused health assessment for PTSD.	3.68	1.081	73.6
45 I feel confident managing (caring, evaluating) emotional outcomes for acute stress disorder or PTSD following disaster or trauma in a multi-disciplinary way such as referrals, and follow-ups and I know what to expect in ensuing months.	2.91	1.061	58.2
Evaluation of the disaster	3.091	.6576	61.82

Table 5. T test results for previous exposure to and participation in a real disaster situation and sub-scales of the study

Sub-scales	Previous exposure to and participation in a real disaster situation	N	Mean	SD	T test (P-value)
Preparations for the disaster	Yes	146	3.4570	.82724	1.770 (0.078)
	No	156	3.2918	.79490	
Post disaster management	Yes	146	3.5521	.73435	1.892 (0.049*)
	No	156	3.2935	.72160	
Evaluation of the disaster	Yes	146	3.1541	.66612	1.602 (0.110)
	No	156	3.0331	.64631	

*Significant at level 0.05.

themselves as having weak to moderate skills for disaster management.³² Moreover, Hughes et al.³³ showed that it is necessary to guarantee that participants have adequate knowledge and skills to respond well to disaster situations.³³

In this study, we found significant differences between participants who had regular disasters or emergency drills in their workplaces and their perceptions of disaster preparedness on the postdisaster management subscale. The same results were revealed

Table 6. Association between age and those who had experienced a real disaster

			Previous exposure to and participation in a real disaster situation		Total	Chi-squared, df, P-value	
			No	Yes			
Age (y)	22-26	Count	14	2	16	$\chi^2 = 16.394$ df = 3 P-value = 0.001**	
		% of Total	4.6%	0.7%	5.3%		
	27-31	Count	83	67	150		
		% of Total	27.5%	22.2%	49.7%		
	32-36	Count	41	41	82		
		% of Total	13.6%	13.6%	27.2%		
	+37	Count	18	36	54		
		% of Total	6.0%	11.9%	17.9%		
Total	Count	156	146	302			
	% of Total	51.7%	48.3%	100.0%			
Experience (y)	1-4	Count	49	11	60	$\chi^2 = 36.497$ df = 3 P-value = 0.000**	
		% of Total	16.2%	3.6%	19.9%		
	5-8	Count	61	51	112		
		% of Total	20.2%	16.9%	37.1%		
	9-12	Count	22	47	69		
		% of Total	7.3%	15.6%	22.8%		
	+13	Count	24	37	61		
		% of Total	7.9%	12.3%	20.2%		
	Total	Count	156	146	302		
		% of Total	51.7%	48.3%	100.0%		

**Significant at level 0.01.

by Crane et al.,²⁹ who showed that those with prior training were more likely to be ready in disaster situations than those with no training. To develop participants' preparedness for managing disasters, it is crucial to take into account disaster drills and training programs.²⁹

Limitations

The limitations of this study included the use of a self-reported survey only and a 56.9% response rate (ie, 306 respondents of the 506 surveys sent). The most obvious limitation was the use of online self-reporting data collection procedures. In addition, this study was a cross-sectional study in which participants responded to the survey only once. Therefore, other factors, such as having an unexpected issue on the specific day that the survey was completed, might have affected the response rate. Another limitation of this study was that the respondents were medical staff employed in Riyadh only, not from the entire country.

Recommendations

- More training and education regarding preparedness for disaster management
- Further study is recommended in all centers for SRCA's medical staff, as this study was limited to only Riyadh. We recommend the distribution of emergency and disaster plans to all SRCA stations.

Conclusions

The study indicated that participants perceived themselves as having moderate levels of preparedness, knowledge, and skills for

disaster management. Significant differences were found between those who took training drills for a regular disaster or emergency plan in their workplaces and those who did not, in all the 3 sub-scales. That is, participants who felt confident about their workplace disaster or emergency plan would work well in disaster situations and were more likely to perceive themselves as having preparedness, knowledge, and skills management than those who were not confident or not sure. Moreover, there was a significant association between age categories and those who experienced a real disaster during their employment, as well as between experience categories and those who experienced a real disaster during their employment.

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