

ORIGINAL RESEARCH

Knowledge and Attitude of Iranian Red Crescent Society Volunteers in Dealing with Bioterrorist attacks

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Abstract

Introduction: Bioterrorism is a worldwide problem and has been the focus of attention during recent decades. There is no precise information on the knowledge, attitude, and preparedness of Iranian Red Crescent volunteers in dealing with bioterrorism. Therefore, the present study aimed to evaluate the above-mentioned parameters in Mahabad Red Crescent Society volunteers. **Methods:** In this prospective cross-sectional study, the knowledge of 120 volunteers was evaluated and rated as poor, moderate, and good. In addition, attitude of the volunteers and preparedness of Mahabad Red Crescent Society was rated as inappropriate and appropriate using a questionnaire. **Results:** The mean age of volunteers was 32.0 ± 8.2 years (62.5% male). 2 (1.7%) volunteers had good knowledge while 94 (78.3%) had no knowledge regarding bioterrorist attack management. Only 1 (0.8%) volunteer had appropriate attitude and 6 (5.0%) stated their preparedness for being sent out to the crisis zone. 116 volunteers (96.7%) indicated that Mahabad Red Crescent Society has an inappropriate level of preparedness to encounter bioterrorist attacks. **Conclusion:** The findings of the present study showed poor knowledge and inappropriate attitude of Mahabad Red Crescent Society volunteers in encountering probable bioterrorist attacks. Furthermore, the Red Crescent Society of this town had an inappropriate level of preparedness in the field of bioterrorism from the viewpoint of the studied volunteers.

Key words: Bioterrorism; knowledge; civil defense; rescue work

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Introduction:

Bioterrorism can be generally defined as the abuse of biological and microbial agents or their products to terrify or kill humans or animals. Limited bioterrorist actions are precedent from a long time ago, but recently it has been broadly introduced into medical and hygienic circles (1-3) and has compelled researchers to prioritize preventive measures in this regard (4-7). Despite the rare probability of a biological war, it cannot be ignored (8, 9). Biological terrorist attack of Tokyo subway, 1995, caused 11 cases of death and thousands of hospitalization cases (10). Following the event of September 11, 2001, the risk of a bioterrorist attack has become a real concern among rescue task forces. One theoretical model in the United States declared that if a terrorist attack with biologic agents happened in a crowded city, it could lead to a

mortality rate up to 32000/100000 (11). Decreasing post-disaster morbidity and mortality depends on sufficient resources and acceptable level of knowledge, attitude, and preparedness among rescue task forces (12-14). In Iran, Red Crescent Society is the most important organization in dealing with probable terrorist attacks. Nevertheless, at the time of bioterrorist attacks, its volunteers may have to confront difficulties such as identification of unknown microbial agents as well as working with limited equipment and in unknown environments (15). To date, there is no precise information regarding knowledge, attitude, and preparedness of Iranian relief task force volunteers in management of probable bioterrorist attacks. Therefore, the aim of this study was to evaluate knowledge, attitude, and preparedness level of Iranian Red Crescent Society volunteers in biological and bioterrorist attack.



Methods:**Study design and setting**

The present study is a prospective cross-sectional study on knowledge, attitude, and preparedness level of Mahabad (Northwest Iran) Red Crescent Society volunteers, in 2014. The required information was collected through a questionnaire, reliability of which was verified using a 40-case pilot study and test-retest method ($r = 0.78$). Expert panel confirmed face, criterion, and content validity

of the questionnaire. The first part of the questionnaire included three questions regarding demographic data such as age, sex, and education. The second part of it included 18 two-choice questions in three fields: volunteers' knowledge (four questions), volunteers' attitude to participate in rescue teams at the time of bioterrorist attacks (six questions), and the preparedness of Red Crescent Society in dealing with bioterrorist attacks from volunteers' viewpoint (eight questions) (Table 1).

Table 1: The questions queried about the volunteers' knowledge, attitude, and the preparedness of respective organization about bioterrorist attacks

The question	No (%)	Yes (%)
Knowledge		
1- Are you familiar with bioterrorism threats (biological disasters)?	111 (62.5)	9 (7.5)
2- Are you familiar with causative and pathogenic bioterrorism agents?	114 (95.0)	6 (5.0)
3- Are you familiar with diagnostic and therapeutic methods at the event of encountering bioterrorism agents?	120 (100)	0 (0.0)
4- Do you believe the central upper management is partly responsible for the lack of education and consequently lack of intervention in urgent biological disasters?	45 (35.0)	75 (62.5)
Attitude		
1- Are you committed to staying at work at the event of a bioterrorist or biological attack?	113 (94.2)	7 (5.8)
2- Do you tend to care and treat the probable victims at the event of a bioterrorist or biological attack?	117 (97.5)	3 (20.5)
3- Do you tend to cooperate with your respective organization in biological defense (anti-bioterrorism) plans?	115 (95.8)	5 (4.2)
4- If the personal protective clothing and complete isolation equipment are supplied, do you tend to work (able to take a role) in the area contaminated with pathogenic agent?	108 (90)	12 (10)
5- Do you tend to participate in workshops and conferences related with bioterrorism?	104 (86.7)	16 (13.3)
6- Do you tend to pass university courses or in-service training courses with the content of anti-bioterrorism defense?	117 (97.5)	3 (2.5)
Organization preparation		
1- Has your organization held retraining workshops and seminars in the field of biological defense and bioterrorism?	100 (100)	0 (0.0)
2- Has a recorded and official instruction, proclamation, or training course been explained on how to intervene in biological and bioterrorist attacks?	118 (98.3)	2 (1.7)
3- Does the organization you serve, provide the required financial supports for you at the time of encountering biological and bioterrorist attacks?	119 (99.2)	1 (0.8)
4- Does the organization you serve, consider your worries and concerns about the security of yourself and your family at the time of facing biological and bioterrorist attacks?	110 (91.7)	10 (8.3)
5- Does the central organization (in Tehran) consider your concerns and needs at the time of educational and strategic planning for preparedness against bioterrorist attacks?	97 (80.8)	23 (19.2)
6- Do you believe material and spiritual encouragements by the upper management are necessary for better performance (quantitatively and qualitatively) at the event of bioterrorist attacks?	95 (79.2)	25 (20.8)
7- What is your general attitude toward the preparedness level of relief and intervention teams at the event of a biological emergency?	120 (100)	0 (0.0)
8- Do you have the required preparedness to be sent out to the zone of crisis if you are needed at the event of a biological attack in any part of the country?	114 (95.0)	6 (5.0)



The protocol of this study was approved by the local Ethics Committee of Red Crescent Society. The investigators adhered to the principles of Helsinki declaration. The informed written consent form was signed by the volunteers.

Participants:

The studied population included volunteers who had passed at least one rescue course (consisting of 4 different 2-day workshops) in disaster management. 120 volunteers were selected using simple random sampling. Volunteers who did not want to participate or filled the forms incompletely were excluded.

Statistical analysis

The required sample size was determined to be at least 77 cases considering the 72% prevalence ($p = 0.72$) of poor knowledge (12), $\alpha = 0.05$, and desired precision of 0.1 ($d = 0.1$).

The data were analyzed using SPSS 21.0. The quantitative data were reported as mean and standard deviation, and the qualitative ones were reported as frequency and percentage. Each positive answer to the questions gained 1 point, while negative answers received 0 points. Therefore, the maximum achievable scores for knowledge, attitude, and preparedness were 4, 6, and 8, respectively. The knowledge score 0 was considered as poor, 1 and 2 as moderate, and 3 and 4 as good knowledge. In addition, the attitude score ≤ 3 was defined as inappropriate and score > 3 as appropriate attitude. The preparedness level was rated inappropriate if preparedness score was 0-4 and appropriate if it was 5-8.

Results:

120 volunteers of Iranian Red Crescent Society were questioned (62.5% male). Mean age of the volunteers was 32 ± 8.2 years (Range: 20-51 years). 34 (28.3%) of the participants had diploma, 25 (20.8%) had associate degree, 52 (43.3%) had bachelor's degree, and 9 (7.5%) had master's degree or higher. None of the volunteers had any information regarding management of biologic agents. Table 1 summarizes the frequency of positive and negative responses to the 18 mentioned questions.

Knowledge:

9 (7.5%) cases had knowledge about bioterrorism threats. 6 (5.0%) cases had knowledge about causative and pathogenic characteristics of biologic agents. 2 (1.7%) cases had good knowledge about bioterrorist attacks and their management (Figure 1). While 94 (78.3%) cases had no knowledge about how to encounter and manage bioterrorist attacks.

Attitude:

7 (5.8%) cases would stay at work during a bioterrorist attack. Five (4.2%) cases had the tendency to cooperate with the responsible organizations and 12 (10.0%) cases declared that they would participate if protective equipment were available. Three (2.5%) cases were willing to take care of the probable victims of bioterrorist attacks.

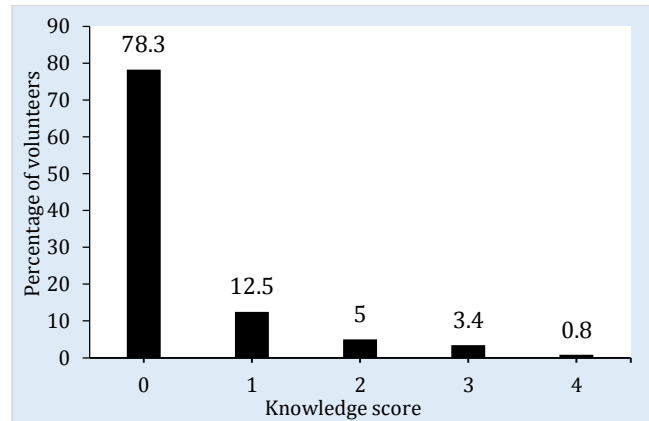


Figure 1: The volunteers' knowledge regarding management of bioterrorist attacks.

Only one (0.8%) volunteer had an appropriate attitude and 119 (99.2%) had inappropriate attitude toward participation in bioterrorism relief task forces.

Preparedness:

Based on volunteers' answers, no training workshops and seminars had been held so far regarding biological and bioterrorist attacks. One (0.8%) case stated that the Red Crescent Society provided the required financial supports for facing biological and bioterrorist attacks. Two (1.7%) cases declared that recorded instructions, guideline, or training courses had been explained by the central organization.

Ten (8.3%) cases expressed that the respective organization had considered their worries and concerns about the security of their own selves and their families at the time of facing biological and bioterrorist attacks. 23 (19.2%) cases said that the central organization considered the personal requirements during educational planning for preparedness against bioterrorist attacks. From the viewpoint of 116 (96.7%) volunteers, Mahabad Red Crescent Society had inappropriate preparedness to encounter bioterrorist attacks (Figure 2).

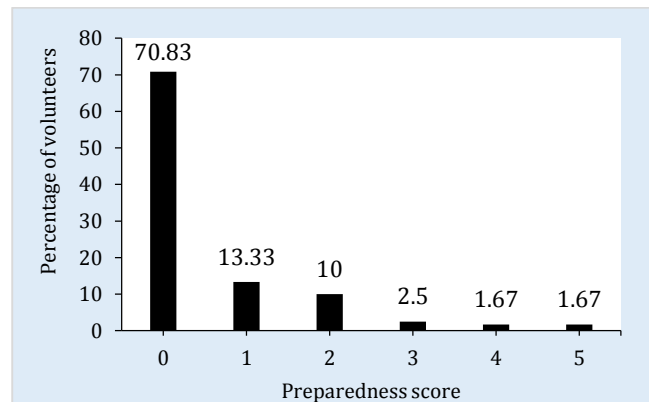


Figure 2: The preparedness of Mahabad Red Crescent Society to encounter bioterrorist attacks from the volunteers' viewpoint.



Discussion:

The findings of this study showed that only 1.7% of the Iranian Red Crescent Society volunteers had good knowledge about management of bioterrorist attacks. 99.2% had inappropriate attitude, and 96.7% believed that preparedness of Mahabad Red Crescent Society is poor about encountering bioterrorist attacks.

The findings of present study is in line with previous investigations in this regard (13, 14). In an evaluation of nurses' awareness about bioterrorism agents, 72.5% had poor knowledge in this field (12). In addition, an investigation in 2002 concluded that physicians did not have the necessary and satisfactory level of knowledge in bioterrorism management and declared the necessity of training courses in this regard (16). One study showed that higher knowledge of rescuers increased their tendency to respond in bioterrorist attacks (17). Thus, training the volunteers is of high importance in order to increase their willingness for relief in contaminated areas. Holding different scientific seminars and symposiums and fitting different training plans in the field of bioterrorism as optional courses into syllabuses of universities and responsible organizations, can be a worthy donation to elevate the knowledge level of society's experts.

In Iran, Red Crescent Society along with military forces are on the frontline of biological and anti-bioterrorist defense. They must provide necessary resources such as antidotes, antibiotics, antitoxins, and intensive care equipment like ventilators. At the time of bioterrorist attacks, quick and timely response is so important that even seconds can save thousands of lives. The required facilities and equipment for combating against bioterrorist attacks must always be prepared and ready to work to prevent waste of time in such events. During such disasters, there is an increase in consumption of resources and some rarely-used equipment, which causes shortage of equipment during a bioterrorist attack (18). Unfortunately, based on the viewpoint of the study participants, we are faced with inappropriate preparedness of Mahabad Red Crescent Society in dealing with bioterrorist attacks, which requires special attention to improve.

Finally, it is thought that elevating the knowledge and attitude of health care providers and training them in the backbone field of biological defense can result in a better and more efficient battle against probable bioterrorist attacks.

Conclusion:

The findings of the present study showed poor knowledge and inappropriate attitude of Mahabad Red Crescent Society volunteers in encountering with probable bioterrorist attacks. Furthermore, the Red Crescent Society of this town had an inappropriate level of preparedness in the field of bioterrorism from the viewpoint of

the studied volunteers.

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