Methods of Acquiring Insight, Knowledge, and Skills Regarding Self-Protection in Incidents and Chemical Warfare for the New Students of School of Army Nursing

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Abstract

BACKGROUND: Reviewing the history of human warfare, particularly recent wars, indicates that many countries have hidden or apparent access to chemical, biological, and nuclear weapons. The Iraqi Ba'athist regime used mustard gas against Iran 92 times during the war and its long-term complications can still be observed among the victims. In fact, the lack of correct attitude, knowledge, and skills regarding crisis management and protective measures caused Iran to be the biggest victim of chemical weapons in the world. This article tried to provide methods to gain insight, knowledge, and skills regarding protective measures for chemical warfare for the new students of the School of Army Nursing, AJA University of Medical Sciences, Tehran, Iran.

METHODS: This descriptive survey explored methods to gain insight, knowledge, and skills regarding protective measures for chemical warfare for the new students of the Army Nursing School. The study participants consisted of 78 nursing students who had not received military trainings in the School of Nursing. The data gathering tool was a questionnaire and a researcher-made checklist. To determine the validity and reliability of the data collection tool, face validity and Cronbach's alpha were used, respectively. Results were analyzed using statistical tests in SPSS software (P ≤ 0.05).

RESULTS: According to the findings, the methods of acquiring knowledge on chemical warfare were Basij, high school defense preparedness course, broadcasting media, and textual sources with mean scores of 32.7, 37.7, 35.1, and 32, respectively. Moreover, the mean of insight regarding chemical warfare training methods were 102.8 for Basij trainings, 108.6 for high school defense preparedness course, 92.87 for broadcasting media, and 103.6 for newspaper and books. ANOVA test showed no significant difference in the methods of acquiring knowledge (P = 0.94) and insight (P = 0.16) (P > 0.05). This indicated that there were no significant differences among students regarding the knowledge and insight of chemical warfare methods. The impact of Basij on preparing students for self-protection was 44.18, high school defense preparedness course was 45.78, broadcasting media was 42.62, and newspaper and books were 44.07. This indicated a statistically significant difference in the methods of acquiring personal protection skills during chemical attacks (P > 0.05).

CONCLUSION: Due to being at the forefront and confronting such events, raising the awareness of army nurses and training them appropriate skills is essential. Lack of such preparation or believing that such preparation is unnecessary is a disaster. In addition, medical centers and other accident-related organizations should hold workshops in this regard.

Keywords: Chemical Warfare; Personal Protection; Knowledge; Skills; Nursing Students

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Introduction

Today, the world is experiencing an unprecedented acceleration in scientific advances. Scientific and technological development have changed military science and technology and these developments have created new and unconventional wars (1). The present chemical weapons crisis is the worst crisis experienced by humanity (2). The use of nuclear weapons in wars or for terrorist purposes results in many losses and severe crises. In the history of global crises, the use of these weapons is the darkest pages of human civilized history and a serious threat to humanity (3).

The first use of chemical agents was in World War I by the Germans against the French and British, with 5000 killed and 15000 injured due to exposure to chlorine gas in 1915 (2,4). Due to lack of protective equipment, it left many casualties. In addition, 77% of the victims of chemical weapons in World War I were related to mustard gas. However, because most of the soldiers had respiratory protection and were prepared, the mortality rates of this gas was as low as 2% (2).

Most of the damage caused by chemical weapons in World War I was due to lack of protective equipment and lack of training of Russian troops. Their casualties reached a total of 50000 killed and 500000 injured (3,4).

In the imposed war against Iran, the Iraqi Baathist regime used mustard gas against Iranians 92 times (3). Later, about 5000 Iranians and Kurds in Halabja were massacred in the chemical attack by Iraqi forces (5). A massacre to this extent had been unprecedented in the history of chemical weapon use since the first chemical attack of Germany in 1915 with chlorine gas (3,6).

To protect military personnel against chemical agents, the most effective equipment is the nuclear, biological, and chemical (NBC) suit and mask. This suit is air permeable, but impermeable to chemical agents (6). When exposed to chemical weapons in the war, only 37.9% of the soldiers used masks and 40% used appropriate covers (7). Research showed that Iran's lack of accurate air defense in the war was due to lack of adequate training in the timely use of masks in case of a chemical attack (8). However, in the United States of America, personal protection training and its maintenance in time of peace is the objective of their defense plan (9). Commanders of military units must ensure that all personnel have the adequate training for the care of victims of chemical weapons, because the natural instinct to help each other may be reduced due to the cumbersome protective equipment (10). The Iranians’ lack of appropriate self-protection during the Imposed War, in particular, lack of mask use, training, and personal protective culture, despite having these equipment, made Iran the world's largest victim of chemical weapons (3,11). Ehteshami considered regular training and sufficient planning the key to being prepared against chemical attacks (12).

The first rescuers at time of crisis in the military medical teams are the nurses. Nurses, as frontline rescuers, are at the center of this plan (13). High levels of knowledge and awareness of nurses leads to faster recovery of the injured and increase in the efficiency of the system at time of crisis. Nurses are judged based on their attitude and performance (14). Jennings-Sanders et al. found that more than 80% of the nurses who volunteered to participate in crisis, had no previous experience and knowledge of crisis management (15).

Shariffar conducted a study on the awareness of AJA medical personnel on chemical, biological, and nuclear attacks management strategies in 2012 (1). She determined that the greatest sources of information in this field for doctors were the radio and television, and the least used source was professional journals. Other sources used were, respectively, classroom, non-technical magazines, the Internet, participating in congress, participating in retraining courses, and studying specialized books (1).

The experiences of the 8-year Holy Defense, crises, and natural disasters showed the effectiveness of nurses in response to crisis. The right attitude and knowledge of nurses in the recognition of chemical attacks, individual protection, protecting others, and the ability to teach individual protection to other military personnel, medical staff of other organizations, and the public have an important role in crisis management. Due to the strategic position of Iran, the oppression-fighting spirit of its people, and the terrorist groups and enemies seeking to harm the country, nurses must be trained on personal protection and chemical warfare which is one of the most important components of military defense (13,16). Through a review of previous studies, it was found that studies on methods of acquiring knowledge and attitudes towards protective measures in chemical warfare were very limited and the necessity of further studies in this field was felt.
Due to the importance of teaching this subject, needs assessment was conducted among students in order to determine the methods of obtaining knowledge, insight, and skills regarding self-protection in chemical warfare used by new nursing students of the School of Army Nursing, Military Medical University, Tehran, Iran.

**Materials and Methods**

The present descriptive survey was conducted on 78 students who were selected through census method. It should be noted that these students had not passed the military nursing course, one of the nursing courses approved in the School of Army Nursing. Since there were no similar studies and there was no standard tool in this regard, a researcher-made questionnaire and checklist were used. The data collection tools included the knowledge, insight, and demographic characteristics questionnaires, and the skills checklist. The demographic questionnaire included age, gender, education, hometown, and methods of acquiring knowledge on chemical warfare and personal protective measures and was designed as a multiple choice questionnaire. The sources of information were media, Basij, high school defense preparedness course, and written sources such as newspapers and books. With the assumption of students’ lack of access (pre-university) or lack of use for searching this topic in the years before entering the university in case of access, the Internet was eliminated from the options. The insight questionnaire consisted of 25 items and assessed the feelings, opinions, and thoughts of students regarding self-protection during chemical attacks based on a Likert scale ranging from strongly agree to strongly disagree. The knowledge questionnaire consisted of 16 multiple-choice questions with one correct answer and was designed based on what the students should know about individual protection. The 36-item skills checklist was designed according to standard step-by-step personal protection measures including wearing mask and appropriate clothing, and the right time to wear them, and each item was answered with yes or no. To determine the content validity of the questionnaires on knowledge and insight, and the skills checklist, they were given to 15 professors in this field and the required changes were applied to the items. To determine face validity, the questionnaires and checklist were completed by 10 students and statements that seemed difficult, ambiguous, or did not fit the purpose of the research, were modified. The reliability of the insight and knowledge questionnaires was determined by Cronbach's alpha test. The internal consistency of the knowledge questionnaire was determined as 0.716 favorable using Cronbach's alpha. Cronbach's alpha coefficient of the insight questionnaire was reported as 0.951. The internal reliability of the skills checklist was determined, based on Kappa method, simultaneously for 15 students by the researcher and another person who had previous training by the researcher. The coefficient of inter-rater agreement was significant and equal to 0.907.

First, the approval of the Research Ethics Committee of Military Medical University was obtained. Then, a preparatory meeting was held for one hour for the students of the department of army nursing. The content of this session, which was in the form of a lecture and a question and answer meeting, included explanation of the research process, selection of individuals, obtaining of written consent to participate in the research, and testing. Data were analyzed using descriptive statistics (mean, standard deviation, relative frequency, and absolute frequency), one-way ANOVA, and Tukey's test. It should be noted that all the variables showed normal distribution according to Kolmogorov-Smirnov test. Data were collected through the questionnaire and the results were analyzed using SPSS software (version 20, IBM Corporation, Armonk, NY, USA). Results were considered as significant if P ≤ 0.05.

**Results**

This study aimed to determine methods of obtaining insight, knowledge, and skills regarding protective measures in chemical warfare among the undergraduate students of the School of Army Nursing. The mean age of the subjects was 20.19 years and 74.4%, 25.6%, and 96.2% of the subjects were men, women, and single, respectively. Participants in this study were in their second, third, and fourth academic semesters. The importance of these semesters was that the military nursing course was not provided in these semesters. Students’ frequency in the academic semesters was 60% in the second term, 16.7% in the third term, and 23.1% in the fourth term. In addition, 34.6% of the subjects lived in border cities and the rest lived in non-border cities. Among the participants, 96.2% had not seen or experienced a chemical attack. Moreover, 96.3% had no chemical veterans in their close relatives, and 52.6% had not heard about the chemical death tolls.
The means of acquiring chemical knowledge through Basij, high school defense preparedness course, media, and written sources were, respectively, 32.7, 37.7, 35.1, and 32. The means of insight into chemical warfare from Basij trainings, high school defense preparedness course, media, and written sources such as books and newspapers were 102.8, 108.6, 92.87, and 103.6, respectively. Initially, the normal distribution of the groups was confirmed using Kolmogorov-Smirnov test with P > 0.05. One-way ANOVA was used to investigate the differences in the mean scores of the methods. This test was used to study the differences between the three groups or more (methods of broadcasting information, Basij, high school defense preparedness course, written sources such as newspapers and books). One-way ANOVA results showed no significant difference between the methods of obtaining knowledge (P = 0.94) and insight (P = 0.16) regarding chemical warfare (P > 0.05) (Table 1). This suggested that the students had no statistically significant difference with each other in terms of knowledge and insight regarding chemical warfare. Nevertheless, regarding the acquisition of skills, the results were significant (P ≤ 0.05). Furthermore, the acquisition of skills was significant; therefore, pairwise analysis was conducted on the methods using Tukey's test. The results showed that high school defense preparedness course had a significant difference with obtaining information using written sources and radio and television.

**Discussion**

This study showed that there was no statistically significant difference among the groups in terms of the scores of insight and knowledge regarding personal protection during chemical attacks. However, there was a statistically significant difference between the methods in the area of self-protection skills and coping measures. Unfortunately, there is little research in this area and the majority of nursing studies on methods used to gain knowledge and insight are associated with AIDS. The only study on the methods of acquiring knowledge and insight in relation to chemical warfare was the study by Shariffifar (1).

In comparing the results of this study with that of Shariffifar, it was found that nurses and doctors participating in the study by Shariffifar had reported that radio and television were the most commonly used methods of obtaining knowledge and insight regarding chemical warfare. However, in the present study, the most commonly used method of obtaining knowledge and insight regarding chemical warfare and personal protection was the high school defense preparedness course.

No formal training is provided in this field by radio and television, and only limited informal education and even incorrect information may be obtained from Holy Defense films. Therefore, the insight and skills acquired through the media was limited and had the lowest mean. With regards to the low mean of knowledge and skills obtained from books and newspapers and gaining a good insight from newspapers and books it was realized that although newspapers and books were successful in forming insights, they were unable to create knowledge and skills. It is suggested that, due to the availability of newspapers and books, their content be enhanced in the above mentioned fields. One of the sources of obtaining information was Basij. Basij is one of the military organizations of Iran which provides trainings through active and passive recruitment. High school students, before entering the army, have the opportunity to go through chemical trainings as an active Basiji.

Since these training courses from Basij are offered to the public at a low level, students may not be motivated to learn and to attend training sessions at that time; thus, it could not have a significant impact. However, the high school defense preparedness course that is a compulsory course for boys in Iran, had a higher mean score in creating knowledge, insight, and skills. This result may be due to the course being mandatory, the complete participation of students (as

<table>
<thead>
<tr>
<th>Description</th>
<th>Basij</th>
<th>High school defense preparedness course</th>
<th>Radio and television</th>
<th>Books and newspaper</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insight</td>
<td>102.8</td>
<td>108.6</td>
<td>92.87</td>
<td>103.60</td>
<td>0.16</td>
</tr>
<tr>
<td>Knowledge</td>
<td>32.7</td>
<td>37.7</td>
<td>35.10</td>
<td>32.00</td>
<td>0.94</td>
</tr>
<tr>
<td>Skill</td>
<td>44.2</td>
<td>45.8</td>
<td>42.62</td>
<td>44.07</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Table 1. Comparison of methods to gain insight, knowledge, and skills regarding self-protective measures during chemical attacks using one-way ANOVA
opposed to Basij), the effect of the score of this course in the final mean grade point, the military enthusiasm among students, and being held during school hours (as opposed to Basij).

In the study by Sharififar, the Internet was regarded as the least used method of obtaining knowledge among the educated class of doctors and nurses despite its availability (1). Therefore, due to the lack of access and knowledge of the students regarding the Internet and with respect to the study by Sharififar, Internet was omitted from the methods of acquiring knowledge (1). Due to the foregoing, increasing the knowledge and skills appropriate to military nurses who are at the forefront of confrontation with such events is essential (2,10,17).

In dealing with mass casualties caused by chemical weapons, careful planning and training are required for nursing students for effective performance. The lack of such preparation or the belief that this preparation is unnecessary is a disaster (18).

Health centers and other accident-related organizations should implement education and training classes at least twice a year and consider it as an activity to promote the insight, knowledge, and operational skills of nurses to guarantee their efficient response to accidents (18).

**Conclusion**

According to the results, medical centers and other accident-related organizations should perform training courses regularly and annually to raise the level of knowledge and skills regarding self-protection actions in order to reduce losses and damages. Therefore, training personal protection and its maintenance should be one of the country’s defense objectives not only in wartime, but also in peacetime.

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**Conflict of Interests**

Authors have no conflict of interests.

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