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Evaluating the Effectiveness of Public Education Courses by the Red Crescent Society on the Attitude, Knowledge, and Performance of Armed Forces Conscripts

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Original Article

Abstract

INTRODUCTION: This study evaluates the effectiveness of the public education courses (first aid and emergency preparedness) of Red Crescent Society (RCS) on attitude, knowledge, and performance of conscripted personnel of the Iranian armed forces towards first aid and facing of hazards and disasters.

METHODS: In this descriptive and quasi-experimental study, a total of 680 armed forces conscripts across the country were evaluated using a multi-stage cluster sampling method. Based on Cochran's formula, 340 individuals were assigned to the experimental group (trained by RCS trainers) and 340 to the control group (not trained). A researcher-made questionnaire contains two sections and main components (attitude, knowledge, and performance), was developed using the Kirkpatrick evaluation model. Its content validity (CVR=0.86) and reliability (Cronbach's alpha=0.89) were confirmed. Data analyzed using SPSS-22 included Kolmogorov-Smirnov, independent t-test, Mann-Whitney U, and chi-square tests.

FINDINGS: According to the results, the RCS public education courses had a statistically significant positive effect on participants' attitude (mean score 4.1, $p<0.05$), knowledge (4.0, $p<0.05$), and performance (3.6, $p<0.05$); also, total score (3.8, $p<0.05$) in the experimental group are lower compared to the control group (attitude 2.8, knowledge 3.7, performance 3.3, total score 3.2).

CONCLUSION: The RCS public education courses significantly improved the attitude, knowledge, and performance of conscripted armed forces personnel which these results support the continuation and potential expansion of such training initiatives to enhance military preparedness and response capability.

Keywords: First Aid; Emergency Preparedness; Attitude; Knowledge; Performance; Armed Forces Conscripts; Training Effectiveness; RCS.

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Introduction

Today, the decisive role of human resources in organizational success is well established; strategic plans and investments yield results only when capable, efficient, and committed personnel are continuously developed through a comprehensive training system. (1)

In the military context, where rapid and coordinated action during crises can prevent extensive loss of life and property, strengthening human capital becomes even more essential. Therefore, using the Kirkpatrick four-level model as the evaluative framework, this study evaluates whether the RCS first-aid and emergency preparedness training enhances conscripts' attitude, knowledge, and performance. By comparing trained and untrained conscripts, the research aims to measure the program's impact and provide evidence to support the refinement or expansion of such training within the armed forces.

Experiential training is rooted in learning theory and aims to create relatively stable transformations in individuals—enabling them to

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perform tasks more effectively, and to improve their skills, knowledge, and behavior. (2)

Training involves the use of planned programs that enhance existing competencies in employees and facilitate the acquisition of new knowledge, skills, and abilities in individuals in a way that facilitates improved job performance.(3)

On the other hand, learning activities also play an essential role in individual development. These include all actions a person undertakes throughout their life to enhance knowledge, skills, and competencies within personal, social, and professional domains. Such activities directly influence behavior, information processing, understanding, attitudes, values, and capabilities. They are not random but rather defined by two essential characteristics: continuity and persistence. Learning activities are generally categorized into two types: A) organized learning activities: are intentional, with clearly defined goals and outcomes in which the learner or program designer consciously seeks to expand knowledge, develop skills and professional competencies, and achieve explicit behavioral outcomes. These activities follow a structured format, are delivered in a specific learning environment using purposeful instructional methods, and may involve both explicit and implicit learning objectives; B) unorganized (random) learning activities: may consist of one or more informal experiences which each may vary in content and method, yet they still contribute to learning. Interestingly, both types of learning can sometimes lead to similar outcomes. (4)

The General Staff of the Armed Forces of the Islamic Republic of Iran, in line with its goal of enhancing national security along with defensive, economic, and social capabilities through the effective execution of military service, signed a memorandum of cooperation with the IRCS in 2019. This agreement marked the beginning of skill-based training programs focused on first aid and emergency preparedness, aiming to improve the efficiency, knowledge, and operational preparedness of conscripted personnel and also includes the strategic utilization and management of the armed forces' capacity—as a present and responsive entity in emergency situations—to contribute to the formation of a hazard-aware and resilient society. Through this collaboration, the program is intended to facilitate the recruitment and development of qualified, educated, and responsive teams within the armed forces to act effectively in the face of environmental hazards, incidents, and disasters. (5)

In other words, trained individuals will be able to play an effective role in both self-aid and mutual aid until professional aid workers arrive. Through proper first-aid training courses, the armed forces will be equipped to take immediate and preliminary action to reduce injuries and stabilize the physical condition of the injured before their transfer to medical centers. Moreover, such training prepares personnel to respond to a range of natural and man-made hazards and enables them to act appropriately during emergencies (6,7,8). The plan for public education courses for conscripts of the armed forces includes periods during and after their duty, aiming to improve knowledge and preparedness in the face of incidents and disasters, raising their awareness of first aid and natural and man-made hazards, disaster response, strengthening related skills, increasing the preparedness of conscripts of the armed forces against hazards, and recruiting members for the relief and humanitarian activities of the RCS. (9&10)

Nowadays, the advancement and development of organizations and institutions are closely linked to the enhancement of knowledge, skills, behavior, and insight among human resources. (1&3) Therefore, focusing on the training and development of personnel is essential.(6) In this context, individuals who have received various forms of skill-based training can significantly mitigate the risks and consequences of incidents until the arrival of rescue forces, especially when they are already familiar with principles of prevention and preparedness. (7&10) According to available statistics, the RCS trained 169,269 armed forces personnel in first aid and emergency preparedness from 2019 to 2023. (5)

A key element in evaluating the effectiveness of such training lies in the proper implementation of training processes and the fulfillment of learning objectives at each stage. (6,11)

Indicators of training effectiveness include: achievement of intended learning outcomes, observable improvements among participants, alignment of behavior with organizational expectations, accurate task performance, the capacity to meet operational goals, added value through learning, and enhancement of work-related success indicators. (6,12&13)

The RCS can serve as a reliable lead agency for executing this national plan by analyzing

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training outcomes to identify strengths and weaknesses and derive lessons for future program improvement. (10&14). However, successful implementation requires coordinated efforts across all levels of the RCS and full collaboration with the General Staff of the Armed Forces. (5)

Accordingly, this study aims to evaluate the effectiveness of the RCS training courses in first aid and emergency preparedness provided to armed forces conscripts. Using the Kirkpatrick model as a framework (particularly levels 3 and 4) (6), the research seeks to answer two central questions: Have the first aid and emergency preparedness training courses been effective for military and conscripts of the armed forces personnel? And to what extent have these training courses affected the attitude, knowledge, and performance (behavior and results) of armed forces personnel?

Methods

In this descriptive and quasi-experimental study, a total of 680 armed forces conscripts who had completed RCS training courses at their designated training centers across the country were surveyed using a multi-stage cluster sampling method. According to the RCS report, from 2019 to 2023, a total of 169,269 conscripts underwent RCS public education courses such as first aid and emergency preparedness training (5,10). Based on Cochran's formula, 340 individuals were allocated to the experimental group who trained and another 340 to the control group who not trained by RCS trainers, selected from provinces representing five geographical zones of the country (north, south, east, west, and central) (17). The selection of training centers within each region was guided by expert opinions and recommendations from provincial educational specialists.

A researcher-designed questionnaire was developed with a Likert scale in accordance with the Kirkpatrick four-level evaluation model (including reaction, learning, behavior, and results) (6) and included two main sections. Section A collected demographic information such as province, training center, age, education level, service history, and type of military affiliation, including the Army of the Islamic Republic of Iran (AJA), the Ministry of Defense and Armed Forces Logistics (VEDJA), and the Law Enforcement Command (FARAJA).

Section B comprised training evaluation questions aligned with the RCS training courses, addressing dimensions such as: a) attitude; b) knowledge acquisition; c) performance (including behavior and practical outcomes as results).

The questionnaire included five demographic questions. The attitude section contained 13 items for the experimental group and 3 for the control group; knowledge section included 10 items per group; and the performance section consisted of 15 items in each group.

The questionnaire's content validity was established using Lawshe's method (CVR = 0.86) (18), and internal consistency reliability was confirmed using Cronbach's alpha ($\alpha = 0.89$).(19) Both descriptive and inferential statistics were used to analyze data using SPSS-22. (18) Descriptive statistics included mean, median, mode, standard deviation, skewness, kurtosis, frequency, and percentage. Inferential statistics included the Kolmogorov-Smirnov test, independent t-test, Mann-Whitney U test, and chi-square test, with a significance level set ($p<0.05$). (19)

Findings

According to the results, the geographical distribution of research participants across the selected provinces was identical in both the experimental and control groups. The distribution in provinces was as follows: Mazandaran (n = 43, 12.6%), Fars (n = 46, 13.5%), Kerman (n = 32, 9.4%), South Khorasan (n = 39, 11.5%), East Azerbaijan (n = 42, 12.4%), Tehran (n = 123, 36.2%), and Qazvin (n = 15, 4.4%).

Table 1 presents the demographic characteristics of the participants in both groups and, as shown, there is no statistically significant difference between the two groups in terms of age and education level. The mean age in the experimental group was 22.9±3.0 years (18-37), while it was 23.5±3.0 years (18–39) in the control group (P=0.142). In addition, the experimental group had a higher proportion of participants with bachelor's degrees (47.1% vs. 42.1%), whereas the control group had a higher proportion of postgraduate degree holders (11.8% vs. 3.8%) (P=0.203). Overall, there is a statistical difference between the two groups.

In contrast, the distribution of participants by military affiliation—Army, MODAFL, and Police—was identical in both groups (P=1.000), indicating homogeneity in this demographic variable. Considering the differences, especially in age and education, these variables should be taken into account when interpreting the effectiveness of the RCS training courses. Although differences in

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age and education were statistically significant, they were modest in magnitude and unlikely to have introduced meaningful bias. The positive effects of the training program remained consistent across demographic subgroups, reinforcing the validity of the observed outcomes.

Table 1. Demographic Characteristics of Participants

Variable		Experimental (n=340)	Control (n=340)	P-value
Age, (Mean ± SD)		22.9 ± 3.0	23.5 ± 3.0	0.142
Education Level	Junior /senior high school	42 (12.4)	44 (12.9)	0.203
	High School Diploma	114 (33.5)	94 (27.6)	
	Associate degree	11 (3.2)	19 (5.6)	
	Bachelor	160 (47.1)	143 (42.1)	
	Postgraduate	13 (3.8)	40 (11.8)	
Type of Membership (n, %)	Army	204 (60)	204 (60)	1.00
	MODAFL	15 (4.4)	15 (4.4)	
	Police	121 (35.6)	121 (35.6)	

Table 2. Comparison of Main Study Variables Between Groups

Item	Experimental (Mean±SD)	Control (Mean±SD)	t-value	p-value
Attitude	4.1 ± 0.719	2.8 ± 0.108	5.2	< 0.05
Knowledge	4.0 ± 0.487	3.7 ± 0.429	3.8	< 0.05
Performance	3.7 ± 0.455	3.2 ± 0.505	4.1	< 0.05
Total score	3.8± 0.455	3.2 ± 0.446	5.4	< 0.05

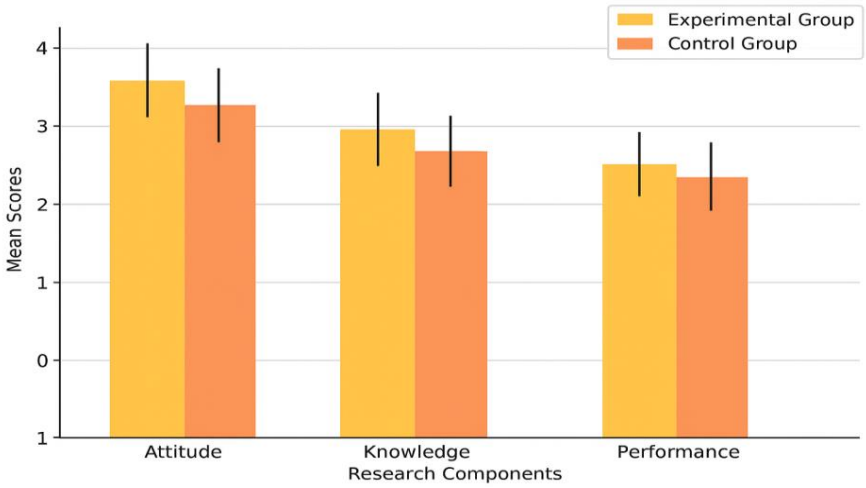

Figure 1. Comparison of mean scores between the two groups for research components

Figure 2. Comparison of performance aspects between two groups

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Table 2 summarizes the comparison of the three core research variables—attitude, knowledge, and performance—between the experimental and control groups. The experimental group showed significantly higher mean scores in all components: attitude (4.1 ± 0.719 vs. 2.8 ± 0.108), knowledge (4.0 ± 0.487 vs. 3.7 ± 0.429), performance (3.7 ± 0.455 vs. 3.2 ± 0.505), and total score (3.8 ± 0.455 vs. 3.2 ± 0.446), with all differences being statistically significant ($P<0.05$). These findings clearly demonstrate the effectiveness of the RCS public education courses in improving cognitive, attitudinal, and behavioral dimensions among conscripts.

Figure 1 illustrates the comparative mean scores for *attitude*, *knowledge*, and *performance* in the experimental and control groups. In all three domains, the experimental group consistently achieved higher scores, underscoring the positive impact of the RCS public education courses. The visual representation in Figure 1 clearly depicts a substantial gap between the two groups, reinforcing the practical effectiveness of the intervention and its influence on participants' cognitive and behavioral dimensions.

Figure 2 highlights two subcomponents of performance: behavioral performance (e.g., application of first-aid techniques) and result-based performance (e.g., participation in rescue operations). The experimental group outperformed the control group in both categories.

These improvements indicate not only enhanced skill application but also increased operational participation, both of which are vital in military crisis response settings. The training program, therefore, demonstrated effectiveness in both individual preparedness and collective emergency response outcomes.

Collectively, these findings confirm that the RCS training courses significantly enhanced the preparedness, skill, and response efficiency of armed forces conscripts. These outcomes support broader implementation of such capacity-building interventions within military structures.

Discussion and Conclusion

The results of this study confirm that first-aid and emergency preparedness training programs provided by the RCS have had a significant and multidimensional impact on the preparedness of armed forces conscripts. By applying the Kirkpatrick four-level model as the guiding theoretical framework, the study systematically assessed the program's effectiveness across four domains: learner reaction, knowledge acquisition, behavioral change, and practical results in real-life settings. (6)

At level 1 (*reaction*), conscripts expressed a high level of satisfaction with various aspects of the training, including the relevance of the content, teaching methods, instructor competence, and the overall learning environment, as measured through survey results. The high average attitude scores observed in the experimental group indicate that participants viewed the program as meaningful, motivating, and professionally beneficial. This initial reaction is essential because positive learner perception often correlates with higher engagement and willingness to apply learned concepts in real-world situations. (1)

At level 2 (*knowledge*), the program was successful in delivering measurable improvements in both knowledge and skill acquisition, as evidenced by the significantly higher mean scores in the experimental group compared to the control group. These gains are important in contexts such as military preparedness, where theoretical understanding of emergency response protocols must translate into immediate, decisive action.

At level 3 (*behavior*), the findings indicated that the RCS training program fostered positive behavioral changes in the experimental group. These included improved decision-making, more confident application of first-aid techniques, and increased preparedness to respond to emergencies. Such changes are crucial in the armed forces setting, where rapid response and composure under pressure are mission-critical skills. However, the data also reveal a performance gap between behavioral improvements (mean score 3.7) and outcome-level achievements (mean score 3.2), indicating that while individuals adopt new behaviors, their full impact at the organizational or operational level may require additional reinforcement. (19)

At level 4 (*results*), though this study did not assess long-term institutional outcomes such as reduction in casualty rates or improved mission performance, short-term indicators of effectiveness—like improved practical skills and increased participation in emergency drills—suggest positive transfer of learning. The performance dimension, encompassing both behavior and its outcomes, showed statistically

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significant gains, reinforcing the real-world applicability of the training.

Importantly, when comparing domains, the performance scores (mean=3.7) were somewhat lower than those for attitude (4.1) and knowledge (4.0). Within the performance domain itself, the average for outcomes (3.2) was notably lower than for behavior. This discrepancy underscores the need for continued support post-training—through mentoring, feedback, and operational opportunities—to ensure that behavioral change results in tangible organizational impact. Training authorities and RCS planners may need to explore ways to bridge this implementation gap through follow-up programs or field simulations. (6,19)

Overall, the training programs fulfilled their intended purpose: enhancing conscripts' emergency preparedness. The findings strongly support continued investment in these structured, skill-based educational interventions for the military sector. Beyond knowledge and skills, the training helped develop confidence, initiative, and practical capability among conscripts—core qualities in any emergency setting.

To further improve training quality and impact, several recommendations emerge from this study. First, it is essential to identify and address the barriers that conscripts face during the training process. Methods such as interviews, focus group discussions, and needs assessments can provide valuable insights into learner challenges. Training designers should then prioritize these concerns and allocate resources accordingly. In addition, behavioral change can be strengthened by addressing three key factors:

Predisposing factors, such as trainees' attitudes, values, motivations, and beliefs. Enabling factors, which include resources, access to materials, and the structural support required to apply new skills.

Reinforcing factors, such as institutional recognition, feedback, and rewards, which sustain motivation and ensure long-term application of learning. (1,3&13)

To create enabling environments, it is essential to ensure that trained personnel have both the opportunity and the autonomy to use their new skills. This includes providing time, resources, and managerial support. Reinforcement, on the other hand, may come through follow-up workshops, acknowledgment of training participation, and the inclusion of trained personnel in real operations or drills.

The training environment itself can be further enriched by encouraging participant feedback, fostering innovation, and adapting content to reflect emerging challenges. Additionally, simulation-based exercises and drills—conducted in realistic but safe conditions—can bridge the gap between theoretical learning and applied action. These practical experiences serve as catalysts for behavioral consolidation and help participants become more operationally competent. (19)

Although some demographic differences between groups were statistically significant—namely in age and education—their magnitude was minor and unlikely to have influenced the outcomes materially. The large sample size and demographic similarity across other variables (e.g., military branch, regional distribution) support the internal validity of the findings. However, future studies might consider employing matched-group designs or using regression controls to adjust for such baseline differences more precisely. (19)

In conclusion, the results of this study provide compelling evidence that structured, skill-based training in first aid and emergency preparedness—when implemented through a coordinated national initiative like that of the RCS—can significantly enhance military preparedness. Improvements were observed across all core dimensions: attitude, knowledge, and performance. These gains are not only statistically significant but also practically relevant, highlighting the potential of well-designed training programs to build resilient, responsive, and skilled human resources in the armed forces. Given the strategic importance of emergency response capacity in military contexts, continued expansion and refinement of such training programs are strongly recommended.

Conflict of Interests

The authors declare no conflict of interest.

Ethical Considerations

All ethical principles have been considered in this article. Participants were informed about the purpose of the research and the steps of its implementation.

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Author's Contributions

This article is based on a research project titled "evaluating the effectiveness of public education courses on armed forces personnel in the country (Iran)," which is being implemented by Nahid Sarikhani. Also, Sarikhani was responsible for the design, supervision, methodology, and data analysis, and Azadeh Soleimaninejad was responsible for writing, reviewing, and editing the submitted manuscript, and correspondence.

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