

Effect of self-aid and buddy-aid education by lecture and multimedia software package methods on the knowledge level of military cadre

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Abstract

Aims: Regarding the necessity of self-aid and buddy-aid training, passing this training course has been obligatory for the whole army personnel for about 10 years. This study was conducted to investigate the effectiveness of self-aid and buddy-aid training by two methods of lecture and multimedia software packages on the knowledge level of selected combat battalion officers of Tehran.

Methods: In a semi-experimental study conducted in year 2010, 60 eligible officers of two selected combat battalions of Tehran were selected from the total number of 300 and were divided into two 30-person groups and they were thought by two methods of lecture and multimedia software packages. They were tested by a written test with standard questions for determining the amount of knowledge. Results were collected and analyzed and compared by descriptive and analytic statistical methods including paired T-test, independent T-test and exact Fisher test using SPSS 15 software.

Results: The mean knowledge level score was not statistically different between the two groups before intervention. The mean score showed more increase in multimedia software group after intervention. The mean knowledge level score increased in both groups after intervention, which was statistically different ($p < 0.001$).

Conclusion: Teaching with multimedia software packages is more effective than lecture method in increasing military officers' knowledge level in proper time and place with presence of educational assistance tools.

Keywords: Self-aid, Buddy-aid, Lecture, Multimedia Teaching Method

Introduction

Awareness of the first aid principles is necessary for soldiers in order to protect themselves and the other counterparts' life. Knowing organizational duties, they can save a life or prevent permanent disability or decrease the duration of hospitalization for themselves and their counterparts through timely and appropriate medical course of actions. Most of wounded and injured soldiers can return to their unit and continue their combat duties if they receive timely first aids and subsequent appropriate treatment. Therefore, all military forces should learn the principles of first aids to present the highest efficiency and arm power in battle fields. One of the best ways to save lives and reduce high injuries in injured people are self and buddy-aid primary actions. Through these methods, combat fighters can be involved in simple but life-giving therapeutic measures for themselves or their counterparts in battle field through obtaining some primary medical information and related skills for using this information with assistance tools [2, 3, 4]. Another important issue in the self and buddy-aid after passing theoretical and practical education courses, is the presence of assistance tools related to the mission of combat fighters and their complete familiarity in using these tools. The specialized operating force

which is sent into enemy's territory without having specific sequence of operations should have higher education and equipment compared to a force that operates in classic organization and with supporting facilities. There are many subjects in military first and buddy-aid training. Among the most important issues, being familiar with basic resuscitation measures, investigating breathing, bleeding and shock and the methods of their control, and dealing with various fractures, application of temporary splints, NBC events, etc. can be mentioned. Any action that keeps the soldier and his unit in ideal conditions is considered as the basic principle of combat organization. Therefore, learning basic principles of first aids and basic measures are necessary for all militaries [5]. Education is an important part of the preparation process [6, 2]. Presence of active system of education and public health care are the defensive keys in facing mentioned threats, in a way that attacks could be identified easily and effectively and can be equipped effectively against them [7, 8].

Teaching Methods has been classified into lecture and non-lecture method. Teaching through lecture is teacher oriented. Course content is presented in class (face to face), or workshop in which the attendance of teacher and students in class simultaneously is mandatory. Non-lecture training features are student

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oriented and there is separation of teacher and student. Media provides a non-joining relationship between these two important components of education [9, 10]. The advantages of lecture method are: mutual relations, active participation and the possibility of discussion, obtaining habits leading to behavior and skills along with obtaining knowledge, developing good relations and interpersonal communication skills, possibility of intimate discussion and immediate response, having prompt feedback, encouragement and motivation of others to interpret behaviors, etc. [10].

Previously, many investigators have examined the effect of multimedia education and educational software in teaching that the results of some of these researches have proved the efficiency of mentioned method in teaching and learning and the results of other researches indicate the significant difference between traditional teaching method and multimedia teaching method. Interesting points in multimedia teaching method are as follows:

- 1- While using the educational software, learner encounters different maneuvers which increase his choice power and this issue increases his learning level.
- 2- In multimedia software designing according to the educational principles, personal differences have been considered; therefore, each individual learns according to his own position and conditions
- 3- The possibility of choice in educational software creates more capabilities and abilities in learners.

Barsuk et al. conducted a study with regard to the preference of education with computer compared to traditional methods of teaching. Considering that placing catheters in hemodialysis patients is a skill that is done by nephrologists, in this study, 18 nephrologists were used who had been taught through two methods of traditional education and computer stimulated method and they were evaluated after one year of education. Those who had been trained through traditional style gained 17% of minimum score and those trained through stimulated method achieved 88% of minimum score. Therefore, standard stimulated programs can be complementary for many procedures [11]. Amy MC et al. in their research with the title "The effect of software packages in teaching 7- to 14-year-old asthmatic children" showed that those children who used the training packages had more fun. In addition, their knowledge about asthma increased dramatically [12]. Zolfaghari et al. in their quasi-experimental study entitled "The comparison between the effect of electronic and lecture teaching methods on the learning of mother and child health

lessons in nursing students of Nursing and Midwifery College of Tehran University," concluded that electronic education can be applied for some nursing subjects [13]. Dennis et al. also expressed that using multimedia method alters the attitude of learners, because students can use educational CD based on their own choice at any time [14].

This study was conducted due to the importance of self and buddy-aid education for all combat battalion officers and considering the problems existed in deploying teachers for teaching these courses and teaching method.

The purpose of this study was investigating the self and buddy-aid education through two lecture and multimedia software package methods.

Methods

This semi-experimental two-group study was conducted in 2009. Subjects were the officers of two selected military battalions in Tehran. The number of officers in each battalion was 300. From these two battalions, some were selected based on the criteria for entering the study and among these officers, 30 subjects were chosen randomly from each battalion and were taught self and buddy-aid through two lecture and multimedia methods. Inclusion criteria were as follows: having diploma or associate degree, gaining the score less than 60%, lack of previous experience in self and buddy-aid learning and training and being in the first or second decade of his service. For the group who received multimedia software, least familiarity with windows, knowing how to use multimedia CDs and having P.C were among the required conditions for entering the study. The necessary sample size in each group was estimated using the Altman nomogram ($\alpha=5\%$, $\beta=20\%$, Power=80% and $d=2.4$) that with the probability of losing 10% of sample size, 30 subjects for each group (i.e. 60 in total) were considered. Pre-test in both groups included 38 standard questions related to cognitive domain (knowledge) that was conducted before the intervention. For lecture group, training was conducted using lecture, question and answer and presenting training booklets and for the second group training was done through presenting the training package containing training CD. Training in these cases included texts, printable CDs, slides, images, sound tracks, films and the test, with no time and place limitation. The interval between the end of the intervention and holding posttest in both groups was one week after lecture training and delivery of

multimedia training package. Posttest also included 38 questions related to cognitive domains (knowledge).

The validity of questionnaire was determined through face validity and content of questions was determined through content validity by 10 faculty members who had sufficient skill in self and buddy-aid training and required changes were made in questions applying their comments and suggestions.

For determining the reliability of the questionnaire, 10 officers were chosen and were given the questionnaire. The questionnaire was given to the same number of officers a week later and its reliability was calculated and confirmed using Pearson test ($r=93\%$).

Data analysis was performed using SPSS 15 software, descriptive statistics (mean, SD) and paired T-test, independent T-test, exact Fisher test and Kolmogorov-Smirnov test. Paired T-test was used for comparison of the mean before and after intervention in both groups and independent T-test was used for comparing the means in two groups.

Table 1- Comparing the mean of knowledge score before and after training

Stage→ Group↓	Before intervention	After intervention	Level of significance Paired T-test
Lecture	18.9±3	23.7±2.9	<0.001
Multimedia	17.2±3.9	28.2±2.5	<0.001
Independent T-test significance level	0.07	<0.001	

Results

20 subjects (7.66%) had diploma and 10 (3.33%) had associate degree in lecture group and in multimedia group 14 subjects (46.7%), had diploma and 16 subjects (53.3%) had associate degree. Although the majority of subjects in lecture group had diploma and in multimedia group had associate degree, significant difference was not seen between two groups ($p>0.05$). In the lecture group, 22 people (73.3%) and in multimedia group all individuals were married. Although the majority of subjects were married in both groups, the difference between two groups was statistically significant ($p=0.005$). The average age in the lecture group was 28.5 ± 3.8 years and in the multimedia group was 32.5 ± 3.8 . In addition, the average of work experience was 7.3 ± 3.2 years in lecture group and 11.8 ± 4.2 years in multimedia group. There was significant difference between two groups regarding age and work experience ($p<0.001$). The mean of knowledge test was not different in both

groups' pretests before intervention. After intervention, the mean score had higher increase in multimedia group. The mean of knowledge score increased after invention in both groups which was statistically significant (Table 1).

Discussion

According to the results of this study, there is statistically significant difference between age, experience, and multimedia training variables. It means that in multimedia group, with increase of age and experience, the knowledge gained by multimedia software has increased which may be due to the ease of using this method at home or workplace.

Regarding marital status and methods of teaching, there is a significant statistical difference between marital status and training through multimedia. This means that in married group also the level of knowledge has been increased through using multimedia software package method of teaching that it may be due to the family participation in education in this method.

In order to evaluate the amount of knowledge before training in lecture and multimedia groups, low level of knowledge in both groups is not strange because due to educational needs of officers, holding continuous educational courses in organizations is essential. According to the obtained results, significant difference between the test scores of two groups in pretests and posttests is evident. These scores indicate the effect of teaching in knowledge level in two groups. Using independent T-test, knowledge in both groups was compared after training. The results show that in lecture group and multimedia group, the level of knowledge has been increased after the intervention but the difference in scores level shows that increase in level of knowledge has been in favor of multimedia group. The results of this part is consistent with the studies of Mladenovski and Kieser who announced that teaching through multimedia has more effects in increasing awareness score of participations compared with teaching through lecture [15]. Shahidi et al. in their study also expressed that training with computers is more effective than training through lecture [16]. Also, Joe O et al. studies about the effect of education before surgery on knowledge, skill and ability of patients after the surgery through multimedia software training method showed that using this method of training leads to the improvement of patients' knowledge after surgery [17]. Therefore, the results of this study is also consistent with the present

study.

Considering the shortage of skilled manpower in teaching and consequent problems of deployment of teachers and the presentation way of educational content and also the limitation in staff's cooperation during the training due to the time consuming nature of teaching, remote learning especially in form of CDs, which can be applied online (on the internet or intranet) and providing CDs for the armed force officers is suggested.

Conclusion

In terms of ideal time and place conditions and presence of educational assistance tools, teaching through multimedia software package can be more effective in increasing the knowledge of officers, compared to teaching through lecture.

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