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RESEARCH ARTICLE

Effectiveness of Applying Tactical Combat Casualty Care Guidelines on Paramedic's Knowledge's . An Interventional Study

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ABSTRACT
Objective(s): to find out the effect of applying Tactical Combat Casualty Care (TCCC) guidelines on Paramedic's knowledge and to found relationship between paramedic's knowledge and their socio demographic characteristic.

Methodology: A pre-experimental design is carried in Baghdad Operations Command, at January 14th, to April 2nd, 2022. Non-probability "purposive" sample of (40) paramedics are selected from all units in Baghdad Operations Commands. The questionnaire consisted of two parts: the demographic characteristics of paramedics, and second part include four domain, which are (32) items related to the knowledge of paramedics towards TCCC. The researcher used the statistical program version 20 to analyze the data, stability of questionnaire measured through pre and posttest, validity was determined The content of the tool through its presentation to experts, and data was analyzed through use of descriptive and deductive statistical analysis.

Results: study results indicated that the knowledge of paramedics related to TCCC protocol of the four axes was poor level in the pre-test and their knowledge was improved in first and second post-test. The study revealed that there was relationship for the effectiveness of the program with the level of education for the paramedic participating in the study at P ≥0.05 level

Conclusion: The study concluded that there were improvements in paramedics' knowledge toward the TCCC standards.

Recommendations: The study recommended the inclusion of the current program within the syllabus of training courses for members of the military medical services.

Keywords: tactical combat casualty care, guidelines, paramedic, Knowledge, Interventional Study.

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INTRODUCTION

Tactical Combating Casualty Care (TCCC) is a collection of practices that depend on based-evidence standards for casualty care before arriving to health care facility that was established for use on the war environment. It has become the Gold important protocol in the care of injured personnel. The goal of these standards was to improve trauma injury care in battle conditions, which presented significant hurdles in terms of instrumentation and patient transfer (Butler, 2017).

The purpose of TCCC is to combine good strategies with good healthcare. TCCC is used in combat missions, as the name suggests. TCCC divided into three stages: Care-under-fire (CUF) tactical field care (TFC), and tactical evacuation care. care providers and their units are believed to be under effective enemy fire in care-under-fire, and the care they can offer is limited. The paramedics and injured combat are no longer under effective hostile fire and the situation allowing to administered more care in the tactical field phase. Casualties are transferred to healthcare facility during tactical evacuation phase; there is chance to provide high degree of care (Gerhardt et al., 2012).

During the wars in Iraq and Afghanistan, Tactical Combat Casualty Care (TCCC) saved hundreds of lives, more than 90% of human losses occur before reaching the hospital, and this stage is the focus of attempts to reduce deaths during the fighting. A few military physicians, police officers, and rescue workers have received trauma training and have been given trauma sessions prior to visiting the hospital (Gerhardt et al., 2017).

Tactical combat casualty care has advantage of lowering casualties' number on battlefield. TCCC is expected to be put in place as soon as possible so that medics are not put in danger. The goal of going over the TCCC was to see how they may be applied to treating injured soldiers on the battlefield (Savage et al., 2011).

METHOD

A pre-experimental design was carried in Baghdad Operations Command, at January 14th, to April 2nd, 2022. The present study has been carried out in the Sixth, Eleventh, and Seventeenth Divisions Commands. A non-probability (purposive) sample included was (40) paramedics , the researcher constructed a questionnaire format based on program in order to reach the objectives of the study, which consists of two parts; Part one; demographic characteristics of the paramedics which as (age, level of education, years of experiences in first aid, and number of training courses in medical category. Part two; paramedics' knowledge concerning TCCC standards. It consists of four domains related to knowledge (Care under fire, Tactical field care, Prepare for Evacuation & treating other injuries, and tactical evacuation care) and it includes 32 items. The content validity of the present program and instruments was established through a panel of fourteen (14) experts. The reliability of the instruments was determined through the applying of present program on pilot study by uses the test-re-test approach. The data was analyzed through the use of the Statistical Package of Social Sciences (SPSS) version 20. Through descriptive statistics (frequency, percentage, mean, mean of scores, total of scores, and standard deviation) and statistical inferential (t-test, person correlation coefficient, and analysis of variance ANOVA) . After the approval of the consultant of the College of Nursing upon the study, researcher has submitted description including the objectives and project of the study to the central statistical organization in the ministry of planning as well as ministry of defense to get official permissions to carry out the study. After that directorate of military training has ordered Baghdad Operations Command and units' to facilitate the researcher mission to conduct the study .

RESULTS

Table (1): Descriptive Statistics of Socio-Demographic Variables (SDVs) of the Studied Sample

Variables	Classification	Freq.	%
Age Mean± SD= 34±5.638	26-30 years old	14	35.0
	31-35 years old	10	25.0
	36-40 years old	8	20.0
	40 and older	8	20.0
	Total	40	100.0
Education Level	Intermediate School	12	30.0
	Secondary School	15	37.5
	Diploma	11	27.5
	Bachelor	2	5.0
	Total	40	100.0
Years of experience	<5 years	10	25.0
	5-10 years	16	40.0
	>10 years	14	35.0
	Total	40	100.0
Training courses	Once	6	15.0
	2-4	24	60.0
	5 and more	10	25.0
	Total	40	100.0

Freq. =Frequencies, %=Percentages, $mean$ ± S.D= Mean and Standard Deviation

Findings show participants age, the mean age for paramedic's is 34, the age 26-30 years old were recorded the highest percentage among participants (n=14; 35%). Respect to education level, the secondary school were highest (n=15; 37.5). Years of experience related findings, findings show that most of study participants have 5-10 years (n=16; 40%). It is obvious from findings that the paramedic's attendant 2-4 training sessions (n=24; 60%).

Table (2): Statistical Significant Difference between Pre and Post Test I by their Overall Responses to the Knowledge Scores

	Weighted	Mean	S.D	t-value	d.f	p≤ 0.05	Sig
Knowledge Testes	Pre-test	1.19	0.192	10.154	39	0.000	HS
	Post-test I	1.70	0.258				

M: Mean, SD: Standard deviation, t: t-test, d.f: Degree of freedom, Sig: Significance, p: Probability value, HS: Highly significant

Findings illustrated that there is a high-significant difference in knowledge scores in two periods of measurements (pre-test and post-test I) (p=0.000), with respect to the statistical mean, the study results indicate that there is an improvement in the paramedic's knowledge at the post-test I (M ± SD= 1.70±0.258) compared with pre-test scores (M ± SD=1.19±0.192).

Table (3): Statistical Significant Difference between Post-tests I and II by their Overall Responses to the Knowledge Scores

	Weighted	Mean	S.D	t-value	d.f	p≤ 0.05	Sig
Knowledge Testes	Post-test I	1.70	0.258	10.154	39	0.091	NS
	Post-test II	1.61	0.220				

M: Mean, SD: Standard deviation, t: t-test, d.f: Degree of freedom, Sig: Significance, p: Probability value, NS: No significant

Findings illustrated that there were no-significant difference in knowledge scores in two periods of measurements (post-test I and post-test II) (p=0.091), with respect to the statistical mean, the study results indicate that the paramedic's they keep acquaintances even passage time.

Table (4) Statistical Differences in Paramedic's Knowledge with regards their Socio-demographic Characteristics

Knowledge	Source of variance	Sum of Squares	d.f	Mean Square	F	p≤ 0.05
Age	Between Groups	.100	3	.033	.479	.699 No-sig.
	Within Groups	2.497	36	.069		
	Total	2.597	39			
Education	Between Groups	.216	3	.072	1.087	.037 sig.
	Within Groups	2.381	36	.066		
	Total	2.597	39			
Experience	Between Groups	.049	2	.024	.353	.705 No-sig.
	Within Groups	2.548	37	.069		
	Total	2.597	39			
Training	Between Groups	.125	5	.025	.343	.883 No-sig.
	Within Groups	2.472	34	.073		
	Total	2.597	39			

d.f: Degree of freedom, F: F-statistic, Sig: Significance

Findings demonstrated there were no-significant differences in paramedic's knowledge with regard socio-demographic data (p> 0.05) except, with level of education, there were significant in knowledge with regards education (p<0.05).

DISCUSSION

The discussion focuses on interpreting the results of the distribution of the study sample by their characteristics, responses of paramedic toward knowledge of applying TCCC program (pretest and posttest I), responses of paramedic toward knowledge of TCCC program (posttest I and posttest II), and association between the effectiveness of program and paramedic's variables.

Through the analysis Demographic characteristics of paramedic's, the high percentage (35%) of participants was at (26 - 30) years Age groups. About education level highest percentage (37.5) of the study sample

was secondary school graduated. The result of the present study indicates that most of the paramedic's (40%), the duration of working in first aids was 5-10 years. And all paramedic's participant in a training course . Sixty percent of the paramedic's complete 2-4 training course related to first aid.

Mebrahtu (2014) conduct study to Assess Knowledge Attitude and Practices of Military Personnel Regarding First Aid Measures in Northern Command 21st Division Addis Ababa, their study finding found that the mean age of the study participants was (26.7) years, and Most of them (42.7%) had trained on the military training center

Raheem and Alwan (2017) reported in their study result that a high percentage (56 %) of the ambulance caregivers participant in the study their level of education were secondary nursing , also according to the findings of the study, the majority (46%) of ambulance care provider spent 6-10 years working in the immediate ambulance.

The comparison of paramedics' knowledge undergoing to the TCCC program at pretest and post-test I, indicated the level of knowledge is (poor) at pretest while the results improved to high level of knowledge (Good) at posttest I, and there is a highly statistical significant between pretest and posttest I. and there were no-significant difference in practices scores in two periods of measurements (post-tests I and II), the study results indicate that the paramedic's keep their information even passage time .

Hassan and AL-mumammedawi (2019) Conduct study to find out the effect of instructional program concerning to emergency care on caregiver. Their study result revealed that there was improved in caregivers' knowledge at posttest.

Shakeri et al (2018) conduct study to identify the knowledge, attitude, and clinical skill about treatment of trauma in Tehran emergency center in a descriptive study on 213 participants, their results revealed that the majority of participants 81.1% have knowledge of trauma management, 88.3% have a positive attitude toward trauma, and 62.4% have skills for trauma management.

Aghababaeian et al (2013) stated in their study result to assess knowledge and performance of medics before the training was low, which increased to high gradually

Pouraghaei et al(2017) they state in their study results that holding training courses is a significance, and necessary to improving the employee's knowledge and performance for emergency medical services.

Jordi et al (2015) their study results agree with this study and revealed that most of medics were poor knowledge and low percent of study participants perceived inadequately prepared for trauma skill. They considered the reason might be due to the majority medics who are working in emergency department didn't attend specific training course.

Kadhum and Baker (2020) They state in their study result that the knowledge of paramedics related to the air evacuation was moderate level in the pre-test and their knowledge was improved in the first and second post-test.

Present study Findings demonstrated that there were no significant differences between the Paramedic's knowledge and their age groups, training courses, and number of years' experience in first aid. While there were significant differences in paramedic's knowledge related to TCCC with regard their Educational level .

Ali and Khudur (2021) They state in their study result that their no statistical significant differences have been found between paramedic's knowledge and their demographic characteristics age, Number of years in first aid, Number of courses completed in the medical, training of advanced first aid course, and the Place of the courses. While there is high significant difference in paramedic's knowledge with regards their level of education.

CONCLUSIONS

1. The study concluded that there were improvements in paramedics' knowledge toward TCCC standards.

2. There were no-significant differences in paramedic's knowledge with regard socio-demographic data age, experience and training. Except, with level of education, there were significant in knowledge with regards education in posttest program ($p<0.05$) .

RECOMMENDATIONS

1.The present study recommended increasing the training courses for paramedics inside and outside Iraq.

2.The study recommended the inclusion of the current program within the syllabus of

training courses for members of the military medical services.

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