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ORIGINAL ARTICLE

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

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ABSTRACT

Background: medical services provided by specialized paramedic played a key role in the military conflicts that occurred in Iraq during the last two decades after 2003 by first aid providing to the injured immediately in the battlefields to safe their life and transporting them to health care facilities for additional health care , as well as in the current study , which concerned with paramedics training on tactical combat casualty care standards that include three steps of care (care under fire, tactical field care, and tactical evacuation care)

Objective(s): The aim of a present study is to determine the effectiveness of applying Tactical Combat Casualty Care (TCCC) guidelines on Paramedic's Practices.

Methods: A pre-experimental design study was carried in Baghdad Operations Command in Iraq, at January 14th, to April 2nd, 2022. to find the effect of applying Tactical Combat Casualty Care guidelines on paramedics' practices. Non-probability "purposive" sample of (40) paramedics are selected from all units in Baghdad Operations Commands. The questionnaire is composed of two main parts (demographic characteristics of the paramedics, and the second part involves four domains which was (71) items concerning paramedics' practices regarding the standards of Tactical Combat Casualty Care , the researcher used SPSS version 20 to analyze the data. Test-retest reliability of instrument was determined through the use of Pearson correlation coefficient and content validity of the instrument was determined through a panel of (fourteen) experts. Data was analyzed through the use of descriptive and inferential statistical analysis.

Results: The results of paramedic's practices in overall main domains related to applying TCCC standards was inadequate in pretest , while in posttest I results showed that the paramedics' practices was improved to adequate level after application of the intervention program . Then the posttest II was done, and the results was similar to posttest I. the data show that there were highly significant differences between pre and post test , which emphasis the positive effect of program.

Conclusion: The study concluded that there was improvement in paramedics' practices toward the TCCC intervention program.

Recommendation: The study recommended to Continuous training for paramedics and engages them in courses, seminars, and conferences to improve their skills and information.

Keywords: Tactical Combat Casualty Care, paramedics, Practices, Interventional Study.

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. (1)

TCCC purpose 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, tactical field care, and tactical evacuation care. Combat 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. 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 the tactical evacuation phase to take higher degree of care. (2)

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. (3)

TCCC has the advantage of lowering the number of casualties on the battlefield. The 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 TCCCs

Was to see how they may be applied to treating injured soldiers on the battlefield. (4)

MATERIAL AND METHODS

A pre-experimental design was carried out to determine the effect of Tactical Combat Casualty Care guidelines interventional program on paramedics' practices at Baghdad Operations Command units, the present study started from 14th January to 2nd April, 2022. The present study has been carried out in the Sixth Division Command, Eleventh Division Command, and Seventeenth Division Command. A non- probability (purposive) sample included all paramedics working in each setting of present study which of (40) paramedics. The researcher constructed a questionnaire format based on a program in order to reach the objectives of the study, which consists of two parts; first part deals with demographic characteristics of the paramedics, the demographic data such as age, level of education, years of experiences in first aid, and number of training courses in medical category. The second part is checklist contain items related to paramedics' practices. The content validity of the TCCC intervention program and instruments has been established through a panel of fourteen (14) experts. Reliability of the observational checklist was determined through the use of the inter-rater reliability method. The reliability of the participant responses was estimated by alpha correlation (r) practice test. the data of the present study are 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).

RESULT

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 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
Education Level	Intermediate School	12	30.0
	Secondary School	15	37.5
	Diploma	11	27.5
	Bachelor	2	5.0
Years of experience	<5 years	10	25.0
	5-10 years	16	40.0
	>10 years	14	35.0
Training courses	Once	6	15.0
	2-4	24	60.0
	5 and more	10	25.0

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

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

Practices Test	Weighted	Mean	S.D	t-value	d.f	p≤ 0.05	Sig
	Pre-test	1.28	0.235	7.819	39	0.00	HS
	Post-test I	1.71	0.245			0	

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 practices 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 practices at the post-test I (M ± SD= 1.71±0.245) compared with pre-test scores (M ± SD=1.28±0.235).

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

Practices Testes	Weighted	Mean	S.D	t-value	d.f	p≤ 0.05	Sig
	Post-test I	1.71	0.245	1.972	39	0.075	NS
	Post-test II	1.68	0.271				

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 no-significant difference in practices scores in two periods of measurements (post-tests I and II) (p=0.075), with respect to the statistical mean, the study results indicate that the paramedic's keep their practices even passage time.

Table 4: Statistical Differences in Paramedic's Practices with regards their Socio-demographic Characteristics

Practices	Source of variance	Sum of Squares	d.f	Mean Square	F	p≤ 0.05
Age	Between Groups	.211	3	070	1.183	.330 No.sig.
	Within Groups	2.137	36	059		
	Total	2.348	39			
Education	Between Groups	.010	3	003	.051	.985 No.sig.
	Within Groups	2.338	36	065		
	Total	2.348	39			
Experience	Between Groups	.208	2	104	1.796	.180 No.sig.
	Within Groups	2.140	37	.058		
	Total	2.348	39			
Training	Between Groups	.110	5	022	.335	.888 No.sig.
	Within Groups	2.238	34	066		
	Total	2.348	39			

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

Findings demonstrated there were no-significant differences in paramedic's practices with regard socio-demographic data (Age, level of education, Years of experience in first aid, and number of Training courses in medical category (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 practices of applying tccc program (pretest and posttest I), responses of paramedics toward practices of tccc program (post test I and posttest II), and association between the effectiveness of program and paramedic's variables.

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

Iraqi researcher 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. [5]

Regarding The Paramedic's, who participated in the study, Findings illustrated a significant increase in their practice concerning Application of Tactical Combat Casualty

Care. The Paramedic's practices tested by observational checklist . This checklist was composed of (4) main domains. The results showed that the paramedic's expressed inadequate practices at the pre-test period of measurement before application of intervention program. While at post test one after application of an intervention program, paramedic's expressed adequate practices.

finally an overall Findings illustrated that there is a high-significant difference in practices scores in two periods of measurements (pre-test and post-test 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 they keep their practices even passage time.

they stated in their experimental courses in Germany to examine the pre-hospital trauma life support (PHTLS) provider between August – December 2011, their results revealed that the physicians noted significant more deficit in their professional training than paramedics, all physicians not have sufficient training for PHTLS, they recommended to increase the training course for PHTLS and should be integrated into curriculum at medical school. [6]

Study conducted to assess the knowledge, attitude, and clinical skill regarding first aid emergency casualties in Tehran emergency center, the results revealed that mean performance score of participants regarding

Pre-hospital and emergency care was below average. [7]

They reported that the paramedics use advanced airway skills infrequently. A continuing professional development program within ambulance trusts does not provide the necessary additional practice to maintain tracheal intubation skills at an acceptable level. Initial training tracheal intubation skill requires the insertion of tracheal tubes, and further ongoing training is attained through clinical practice. [8]

the first aid practice applications on puppet had higher execution as contrasted, Subsequently of this exploration it was resolved that the level of information of administration drivers on medical aid was expanded in post-test after emergency treatment instruction, most of the drivers got impeccable indicate or close to an ideal point in the assessment of their first aid. [9]

Present study revealed that there were no significant differences between the Paramedic's practices and their socio demographic characteristics such as: Age, level of education, number of years' experience in first aid, and number of Training courses completed in the medical category.

The study results agree with finding of a study conducted to determine the effect of aero medical evacuation program on flight medics' practices. Study revealed that no statistical significant differences have been found between flight medic's practices and their demographic characteristics age, level of education, Number of years in first aid, Number of years in AE, Number of courses completed in the medical, training of advanced first aid course, and the Place of the courses. [10]

CONCLUSION

1. The study concluded with a noticeable improvement in the practices of paramedics through the extensive practices and multiple tests given to them.
2. There was no significant association between the variables such as age, education level, Years' experience in the field, and number of training courses with the paramedics practice in posttest after applying the TCCC program.

Recommendation

1. The present study recommended increasing training courses for paramedics inside and outside Iraq to improve their skills and information toward first aid.
2. The present study recommended to conducting other studies about tactical combat casualty care on large number of participants.

REFERENCES

1. Butler Jr, F. K. Tactical combat casualty care: beginnings. Wilderness & Environmental Medicine, (2017);28(2), S12-S17.
2. Gerhardt, R. T., Mabry, R. L., De Lorenzo, R. A., & Butler, F. K. Fundamentals of combat casualty care. Combat Casualty Care: Lessons Learned from OEF and OIF. Washington, DC: United States Department of Defense, (2012); 85-120.
3. Otten, E. J., Montgomery, H. R., & Butler Jr, F. K. Extraglottic Airways in Tactical Combat Casualty Care: TCCC Guidelines Change 17-01 28 August 2017. Journal of special operations medicine: a peer reviewed journal for SOF medical professionals, (2017);17(4), 19-28.
4. Savage, L. E., Forestier, M. C., Withers, L. N., Tien, C. H., & Pannell, C. D. Tactical combat casualty care in the Canadian Forces: lessons learned from the Afghan war. Canadian Journal of Surgery, (2011);54 (6 Suppl), S118.
5. Raheem R. Alwan K. Effectiveness of an Educational Program on Ambulance Caregivers' Knowledge and Practices Concerning Adult Pre-Hospital Trauma Care at Ambulance Department in Baghdad City, Journal of Nursing and Health Science, 2017; 6(5): 18-26.
6. Frank, C. B., Wölfl, C. G., Hogan, A., Suda, A. J., Gühring, T., Gliwitzky, et al,. PHTLS®(Prehospital Trauma Life Support) provider courses in Germany–who takes part and what do participants think about prehospital trauma care training?. Journal of trauma management & outcomes, (2014);8(1), 1-7.
7. Kumar, S., Agarwal, A. K., Kumar, A., Agrawal, G. G., Chaudhary, S., & Dwivedi, V.A study of knowledge, attitude and practice of hospital consultants, resident doctors and private practitioners with regard to pre-hospital and emergency care in Lucknow. Indian Journal of Surgery, (2008).;70(1), 14-18.
8. Deakin, C. D., King, P., & Thompson, F. Prehospital advanced airway management by ambulance technicians and paramedics: is clinical practice sufficient to maintain skills? , Emergency Medicine Journal, (2009); 26(12):888-91.
9. Bayraktar, N., Çelık, S. Ş., Ünlü, H., & Bulut, H. Evaluating the Effectiveness of a First Aid Training Course on Drivers. Hacettepe University Faculty of Health Sciences Nursing Journal, (2009); 16(1).
10. Gaeed, A. K., & Hassan, H. B. Effect of Pioneer Aeromedical Evacuation Program on Flight Medics' Practices toward Emergency Casualties at Army Aviation Bases in Iraq. Indian Journal of Forensic Medicine & Toxicology, (2020); 14(3).