

Effect of Pioneer Aeromedical Evacuation Program on Flight Medics' Practices toward Emergency Casualties at Army Aviation Bases in Iraq

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Abstract

Objective(s): The study aims to determination the effect of aeromedical evacuation program on flight medics' practices.

Method: A pre-experimental design is carried in army aviation bases in Iraq, for the period of February 1st 2019 to September 25th 2019. Non-probability "purposive" sample of (30) flight medics are selected from army aviation bases. Non-probability "purposive" sample of (30) flight medics are selected from army aviation bases. The questionnaire is composed of two main parts (demographic characteristics of the flight medics, and the second part involves five domains which as (67) items concerning flight medics' practices regarding first aid of emergency casualties format, the researcher used SPSS version 20 to analyze the data. The reliability of the participant responses was estimated by alpha correlation (r) practice test was (r= 0.94), and content validity of the instrument was determined through a panel of (twenty-five) experts. Data was analyzed through the use of descriptive and inferential statistical analysis.

Results: The results of the pretest for flight medics revealed that flight medics' practices about five domains of aeromedical evacuation program toward emergency casualties was moderate, while the posttest I and II results shows that flight medics' practices was improved to high level because of the positive impact of the instruction program, and there were significant association between the effectiveness of present program on flight medics' practices and there level of education at $P \leq 0.05$.

Conclusion: The study concluded that the present program was effective on flight medics' practices.

Recommendation: The study recommended to increase the training courses for flight medics inside and outside Iraq, and included the present program on their plan of training.

Keywords: Pioneer, Aeromedical evacuation, flight medic, practices, Emergency Casualties.

Introduction

Aero- medical services are a comprehensive term covering the use of air transportation, airplane or helicopter, to transport patients to and from healthcare facilities and accident scenes. Air medical services have a particular advantage for major trauma injuries. The well-established theory of the golden hour suggests that major trauma patients should be transported as quickly as possible to a specialist trauma center. ⁽¹⁾⁽²⁾

Helicopter emergency medical services has its origins in military evacuation by air transport during the war, its use in civilian situations was initiated in the 1960s in the United States, since then, it has played an important role in pre hospital emergency medical systems, rapid transport of major trauma patients to a definitive care center is a cornerstone of modern trauma systems, and delay in this element of care is a widely known cause of mortality. ⁽³⁾

Key to success is evenly built medical support with strong, balanced system of medical evacuation.

The evacuation of sick and wounded during military operations is influenced by many factors as are operational environment, weather, length and quality of medical evacuation routes and number and type of suitable medical evacuation means in time of need. (4)

The highest percent of trauma deaths occurs in the prehospital setting of the traumatic incident. Mortality and morbidity can be reduced by effective identification, field triage, the intervention of ambulance caregivers to give pre-hospital trauma care and transport of severely trauma casualty to hospital. (5)

Pre-hospital trauma triage standards ordinarily acquire a blend combo of physiological, anatomical, and mechanisms of trauma constriction made to meet casualties' trauma system needs. (6)

Method

A pre-experimental design is carried in army aviation bases in Iraq, the present study started from February 1st 2019 to September 25th 2019. which carried out in the Al Taji Air Base clinic; Al Habbaniyah Air Base clinic;

Al Shuaiba Air Base clinic; Al Kout Air Base clinic; and Kirkuk Air Base clinic, Army aviation college. A non-probability (purposive) sample included was (35) flight medic, the researcher constructed a questionnaire format based on program in order to reach the objectives of the study, which consists of two parts; first part deals with of demographic characteristics of the flight medics which as age, gender, level of education, years of experiences in first aid, years of experiences in aeromedical evacuation, number of training courses in medical category, and Place of the courses. The second part refers to flight medics' checklist items related to practices. the content validity of the present program and instruments was established through a panel of twenty-five (25) experts. The reliability of the participant responses was estimated by alpha correlation (r) practice test was (r= 0.94), 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, standard deviation, and graphical presentation) and statistical inferential (t-test, person correlation coefficient, and analysis of variance ANOVA).

Result

Table 1: Distribution of the flight medics by their characteristics.

Variable	classifications	Freq.	%
Age groups	26-30	9	30.3
	31-35	12	40.0
	36-40	7	23.3
	41-45	0	0
	46 and more	2	6.7
	Total	30	100.0%
	X±S.D	2.13 ± 1.07	
Level of education	middle school	46.7	14
	Preparatory study	30.0	9
	Diploma	10.0	3
	B.Sc.	13.3	4
	Total	100.0%	30
Gender	male	96.7	29
	female	3.3	1
	Total	100.0%	30

Cont... Table 1: Distribution of the flight medics by their characteristics.

Number of years in first aid	1-5 year	30	10
	6-10 year	46.6	14
	11-15 year	23.3	6
	Total X ± S.D	100.0	30
	X ± S.D	7.76 ± 3.44	
Number of years in AE	1-5 year	60	18
	6-10 year	36.6	11
	11-15 year	3.3	1
	Total X ± S.D	100.6	30
	X ± S.D	5.26 ± 2.79	
Number of courses completed in the medical category	1-2	66.6	20
	3-4	20	6
	5	13.3	4
	Total X ± S.D	100%	30
	X ± S.D	2.13 ± 1.43	
Did you complete the advanced course of first aid?	Yes	26.6	8
	No	73.3	22
	Total	100%	30
Place of the course	Inside Iraq	96.7%	29
	Outside Iraq	3.3%	1
	Total	100%	30

Freq.=Frequencies, %=Percentages, $\bar{x} \pm S.D$ = Arithmetic Mean and Standard Deviation

Table (1): shows that (40%) of flight medics at 31-35 years, high percent of them graduated from middle school, (46.7%), (36.6%) of them have (6-10) years of experience in first aid, and experience in AE respectively, high percent (66.6%) including training course, 60% of the study sample have experience in AE for 1-5 year, 66.6% of their completed the medical category was (66.6%) in the class 1-2 year of the study group, 96.7% of courses was in Iraq.

Table (2): Comparison of flight medic’ practices between pretest and posttest I

NO.	practices domains	periods	(Mean ± S.D)	Ass.	t	P.	Sig.
1	Care according to the priority of care	pre-test	1.22 ± 0.41	NAP	-9.24	0.00	H.S
		Post-test	1.78±0.41	APP			

Cont... Table (2): Comparison of flight medic’ practices between pretest and posttest I

2	Practices regarding open air way (A)	pre-test	1.28±0.45	NAP	-9.52	0.00	H.S
		Post-test	1.62±0.48	APP			
3	Practices regarding breathing (B)	pre-test	1.39±0.49	APS	-7.31	0.00	H.S
		Post-test	1.69±0.46	APP			
4	Practices regarding (CPR)	pre-test	1.33±0.47	NAP	-17.89	0.00	H.S
		Post-test	1.83±0.36	APP			
5	Practices regarding circulation (C)	Pre-test	1.33±0.47	NAP	-13.07	0.00	H.S
		Post-test	1.73±0.44	APP			
6	Practices regarding disability (D)	Pre-test	1.39±0.48	APS	-13.57	0.00	H.S
		Post-test	1.80±0.39	APP			
7	Practices regarding environment (E)	Pre-test	1.30±0.46	NAP	-7.80	0.00	H.S
		Post-test	1.74±0.44	APP			

$\bar{x} \pm S.D$ = Arithmetic Mean and Standard Deviation, NAP= not applied practice (1- 1.33), APS = Applied practice somewhere (1.34-1.67), APP. =Applied practice perfectly (1.68-2), t= t-test P= probability $P \geq 0.05$, sig.=significance

Table (2): this table showed the comparison of flight medic’ practices in present study of the present program between the pre-test and the post-test I, where the results indicated the level of practices is (not applied practice) while the results confirmed the high level of practices in the post-test I is (Applied practice perfectly), and there is a highly statistical significant difference between each group.

Table (2): Comparison of flight medic’ practices between pretest and posttest II.

NO.	practices domains	periods	($\bar{x} \pm S.D$)	Ass.	t	P.	Sig.
1	Care according to the priority of care	pre-test	1.22 ± 0.41	NAP	-6.72	0.00	H.S
		Post-test	1.70±0.46	NAP			
2	Practices regarding open air way (A)	pre-test	1.28±0.45	NAP	-10.05	0.00	H.S
		Post-test	1.65±0.47	NAP			
3	Practices regarding breathing (B)	pre-test	1.39±0.49	APS	-5.80	0.01	S
		Post-test	1.66±0.47	NAP			
4	Practices regarding (CPR)	pre-test	1.33±0.47	NAP	-15.77	0.00	H.S
		Post-test	1.78±0.41	NAP			
5	Practices regarding circulation (C)	Pre-test	1.33±0.47	NAP	-13.45	0.00	H.S
		Post-test	1.76±0.42	NAP			

Cont.. Table (2): Comparison of flight medic’ practices between pretest and posttest II.

6	Practices regarding disability (D)	Pre-test	1.39±0.48	APS	13.19	0.00	H.S
		Post-test	1.79±0.40	NAP			
7	Practices regarding environment (E)	Pre-test	1.30±0.44	NAP	-7.13	0.00	H.S
		Post-test	1.69±0.46	NAP			

$\bar{x} \pm S.D$ = Arithmetic Mean and Standard Deviation, NAP= not applied practice (1- 1.33), APS = Applied practice somewhere (1.34-1.67), APP. =Applied practice perfectly (1.68-2), t= t-test P= probability $P \geq 0.05$, sig.=significance

Table (3): this table demonstrate Comparison of flight medic’ practices in present study of the present program between the pre-test and the post-test II, where the results indicated the level of practices is (not applied practice) while the results confirmed the high level of practices in the post-test II is (Applied practice perfectly), and there is a highly statistical significant difference between each group.

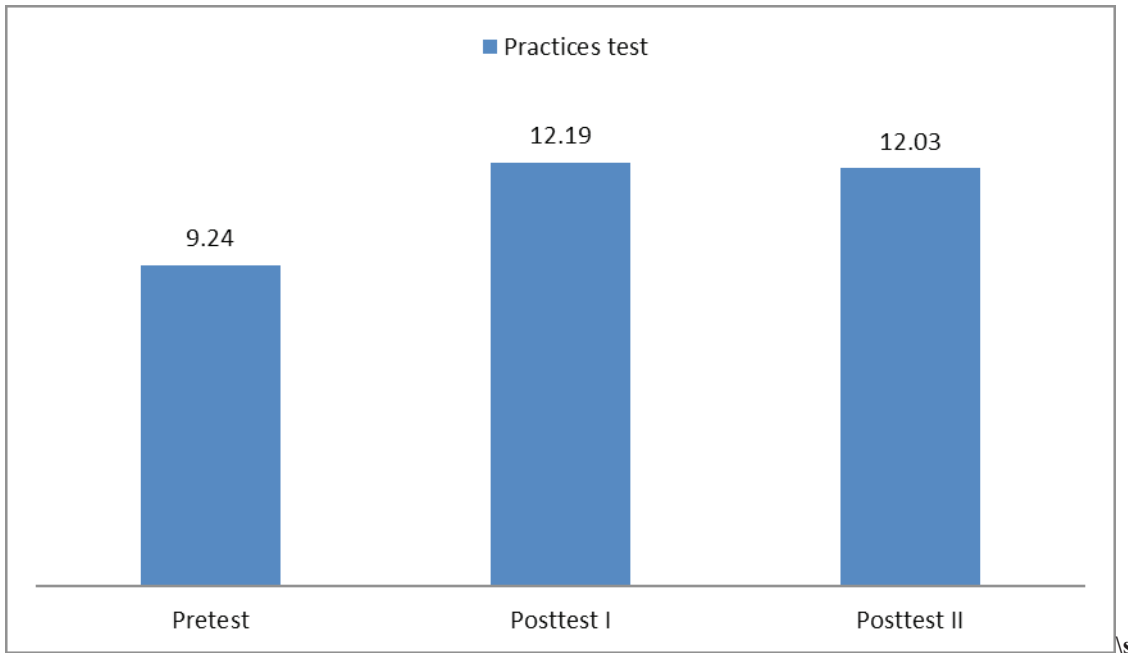


Figure (1): Pretest, posttest I, and posttest II responses for educational program concerning practices of flight medics.

Figure (1): show the pretest, posttest I, and posttest II responses of flight medic’s practices which revealed that the mean at pretest was 9.24, and the result was improved at posttest I and II of present program.

Table (4): Association between the effectiveness of program and flight medic’s level of education, years in first aid, years in aeromedical evacuation, courses completed in the medical category, Training of advanced first aid course, Place of the courses.

Variables	practices Score of the study group post education (n = 30)				
	Mean± Std.	d. f	F	P. ≤0.05	Sig.
Level of education	Middle school	29	0.86	0.61	N.S
	Preparatory study				
	Diploma				
	B.Sc.				
Number of years in first aid	1-5	29	0.52	0.89	NS
	6-10				
	11-15				
	(Mean ± S.D) 7.76 ± 3.44				
Number of years in AE	1-5	29	0.58	0.85	NS
	6-10				
	11-15				
	($\bar{X} \pm S.D$) 5.26 ± 2.79				
Number of courses completed in the medical category	1-2	29	1.22	0.37	NS
	3-4				
	5				
	($\bar{X} \pm S.D$) 2.13 ± 1.43				
Training of advanced first aid course	Yes	29	0.82	0.65	NS
	No				
Place of the courses	Inside	29	1.67	0.19	NS
	Outside				
	Total				

n= Number of sample,

$\bar{X} \pm S.D$ = Arithmetic Mean and Standard Deviation, d. f= degree of freedom, F= fisher, p.= probability
P. ≤0.05, sig. = significance

Table (4): This table expression no statistical significant differences have been found between mean of the age, level of education, Number of years in first aid, Number of years in the present program, Number of courses completed in the medical, training of advanced first aid course, and the Place of the courses.

Discussion

Aeromedical evacuation played a key role in the battles that occurred in Iraq after 2003 by rescuing the injured immediately from the battlefield by competent flight medics, as well as in the current study concerned with training air paramedics to aid the wounded through ambulances towards Emergency injuries, A purposive sample which included 30 flight medics distributed to various air bases, including Taji, Habbaniyah, Kut, Basra.

The discussion focuses on interpreting the results of the distribution of the study sample by their characteristics, responses of flight medic toward practices of aeromedical evacuation of emergency casualties (pretest and posttest I), responses of flight medic toward practices of present program of emergency casualties (pretest and posttest I), and association between the effectiveness of program and flight medic's variables.

Data analysis had revealed that the implementation of the present program had a positive effect on flight medics' practices through measurement of practice concerning adult pre-hospital trauma care as defined by Care according to seven domains.

Frank et al., (2014) concluded in their research to study PHTLS pre-hospital sessions in Germany and demonstrate the assumption that the level of training for pre-hospital health and care providers was deficient. Where the researchers confirmed that the majority of paramedics had received adequate training regarding pre-hospital care, and mentioned after the session's confidence increased significantly and it reached higher rates than before the course. (7)

Kumar et al., (2008) revealed that mean performance score of participants regarding prehospital and emergency care was below average. (8)

Deakin et al, (2009) they added that pre-training medical assistants are not acceptable at using advanced airway skills to keep endotracheal intubation skills at an good level. they emphasized that the educational program

presented to them has improved a lot of endotracheal intubation skills in inserting tracheal tubes, and more continuous training is obtained through clinical practice. (9)

Bayraktar (2009) It was mentioned that paramedics practicing first aid before training on the smart puppets were not ambitious. Later, they were given more scenarios of first aid, and most drivers became impeccable worse or approached an ideal point in assessing first aid. (10)

The American Heart Association (2015) It is mentioned that many of the results make us think about publishing first aid training courses for the entire ambulance team. (11)

The present study Agree with the study of Romundstad, Sundnes, Pillgram, et al., (2004) (2004) they explained that a large percentage of people who are exposed to natural disasters in remote places with multiple scenes, and limited access to them, remains the medical air evacuation is the best solution to save such emergency injuries. (12) Assa, Landau, Barenboim, et al, (2009) revealed that the airomedical evacuation played an important role in the event as reflected from the severity of injuries of the patients transported. of most casualties defined as urgent or severely wounded, life-threatening injuries are evacuated by air.

Conclusion

The study concluded that the present program was effective on flight medics' practices.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of Defense and all experiments were carried out in accordance with approved guidelines.

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