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

تأثير برنامج الاخلاء الطبي الجوي الريادي على معارف المسعفين الجويين تجاه الاصابات الطارئة في قواعد طيران الجيش في العراق

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المستخلص

الهدف: : تهدف الدراسة الحالية الى تقييم اثر برنامج الاخلاء الطبي الجوي في معارف المسعفين الجويين.

المنهجية: برنامج شبه– تجريبي تم تصميمه لاجراء الدراسة الحالية في قواعد طيران الجيش في العراق ، للفترة من 1 نيسان 2019 إلى 25 تشرين الثاني 2019. وتم اختيار عينة غير احتمالية " غرضية " مكونة من "30" مسعف جوي وتم اختيارهم من قواعد طيران الجيش. تكونت الاستبانة من جزأين رئيسيين هي الخصائص الديموغرافية للمسعفين الجويين ، والجزء الثاني تضمن خمسة محاور وهي (50) فقرة تتعلق بمعارف المسعفين الجويين تجاه الاصابات الطارئة واستخدم الباحث البرنامج الاحصائي الإصدار 20 لتحليل البيانات، وتم قياس ثبات الاستبيان من خلال الاختبار القبلي والبعدي ، وتم تحديد صدق محتوى الأداة من خلال عرضها على الخبراء من ذوي الاختصاص ، وتم تحليل البيانات من خلال استخدام التحليل الإحصائي الوصفي والاستنتاجي.

النتائج: أشارت نتائج الدراسة بان معارف المسعفين المتعلقة بالاخلاء الجوي للمحاور الخمسة متوسطة المعدل في الاختبار القبلي وتحسنت معارفهم في الاختبار البعدي الاول والثاني وكشفت الدراسة بوجود علاقة موثرة لفاعلية البرنامج مع مكان الدورة التدريبية للمسعف المشارك في الدراسة بمستوى معنوية ≤0.05

التوصيات:أوصت الدراسة باعتماد البرنامج الحالي في تنفيذ الدورات التدريبية المتعلقة باسعاف الحالات الطارئة اثناء الاخلاء الطبي الجوي

الكلمات المفتاحية: الريادية ، الإخلاء الطبي الجوي ، المسعفين الجويين ، المعارف ، الاصابات الطارئة.

Abstract:

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

Methods: A pre-experimental design is carried in army aviation bases in Iraq, for the period of April 1st 2019 to October 25th 2019. Non-probability "purposive" sample of (30) flight medics are selected from army aviation bases. The questionnaire consisted of two main parts: the demographic characteristics of air paramedics, and the second part included five axes, which are (50) paragraphs related to the knowledge of air paramedics towards emergency injuries. The researcher used the statistical program version 20 to analyze the data, and the stability of the questionnaire was measured through the pre and post testing, and the validity was determined The content of the tool through its presentation to expert experts, and the data was analyzed through the use of descriptive and deductive statistical analysis.

Results: The results of the study indicated that the knowledge of paramedics related to the air evacuation of the five axes was moderate level in the pre-test and their knowledge was improved in the first and second post-test. The study revealed that there were relationship for the effectiveness of the program with the location of the training course for the paramedic participating in the study at P ≥0.05 level

Recommendations: The study recommended the approval of the current program in the implementation of training courses related to emergency cases during aeromedical evacuation

Keywords: Pioneer, Aeromedical evacuation, flight medic, Knowledge, Emergency Casualties

Introduction

Aeromedical 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)

Methods

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 three parts; Part one; 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, Part two; flight medics' knowledge concerning first aid of emergency casualties format. It consists of five domains related to knowledge, the content validity of the present program and instruments was established through a panel of twenty-five (25) 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)

Ethical Considerations

The Institutional Review Board (IRB) at the University of Baghdad, College of Nursing approved the study to be conducted. The study protocol meets both the global & the Committee on Publication Ethics(COPE) standards of respecting humans subjects' rights.

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Results:

Table (1): Distribution of the Flight Medics by their Characteristics

Variable	classifications	Freq.	%
Age by years	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	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
Number of years in first aid	1-5 year	30	10
	6-10 year	46.6	14
	11-15 year	23.3	6
	Total	100.0	30
	X ± S.D	7.76 ± 3.44	
Number of years in aeromedical evacuation	1-5 year	60	18
	6-10 year	36.6	11
	11-15 year	3.3	1
	Total	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	100%	30
	X ± S.D	2.13 ± 1.43	
Did you complete the	Yes	26.6	8

advanced course of first aid?	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, $\bar{X}$ ± 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 aeromedical evacuation respectively, high percent (66.6%) including training course, 60% of the study sample have experience in aeromedical evacuation 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 between Pre and Posttest I of Flight Medic' Knowledge

NO.	Flight medics' knowledge	periods	$\bar{x}$ ± S.D	Ass.	t	P≥0.05	Sig.
1	Respiratory and circulatory system	pre-test	1.29 ± 0.45	D	-7.57	0.00	H.S
		Post-test	1.82 ± 0.38	G			
2	physiology and human disorders in the air altitudes	pre-test	1.34±0.47	A	-3.75	0.00	H.S
		Post-test	1.74±0.43	G			
3	medical classification of injuries (triage)	pre-test	1.35±0.47	A	-3.26	0.00	H.S
		Post-test	1.73±0.44	G			
4	Preparing the wounded for medical evacuation and treatment of injuries.	pre-test	1.31±0.46	D	-1.67	0.00	H.S
		Post-test	1.75±0.42	G			
5	Documentation	Pre-test	1.30±0.46	D	-6.23	0.00	H.S
		Post-test	1.73±0.44	G			

$\bar{x}$ ± S.D = Arithmetic Mean and Standard Deviation, Ass. = Assessment, D= deficit knowledge (1-1.33), A= acceptable knowledge (1.34-1.67), G=Good knowledge (1.68-2), t=t-test, P = probability sig. = Significant, N.S. = Not Significant at P > 0.05, S: significant at P< 0.05, H.S. = high significant at P< 0.01

Table (2): presented the responses of flight medics undergoing the aero medical evacuation program towards emergency casualties at pretest and the post-test one which indicated that the level of knowledge is (deficit) at pretest while the knowledge was improved to high level at posttest one , and there were a highly statistical significant between pretest and posttest.

Table (3): Comparison between Pretest and Posttest II of Flight Medic' Knowledge

NO.	Flight medics' knowledge	periods	$\bar{x}$ ± S.D	Ass.	t	P≤0.05	Sig.
1	Respiratory and circulatory system	pre-test	1.29 ± 0.45	D	-14.86	0.00	H.S
		Post-test	1.80±0.39	G			
2	physiology and human disorders in the air altitudes	pre-test	1.34±0.47	A	-9.57	0.00	H.S
		Post-test	1.68±0.46	G			
3	medical classification of injuries (triage)	pre-test	1.35±0.47	A	-9.71	0.00	H.S
		Post-test	1.71±0.45	G			
4	Preparing the wounded for medical evacuation and treatment of injuries.	pre-test	1.31±0.46	D	-8.22	0.00	H.S
		Post-test	1.61±0.48	A			
5	Documentation	Pre-test	1.30±0.46	D	-12.22	0.00	H.S
		Post-test	1.70±0.45	G			

x ± S.D = Arithmetic Mean and Standard Deviation, Ass. = Assessment, D= deficit knowledge (1-1.33), A= acceptable knowledge (1.34-1.67), G=Good knowledge (1.68-2), t=t-test, P = probability sig. = Significant, N.S. = Not Significant at P > 0.05, S: significant at P≤ 0.05, H.S. = high significant at P<0.01

Table (3): The researcher compares between pretest and posttest II which represent in table 3 and revealed that the improvement of knowledge was clear for all domains related to emergency casualties.

Table (4): Comparison between Pretest and Posttest II of Flight Medic' Knowledge

	Periods	$\bar{x}$ ± S.D	t	d. f	p≤0.05	Sig.
Overall knowledge	Pre-test	6.61±1.03	-21.87	299	0.000	H.S
	Post-test	8 .52±1 .15				

x ± S.D = Arithmetic Mean and Standard Deviation, t=t-test, d. f= degree of freedom, P = probability, sig.= Significant, H.S. = high significant at P≤ 0.05

Table 4 shows the pre-test and the post-test II, which revealed that there were statistical differences between pre and post II at P 0.000

Table (4): Association between the Effectiveness of Program and Flight Medic's Knowledge with their Demographic Data

Variables	Age groups	d. f	F	P ≤0.05	C.S
Level of education	Middle school nursing	29	0.87	0.52	N.S
	Secondary school nursing				
	Diploma				
	B.Sc.				
Number of years in first aid	1-5 years	29	0.48	0.81	NS
	6-10 years				
	11-15 years				
	($\bar{x}$ ± S.D) 7.76 ± 3.44				
Number of years in aeromedical evacuation	1-5 years	29	0.55	0.76	NS
	6-10 years				
	11-15years				
	($\bar{x}$ ± S.D) 5.26 ± 2.79				
Number of courses completed in the medical category	1-2	29	1.25	0.31	NS
	3-4				
	5				
	($\bar{x}$ ± S.D) 2.13 ± 1.43				
Training advanced first aid	Yes	29	0.32	0.91	NS
	No				
Place of the courses	Inside	29	4.51	0.00	HS
	Outside				

$\bar{x}$ ± S.D = Arithmetic Mean and Standard Deviation, d. f= degree of freedom, F= fisher, p.= probability, C.S = comparison significant, N. S= not significant, S= significant, H. S= high significant

Table (4): This table revealed that there were no statistical differences between the effectiveness of present program and level of education, number of year experiences in first aid, number of year experiences in aeromedical evacuation, number of courses completed in the medical, training advanced first aid course, while

that there were highly significant between effectiveness of program and flight medic' place of the course.

Discussion:

Aeromedical evacuation played important 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.

Through the analysis the characteristics of the study sample ensures that high percent of them from intermediate school, which of 46.7% and low percent of them have a medical diploma which of 10%, while air paramedics who obtained Bachelor's degree in nursing are 13%, 46.6% of them have experience from (6-10) years ago, and 60% of them have (1-5) experience in aeromedical evacuation.

The results indicate that 66.6% of the flight medics have completed one to two courses in the medical class, 73.3% of the flight medics did not complete the intensive life-saving course and 26.6% of the flight medics completed the course. Complete that course، 96.7% of the flight medics completed the air ambulance course inside Iraq and 3.3% completed the course outside Iraq.

The comparison of flight medics' knowledge undergoing to the aero medical evacuation program towards emergency casualties at pretest and the post-test I, which indicated the level of knowledge is (deficit) at pretest while the results improved to high level of knowledge at posttest I is (Good), and there is a highly statistical significant between pretest and posttest I.

Iraqi researchers have revealed in their study to find out the effect of instructional program concerning to emergency care on caregiver. They concluded that there were improved of caregivers' knowledge at posttest. [7]

Regarding the assessment of paramedics' knowledge, another study was assessing knowledge and performance of medics before the training were low, which increased to high, gradually. [8]

They state the results of study showed that holding training courses is a significance, and necessary to improving the employee's knowledge and performance for emergency medical services. [9]

Iranian study confirmed the importance of education provided to emergency medical service regarding triage of pre-hospital injuries during disasters, [10] [11]

The present 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. [12]

Recommendation:

1. The present study recommended to increase the training courses for flight medics inside and outside Iraq, and
2. The present study recommends included the present program on training planning for flight medics.

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