

## Effectiveness of Education Program in Nurses' Practices about triage system in Emergency Department at Qalat Salih Hospital فاعلية البرنامج التعليمي في ممارسات الممرضين حول نظام الفرز في قسم الطوارئ من مستشفى قلعة صالح

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الخلاصة:

**الهدف:** هدف الدراسة الهدف من الدراسة لتقويم فاعلية البرنامج التعليمي لممارسات الممرضين حول نظام الفرز في قسم الطوارئ من مستشفى قلعة صالح

**المنهجية:** أجريت دراسة شبه تجريبية في مستشفى قلعة صالح العام في محافظة ميسان للفترة من ٢٠ أيار ٢٠١٨ لغاية ١ تشرين الاول ٢٠١٨ وتم بناء البرنامج والأداة من قبل الباحث لغرض انجاز الدراسة تم اختيار عينة غرضية تكونت من (٦٠) ممرض وممرضة وقسمت العينة إلى مجموعتين، مجموعة الدراسة المنفذ عليها البرنامج التعليمي وتكونت من (٣٠) ممرض وممرضة ومجموعة ضابطة تكونت من (٣٠) ممرض وممرضة لم تتلقى البرنامج ولقياس تأثير البرنامج التعليمي على ممارسات الملاك التمريضي استعمل الباحث استمارة رصد للممارسات التمريضية المتعلقة بنظام الفرز الطبي في قسم الطوارئ وتكونت الاستمارة من (٥٤) فقرة وقسمت إلى سبعة محاور تتعلق بنظام الفرز وتم تحديد ثبات أداة القياس من خلال الاختبار وإعادة الاختبار و حددت مصداقية الأداة من خلال عرضها على مجموعة من الخبراء، و تم استخدام الإحصاء الوصفي ( التكرارات والنسب المئوية، والوسط الحسابي والانحراف المعياري) والإحصاء الاستدلالي ( الاختبار t ) .  
**النتائج:** أشارت نتائج الدراسة بوجود فروقات ذات دلالة معنوية عالية لمجموعة الدراسة بين الاختبار القبلي والاختبار البعدي في الجوانب الرئيسية التي لها علاقة بفقرات الممارسات التمريضية الخاصة بنظام الفرز.

**الاستنتاج:** استنتجت الدراسة بان هناك تأثير ايجابي للبرنامج التثقيفي المنفذ على أداء الملاك التمريضي حول نظام الفرز في قسم الطوارئ من مستشفى قلعة صالح .

**التوصيات:** تشجيع الملاك التمريضي وتحفيزه للمشاركة في البرامج التدريبية والمؤتمرات التي تقام من قبل المختصين في نظام الفرز الطبي الذين لديهم الخبرة الكبيرة في مجال ممارسة نظام الفرز لتلبية حاجاتهم المختلفة المتعلقة بالإخفاقات والمعوقات لممارساتهم.

### Abstract :

**Aim of study:** The aim of the study is to assess the effectiveness of an educational program on Nurses' Practices about the triage system in Emergency department of Qalat Salih Hospital

**Methodology:** An experimental design was carried out at Qalat Salih general hospital from 20 May, 2018 to 1 October, 2018. The program and instruments were constructed by the researcher for the purpose of the study. Random sample comprised of (60) nurses was divided into two groups, study group consisted of (30) nurses exposed to the nursing educational program and control group consisted of (30) nurses were not exposed to the program. The measurement of effectiveness of nursing educational program through the observational checklist includes (54) items are divided to seven main domain related to triage system in emergency department concerning nurses' practice. Reliability of instrument was determined through the use of test and retest and the instrument validity was determined through a panel of experts. The analysis of the data was used descriptive statistics (frequencies, percentages, mean score and standard deviation) and statistical inferential (student t- test and ANOVA) In order to find the differences between the study group and the control group

**Results:** The study findings indicated that there were highly significant differences between pre and posttests in the study group in overall main domains related to nurses' practices

**Conclusion:** The study concluded that the effectiveness of educational program regarding nurses' practice concerning the triage system in emergency department of Qalat Salih Hospital is significance and there are large differences in pretest than posttest in improvement the nursing staff regard to program of the triage system.

**Recommendation:** The nurses' staff can be encouraged and motivation for being participated in the special training programs and conference with the triage system specialists who have long experience in practices of the triage procedure to fulfill the nurses' needs related the triage system in their practices.

**Keywords:** nursing; education; program; practice; triage; system.

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## INTRODUCTION

Triage is derived from the French word trier, meaning "to sort"<sup>(1)</sup>. In the ED, triage is a rapid assessment of a patient's general appearance including a brief history of the presenting problem using limited physiological data. Triage is considered to be a core competency of an effective emergency department registered nurse<sup>(2)</sup>. ED triage is the complex process of sorting and prioritizing patients for care<sup>(3)</sup>. Triage acuity ratings are useful data that can be

used to describe and benchmark the overall acuity of an individual EDs' case mix. This is possible only when the ED is using a reliable and valid triage system, and when every patient, regardless of mode of arrival or location of triage (i.e. at the bedside) is assigned a triage level <sup>(4)</sup>. Thus, in addressing the link between the nurses enters into a health professional and patient. The Triage Nurse shares the responsibility of the hospital to ensure that patients who present to the ED are offered an appropriate assessment of their urgency of treatment requirements <sup>(5)</sup>. The value Triage systems are designed to serve the value of human life and health with fairness and the efficient use of resources. They do this by determining who will not be disadvantaged by longer waiting times and who requires immediate attention to achieve optimal outcomes. The need for triage is enhanced by the growing imbalance between needs and resources resulting from the twin challenges of access block and growing demand <sup>(6)</sup>.

**The study:** Was to evaluate the effectiveness of an educational program on Nurses' Practices about the triage system in Emergency department of Qalat Salih Hospital

### **AIM OF STUDY**

The aim of the study is to assess the effectiveness of an educational program on Nurses' Practices about the triage system in Emergency department of Qalat Salih Hospital

### **METHODOLOGY**

A quasi - experimental design was carried out during the period from 20 May, 2018 to 1 October, 2018. A purposive sample comprised of (60) nurses was divided into two groups, study group consisted of (30) nurses exposed to the nursing educational program and control group consisted of (30) nurses were not exposed to the program. The selection of present sample based on special criteria which include; 1: Nurses that should have at least one year of experience or more. 2: Nurses who worked in the morning and night shift. 3: Nurses who worked in the (Emergency department). The nursing educational program was designed to provide nurse's information related to the triage system in the emergency department, Nursing interventions during the triage system application, and identification the main guide to the triage system. The study instrument was observation chick list of nurses' practice developed by the researcher for the purpose of this study .It was consisted of two parts: Self-administered questionnaire sheet related to demographic characteristics of the nurses, and observational checklist for nurses' practice regarding (the triage system).

An observational checklist of nurses' practice was consisted of (54) items and divided into seven parts: first, the practices of infection control. It was consisted of three items and this item involved three points. Second, health assessment during triage, It was consisted of eleven items. Third, nursing practices during triage. It was consisted of five items. Four, assess the practices related to cardiopulmonary resuscitation (CPR). It was consisted of eight items. Five, Assess the practices related to compression techniques. It was consisted of seven items .Six, assess the practices related to how to use the DC shocks the heart. It was consisted of ten items. Seven, the documentation and consist of ten items. These items were rated according to the liker scales apply (2) and not apply (1) the levels of scale which were scored as a total of three episodes of events were observed for each respondent. Practices as mean of data collection (3) or (2), Correct practices out of (3) episodes were rated as sometimes and uncorrected practices were rated as never. Observational checklists were used for pre education and post education immediately.

The control group were given observational checklist of nurses' practice at the same time that be given to the study group. Scores of the response were categorized according to the following table below:

The control group were given observational checklist of nurses' practice at the same time that be given to the study group. Scores of the response were categorized according to the following table below:

1.	( 0 – 24 )	Low low
2.	( 25- 49 )	Low high
3.	(50 – 74 )	High low
4.	( 75- 100 )	High high

In order to achieve the early stated objectives, the data of the study were analyzed through the use of Statistical Package of social sciences (SPSS) version 20 through statistical approach that includes (frequency, percentage, Mean of score (M.S.) and standard deviation (SD) , and an Inferential statistical approach that includes (ANOVA and t-test).

Results were determined as highly significant at (P<0.01) significant at (P<0.05) and non-significant at (P>0.05).

**RESULTS:**

**Table (1):** Distribution of the study samples (study and control groups) related to (Ages groups; Gender; education level and years of experience)

Var.	Groups	Study			Control			P-value
		Freq.	%	Cum. %	Freq.	%	Cum. %	
Age Groups	21- 25	7	23.3	23.3	9	30.0	30.0	t= 0.265 P=0.218 HS
	26 – 30	9	30.0	53.3	7	23.3	53.3	
	31 – 35	7	23.3	76.7	4	13.3	66.7	
	36 – 40	4	13.3	90.0	5	16.7	83.3	
	41 – 45	2	6.7	96.7	4	13.4	96.7	
	46 and more	1	3.3	23.3	1	3.3	100.0	
Mean ± SD		31.2± 6.98			31.4± 7.30			
Gender	Male	19	63.3	73.3	14	46.7	46.7	t=0.705 P=0.720 NS
	Female	11	36.7	100.0	16	53.3	100.0	
Nursing	College	2	6.7	6.7	1	3.3	23.3	t= 5.968
	Institute	17	56.7	63.3	19	60.0	60.0	

Ed. Levels	School	11	36.7	100.0	10	40.0	100.0	P=0.551 NS
	1 - 5	1	3.3	3.3	3	10.0	10.0	
Experience years	6 - 10	12	40.0	43.3	11	36.7	46.7	t=0.410 p=0.945 NS
	11 - 15	5	16.7	60.0	3	10.0	56.7	
	16 - 20	3	10.0	70.0	7	23.3	80.0	
	21 – 25	5	16.7	86.7	2	6.7	86.7	
	26 and more	4	13.3	100.0	4	13.3	100.0	

Freq. =frequency, % = percentages, cum= cumulative percent; HS: Highly Significant .at P<0.01; NS: Non-Significant. at P>0.05 ,FEPT : Fisher Exact Probability Test;  $\chi^2$  : Chi – Square test , ; x .-=Arithmetic Mean ; SD=Standard Deviation; P=P-value; Var.=Variable ; CCU: coronary care unit; C.S=Considered Significant.

Table (1) displays the frequency counts for selected variables. As stated above, the two nursing groups (control versus study) were equal in size. Ages of the nurses ranged from < 25 to 47 years (Mean age for the study group = 31.2± 6.98), (Mean age for the control group = 31.4± 7.30), there were somewhat more male nurses (63.3%) in the study group while the control group were female (53.3%). The most common educational attainment was from an institute (56.7%) in the study group and (60.0%) in the control group, these findings would suggest that the randomization process provide an acceptable level of equality between the groups. The years of Experience were the majority for the class from (6-10) were (40.0%) in the study group and (36.7%) in the control group.

Statistically, there are no significant difference between study and control groups at (age; gender; level of educational and years of experience) when analyzed by t test.

**Table (2):** Distribution of the Research Sample (Study and Control Groups) according to Expert years in emergency; session participant and Training session

Var.	Groups	Study			Control			P-value
		Freq.	%	Cum. %	Freq.	%	Cum. %	
Expert years in emergency	1 – 3	4	13.3	13.3	3	10.0	10.0	t=0.1.5
	4 – 6	9	30.0	43.3	3	10.0	20.0	p=0.83 1
	7 - 10.	8	26.7	70.0	8	26.7	46.7	

	11 – 13	3	10.0	80.0	9	30.0	76.6	
	14 - 16	6	20.0	13.3	7	23.0	100.0	
<b>session participant</b>	None	5	16.7	16.7	2	6.7	6.7	<b>t=1.201</b> <b>p=0.015</b>
	Yes	25	83.3	100.0	28	93.3	100.0	
<b>Training session</b>	1 – 3	1	3.3	20.0	5	16.7	20.0	<b>t=0.453</b> <b>p=0.136</b>
	4 – 6	17	56.7	76.7	18	60.0	80.0	
	7 – 10	7	23.3	100.0	6	20.0	100.0	

Freq. =Frequency, % = percentages, cum= cumulative percent; S: Sig. at P<0.05; NS: Non-Significant. At P>0.05, FON (Fundamental of Nursing); CCU: coronary care unit, FEPT: Fisher Exact Probability Test;  $\chi^2$ : Chi – Square test

Table (2) shows that the years of experience in the emergency ranged from (4-6) years was (30%) in the study group while the most in control group the class from (11-13) years was (30%). The majority of session participant in the study group (83.3%) were have training session in the study group, while (93.3%) in the control group. The majority of number of sessions both groups were (4-6) represented (56.7%) in study group and (60 %) in the control group.

Statistically, show there are no significant differences between the (study and control groups) at experience years in emergency; training participant and the training session.

**Table (3):** Comparison of Practices Scores Between the pre and posttests related to study groups.

Score	Group	n	Total Mean	SD	$\eta$	t	P
<b>The practices of infection control</b>	Pre	30	1.58	0.230	0.152	2.382	0.024
	Post	30	1.78	0.364			
<b>Nursing practices during triage</b>	Pre	30	1.10	0.042	0.105	29.000	0.00
	Post	30	1.77	0.124			
<b>Nursing practices during Triage</b>	Pre	30	1.55	0.117	0.124	13.209	0.00
	Post	30	1.88	0.087			
<b>Assess the practices related to cardiopulmonary resuscitation (CPR):</b>	Pre	30	1.20	0.102	0.151	24.668	0.00
	Post	30	1.84	0.086			

<b>Assess the practices related to compression techniques</b>	Pre	30	1.34	0.161	0.080	16.155	0.00
	Post	30	1.90	0.112			
<b>Assess the practices related to how to use the DC shocks the heart</b>	Pre	30	1.51	0.139	0.088	10.000	0.00
	Post	30	1.84	0.107			
<b>Documentation</b>	Pre	30	1.21	0.076	0.073	22.361	0.00
	Post	30	1.83	0.136			

n=number, m= mean, SD=standard deviation,  $\eta$  = Eta coefficient which is the Pearson correlation between educational group and the score, t=t test, P=P value.

This table present there are highly significant between the pre and posttest for overall domain in the study group at  $P < 0.001$ . Except the domain (The practices of infection control) show was significant difference, when analyze t-test.

**Table (4):** Comparison of practices Scores Between the post study and post control tests groups.

Score	Group	n	Total Mean	SD	T	P
<b>The practices of infection control</b>	Post Study	30	1.78	0.364	2.490	0.016
	Post Control	30	1.57	0.247		
<b>Nursing practices during triage</b>	Post Study	30	1.77	0.124	28.163	0.00
	Post Control	30	1.07	0.57		
<b>Nursing practices during Triage</b>	Post Study	30	1.88	0.08	14.121	0.00
	Post Control	30	1.53	0.106		
<b>The practices related to cardiopulmonary resuscitation (CPR):</b>	Post Study	30	1.84	0.087	23.857	0.00
	Post Control	30	1.19	0.122		
<b>The practices related to compression techniques</b>	Post Study	30	1.90	0.112	15.348	0.00
	Post Control	30	1.35	0.158		
<b>The practices related to how to use the DC shocks the heart</b>	Post Study	30	1.84	0.107	10.279	0.00
	Post Control	30	1.52	0.130		
<b>Documentation</b>	Post Study	30	1.83	0.136	21.199	0.00

	Post Control	30	1.19	0.06		
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This table shows that there are high significant differences between post study and Post control groups of practice score in overall domains except the domain (The practices of infection control) were significant differences were analyzed by t test.

## DISCUSSION

The results of present study revealed that the Analysis of nurses' demographic characteristics ensured equivalence in both groups and there were no significant differences between study and control groups (table-1). The majority of ages located between of (26-30) present 9 (30%) in the study group while (21-25) present 9 (30%) also in the control group, there were somewhat more male nurses (63.3%) in the study group while the control group were female (53.3%). This result of the study was accepted in the experimental study. Our study revealed that the majority of nurses in the study group 19(63.3%) were male and the majority of nurses in the control group 16(53.3%) were female, (table-1, 2).

Researcher confirmed that the results can be interpreted in a way that due to the nature of the nursing profession, male nurses were accounted for most of the nursing staff. Relative to their educational status, most of the nurses in the study group 17(56.7%) and in the control group 19(60%) were nursing institute (table-1). The researcher believed that nurses with diploma degree were considered the major proportion of staff nurses in health organization.

Our study revealed that the majority of the years of experience to the nurses were in the class from (6-10) were (40.0%) in the study group and (36.7%) in the control group. Also the study show the majority of the nurses in the study group 9 (30%) in class of (4-6) and control group 9 (30%) was in (13-11) experience years in emergency . this study agree with ( Kelley Toffoli,2016 ) <sup>(7)</sup> in his study (Improving Emergency Department Triage Quality Improvement Project) that remember Most nurses had either 0 – 5 years, 6 – 10 years, or 20 or more years of experience (26.2%, n = 11 for each group). Next was 11 – 15 years of experience (16.7%, n = 7), and 16 – 20 years (4.8%, n = 2). (Table 1, 2) .Our study revealed that the majority of the nurses in the study group 25(83.3%) was participant in training session and control group 28 (93.3%) was participant in training session also. Our study revealed that the majority of the nurses in the study group 17 (56.7%) in class of (4-6) and control group 18 (60.0%) was also in (4-6) have training session.

Our study showed that the 5( 16.7%) of nurses in study group and 2 (6.7%) of nurses in control group did not have training courses in nursing, while all of the nurses in the study group and control group did not attend any training session and or conferences regarding knowledge and practice related to triage system in emergency department). This result is supported by (Mohammad Ebrahimi, et al) in his study the effect of triage training on the performance of triage nurses and emergency medical staff of Iranshahr <sup>(8)</sup>.

According to the results of this study the majority of cases (91.4%) are male with a mean age of 31.1±5.1 and a mean record of 6.8±5.0. This agrees with the (Khatibian et al., 2016) <sup>(9)</sup> results in his study (The effects of the Emergency Severity Index triage education via problem-based learning on the triage nurses' performance and the patients' length of stay in the Emergency Department). In this study, the majority of studied cases were male. The

reason is that Iranshahr emergency medical center has employed male staff only. Therefore, all of them are male. The researcher confirmed that the triage system course will provide the necessary skills to enable the participant to understand and interpret of the triage system so that the researcher suggests that encouraging the nurses to attend this conference with leading the triage system specialists who have long experience in teaching of the triage. The program below outlines the topics assembled to achieve our objectives.

Our study revealed that there are significant and highly significant differences between pre - posttests of study group of all domains related to the practice except domain (The practices of infection control) show was significant difference, when analyze t-test. This result means that nurse's practices in study group were much better than those in control group after implement the nursing educational program (Table 4). Our study shows that there is good improvement with highly significant differences in study group at pre- posttests overall main domains related to Nurses' Practice in the all seven domain are changed to the best practice. This result are supported by Grossman<sup>(10)</sup> in his study (investigated the long-term effects of a teaching intervention designed to reduce under triage rates in older ED patients); the one-time learning experience did not prove to be effective to establish new learning. A mixed methods program with an interactive forum, which included mentoring, was proven to be effective to establish triage learning in the current study, supporting the notion that multiple methods program may be more effective to enhance triage learning (Table 4). This program found highly significant difference between study and control group in all scores in posttest changes to level of ( $P < 0.01$ ) were analyzing by t-test, except the domain (The practices of infection control) were no significant where analyzed by t test (Table 4).

This supported by (Kelley Toffoli,2016)<sup>(11)</sup> in his study (Improving Emergency Department Triage Quality Improvement Project) results of the analysis showed that there was an overall significant difference in percent correct from pre to post to post-posttest, implying a decrease in the number of mistriage. The current findings of the current study show that the utilization of the triage education program may lead to positive results. This finding is aligned with the findings of Dateo<sup>(12)</sup>. Dateo found that the standardized nurse training related to resource utilization is essential to facilitate

The study confirmed that large differences between pre-posttests, these outcomes point to successful application of the educational program in this study and can improve the nurses' practices through application the program frequency so that the investigator can strongly assert the need to enforce standard training of nurses to the triage system in emergency department.

### CONCLUSION

The triage system course will provide the necessary knowledge and practices to enable the participant to understand and application of the triage system. Also the study concluded the differences between pre, posttests indicated that the effectiveness of educational program regarding nurses' practices concerning the triage system.

**RECOMMENDATIONS:**

- 1- Available of scientific nursing journal or books in Arabic and emphases of the importance motivation the nurses to important this knowledge and practice related to the triage system in emergency department.
- 2- Continuous education and Triage system training programs for nurses every six months.
- 3- The Ministry of Education and Ministry of Health should be offered the data from this study to carry out policy implementation at the highest governmental level as part of hospital accreditation and workforce standard setting.

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