EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON THE KNOWLEDGE REGARDING PREVENTION OF DIAPER RASH AMONG PRIMI POSTNATAL MOTHERS

Jinu.K.Rajan[1], Samira Alsenany[2], Nalini Ramakrishnan[3]
[1]Assistant Professor, Department of Nursing, Dar Al Uloom University, Riyadh, KSA, j.rajan@dau.edu.sa
[2]Associate Professor, Public Health Department, Faculty of Nursing, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia, salsenany@kau.edu.sa
[3]Department of Nursing, Dar Al, Uloom University, Riyadh, KSA, Nalini.r@dau.edu.sa

Abstract
Background: Emergency care is typically sought for serious acute medical conditions. Longer waiting times in the emergency department not only contribute to patients' dissatisfaction with the care received, but may also result in delays in diagnosis and treatment. The objectives of the study are:- 1. To assess the level of pre-test knowledge regarding triage system among staff nurses. 2. To evaluate the effectiveness of self instructional module regarding triage system among staff nurses. 3. To determine the association between pre-test knowledge and demographic variables
Materials and Methods: An evaluative approach with one group pre-test post-test design was used, 500 samples were drawn through convenient sampling. Pre-test was conducted to determine staff nurses knowledge regarding triage system using a structured knowledge questionnaire, self instruction module given for further reference and learning. After the eighth day post-test was done.
Results: the study shows that staff nurses have a lack in knowledge regarding triage system. Mean pre-test knowledge score was 13.53 and there was a marked gain in knowledge, almost double 27.20 after introduction of SIM. There is a significant difference between knowledge scores, statistically significant at P≤ 0.05 [t (59) = 1.671]. Area wise analysis shows that mean percentage of actual gain is more (56.25) in meaning of triage, triage system and triage nurse and less (18.60) in triage techniques.
Conclusion: staff nurses mean post-knowledge scores were higher than the pre-test at p<0.005. The findings indicate that the SIM program was significantly effective in improving the knowledge of staff nurses regarding triage system.
Keywords: Triage; Staff nurses; knowledge

INTRODUCTION

The emergency department is one of the most important areas of the health care delivery system. Emergency departments worldwide are serving increasing number of patients who have a range of problems from mild to life-threatening with the help of triage system. All patients arriving at emergency department are needed to be assessed and prioritized to reduce the risk of morbidity and mortality due to delay in the initiation of immediate care. The aim of triage is to determine and classify the clinical priority of patients visiting the emergency department.[1]

The concept of triage when being performed at an Emergency Department (ED) is to ensure that patients are treated in the order of their clinical urgency and receiving timely appropriate treatment. Improper triage decision may result in delay for all patients attending the ED and cause added costs to the department as well as the patient. Most of the patients arriving to the ED will feel that they are ill and in need of emergency care. This may leads to delay in receiving emergency care to the real critically ill patients.[2] It is the responsibility of the triage nurse to rapidly identify, make judgment and respond to actual life-threatening conditions. The decisions made by a triage nurse act as a pivotal factor in the initiation of emergency care[3]. Previous Studies show that nurses have lack of knowledge regarding triaging. This remains as an unresolved problem in the health care delivery. Updating the knowledge on triaging among nurses may reduce the mortality rate due to delay in the initiation of treatment. So, investigator felt the need and motivated to take this study. The purpose of this study is to improve the knowledge regarding triage that enhance effective triaging to ensure a quality standard in client care

Analysis and interpretation of data of this study was done using descriptive and inferential statistics

Methods:

In this study an evaluative approach using one group pre-test post-test design was considered as the best and most suitable. An evaluative research is the utilization of scientific research

methods and procedures to evaluate a problem, treatment, practice and policy. It uses analytic means to document the worth of the activity[2] Pre-experimental i.e. one group pre-test post-test design was adopted for the study. This study was intended to ascertain gain in knowledge by the staff nurses who were subjected to self instructional module.

In this study one group pre-test post-test design (O1 X O2) was adopted to find out the effectiveness of experimental treatment. Pre-test (O_1) was conducted with knowledge questionnaire and SIM (X) was given on the same day.

The sample size was determined by power analysis with the formula

$$n = \frac{Z^2 p\,(1-p)}{d^2}$$

The sample size was 500 subjects. The study setting was at Amaltas Medical College hospital, Madhya Pradesh. In this study the self instructional module on triage system was independent variable and knowledge scores was the depended variable. SIM is designed for independent learning and previous studies have proven that the use of SIM could help the nurses enhance the quality of nursing clinical competency.[15]

The population of the present study includes the staff nurses. The sample of this study are staff nurses working at Amaltas Medical College hospital. The sample size is 500 subjects. In this study, a constant number of staff nurses were selected through convenience sampling technique. The Tool/ instruments used for this study include knowledge questionnaire and self-instructional module. Total samples 650 staff nurses were there in hospital, out which 500 met the inclusion criteria of the research study were included for final data collection.

The data collection was done on **1st June,2021 to 12th,January 2022.** Before data collection a formal written permission was obtained from the hospital administrator and nursing superintendent of hospital. The purpose of the study was explained to the staff nurses and assured confidentiality of their identity and responses in order to ensure their co-operation and prompt response. An informed consent was taken from the staffs. The pre-test knowledge questionnaire was administered followed by SIM. The post test was conducted after 8 days of SIM and was continued till 30 days after the implementation of SIM. SPSS-21pakage was used for statistical analysis.

Results: Font size - Arial 12-point text is preferred

{ A sample of 500 staff nurses working in different areas were selected through convenience sampling technique based on the inclusion criteria.it was clear that majority (73.12%) of samples were in the age group of 21-30. Whereas a small group of samples (9.57.53%) were belongs to 41-50 years of age group with Majority (74.19) of participants females. The Inclusive criteria were the Staff nurses who were Working at Amaltas Medical College hospital, nurses who were available during the study and also willing to participate in the study and the exclusion criteria were the staff nurses who were not willing to participate in the study and Temporary nurses.

Tool/ instruments used for this study include knowledge questionnaire and self-instructional module.

The content validity, of the tool was made with The subject experts and the reliability for the knowledge questionnaire was established by using the split half technique. karl pearson's co-efficient correlation technique was used to calculate the reliability.

Table 1: Frequency, Percentage and cumulative frequency distribution of pre and post-test knowledge score of staff nurses.

Knowledge score	**Pre-Test**			**Post-Test**		
	F	**%**	**CF**	**F**	**%**	**CF**
05-09	04	4.30	4.30	-	-	
10-14	44	47.31	51.61	-	-	
15-19	37	39.78	91.39	-	-	
20-24	8	8.61	100	41	44.09	44.09
25-29	-	-		48	51.61	95.7
30-34		-		4	4.30	100
	93	100	100	93	100	100

Maximum score=34

The Staff nurses knowledge regarding triage system was assessed using knowledge questionnaire (Table 1) showed that in the pre-test, around (47.31%) of the respondents score was between 10-14. Only 4.30% had scores in the range of 05 to 09. Around 8.61% had score in the range of 20-24. 39.78% of the respondents had score between 15- 19. Whereas in the post-test none of them scored below 19. While comparing the pre-test scores with the post-test scores it was found that all the students scored higher in post-test than the pre-test which is almost double. This indicates that SIM was effective in increasing the knowledge scores of staff nurses.

A Self-Instructional Module was prepared, which is a self contained instructional material regarding triage system, which is designed to use by the staff nurses.

Table 2: Mean, median and standard deviation of pre-test and post-test knowledge scores of staff nurses on Triage System.

Group	**Mean knowledge score**		**Mean difference**	**Standard deviation**	**Df**	**'t' Value**
	Pre-test	**Post test**				
Staff Nurses from selected hospitals.	2.87	3.23	0.36	.089	92	5.37*

t (92) = 1.99, P≤ 0.005, * significant

The computed 't' value (5.37) is significantly higher than tabled value ('t'(59)=1.71, P ≤ 0.005), so research hypothesis is accepted at 0.005 level of significance. (Table 2), This indicates SIM was effective in increasing staff nurses knowledge regarding triage system.

When the association between the pre-test knowledge scores and selected demographic variables included for this study. The mean pre-test knowledge scores obtained by the staff nurses were found to be 14.44. The number of subjects scored above and below mean knowledge score were identified and grouped according to the demographic variables. In this study chi-squire test is used to find the association between pre-test knowledge scores and selected demographic variables. This revealed that there was a statically significant association between the pre-test knowledge score with demographic variables such as age previous knowledge regarding triage system and hospital policy at P < 0.005 level of significance, were gender, qualification, experience and area of working are not significant to this study and Hence the research hypothesis was accepted.

Table 3: Chi-square test showing the association between pre-test knowledge scores and selected demographic variables i.e. age, gender and qualification.

Sl. No.	Variables	χ2	Df	Table value	Level of significance
1	Age in Years	8.08	2	5.99	**
2	Gender	1.54	1	3.84	**
3	Qualification	1.95	3	7.82	**
4	Experience	4.46	3	7.82	**
5	Area of working	6.05	2	5.99	**
6	Previous Knowledge	2.74	1	3.84	*
7	Hospital Policy	8.53	4	9.49	*

P < 0.005 level of significance,
** not significant, * Significant

There were Significant association found in pre test knowledge score and the age of staff nurses in years and area of working.(Table 3) The chi square value of 8.08 was significantly higher than the table value (5.99), the calculated table values of area of working (6.05) was also higher than the table value (5.99).

The chi squire value of demographic variables such as, gender, nurses' qualification, experience and previous knowledge regarding triage system calculated. The calculated chi squire values are less than tabled values. So these variables were not significant to this study. So in the above demographic research hypothesis was not accepted and null hypotheses was accepted In this study among the seven demographic variables which is previous knowledge of staff nurses and hospital policy these two were significant to this study. Hence the research hypothesis was accepted whereas null hypothesis was rejected.

Discussion:

When the level of pre-test knowledge regarding triage system among staff nurses were assessed using a structured knowledge questionnaire and analyzed using descriptive statistics. The questionnaire consist of 34 questions from three domains i.e. knowledge, comprehension and application. The score was graded arbitrarily as very good (28-34) good (24-27), average (17-23), poor (14-16) and very poor (0-14) score. Data analyses showed that the mean pre-test knowledge score is 14.44, even though majority of samples (46%) have some basic knowledge regarding triage system. These findings are supported by different studies. An observational, multicenter, prospective, cohort study was conducted at 20 US and Canadian EDs revealed that staff nurses have knowledge regarding triage systems and this reduced time for initial administer of analgesics.[13] In this study the researcher also found that staff nurses have some knowledge regarding triage system. Similar finding were also found in a prospective study conducted in department of emergency medicine, faculty of medicine and dentistry, University of Alberta, on staff nurses knowledge regarding eTRIAGE. The study concluded with agreement between study nurses and duty triage nurses, both using eTRIAGE, shows a trend toward improvement in knowledge with additional training. This infers nurses have basic knowledge regarding triage system.[14]

When the effectiveness of self instructional module regarding triage system among staff nurses was assessed the analysis shows mean post-test knowledge (23.60) is almost double than that of mean pre-test knowledge score (14.44). The calculated 't' value (28.59) is significantly higher than tabled value ('t'(92)=1.99, P ≤ 0.005). Hence null hypothesis was rejected and research hypothesis is accepted. This indicates self instructional module was effective in increasing staff nurses knowledge regarding triage system. Area wise analysis shown that calculated 't' values of all areas are greater than tabled values at 0.05 level of significance so areas are significant to improve staff nurses knowledge. In this study grading of pre and post-test knowledge scores of samples shown that in post-test 90% of samples scored above 70% mark. Many studies proved that instructional material or self instructional material is effective to improve staff nurses knowledge. Another study was to assess the effectiveness of self instruction module on knowledge regarding menopausal changes and coping among pre-menopause women in selected areas of Wardha city. One group pre-test post-test design was used and analysis of data shows the mean pre-test score (2.84±1.23) was higher than the mean post-test score (17.56±1.37).4 The present study regarding triage system got mean post-test score (27.2) almost double than that of mean pre-test knowledge score. Both the study concluded that SIM is effective in improving staff nurses knowledge. [15]

When the association between pre-test knowledge score and selected demographic variables were assessed the Chi-square test computed between knowledge and selected variables revealed that there is significant association between the pre test knowledge score and selected variables such as previous knowledge and hospital policy regarding prioritizing patients were significant whereas age, gender, qualification, experience and area of working were not significant with the pre-test knowledge. Calculated χ2value of previous knowledge and hospital policy are 104.879, 63.951 respectively these are greater than the tabled value 55.76 at 0.0005 level of significance; so null hypothesis (H0) there will not be any association with selected demographic variables were rejected and research hypothesis (H2) is accepted and other variables are not significant to this study. Some studies already proved significance of knowledge with some selected demographic variables. Some studies also says there will be some association with selected variables.

In an another study conducted in Box Hill hospital, Victoria, Australia to review of triage system in emergency department identified a direct association with outcomes such as mortality, time in hospital, time in ICU and resource utilization.[16] A

prospective study in a tertiary-care hospital to evaluate a triage scoring system for severity of illness conducted at St. Stephen's hospital, Tis Hazari, Delhi. Result interpreted except heart rate and respiratory rate, all other variables and age showed significant association with survival status ($P < 0.001$).[17] Whereas here the researcher found that previous knowledge and hospital policy to prioritize patient are significant whereas age is not significant with pre-test knowledge. The limitation of the study was conducted for a small representative group of the whole population in selected setting by purposive sampling techniques, which restrict generalization and Extraneous variables like information given by other health professionals, mass media and continuing education were not under the control of the investigator. The strength of this study is that the, SIM (self-instructional module) was effective in improving the knowledge of nurses.

Suggestions for further research include - A similar study can be repeated on a larger sample with different demographic characteristics. The findings of this study will help healthcare institutions to adopt simulation procedures to bridge the gap between theoretical knowledge and clinical practice. Even though the study has shown the impact of education programs, the limitation was that the study had a small sample size which does not meet the standards in generalizing the finding.

Conclusion:

Triage is a major part of emergency department. Since it is difficult for a triage system to reach 100% sensitivity and specificity, a good balance between over-and under-triage is important, for that good knowledge regarding triage system is needed. Majority of staff nurses have some basic knowledge regarding triage system but it is inadequate for proper application. Hence, self instructional module on triage system will facilitate staff nurses to learn more about triage system. After the introduction of the self instructional module, the post test measures showed that there is a significant increase in the knowledge of the staff nurses regarding triage system. Thus the study concluded that self instructional module regarding triage system is highly effective in imparting knowledge regarding triage system among staff nurses.

Ethical considerations:

The study was approved by the ethics committee of Amaltas Institute Of Nursing sciences, Madhya Pradesh (ethic code:92/358995, 2022/05/21).The objectives of the study were explained to the respondents and the participants were informed that their participation was voluntary, and they could withdraw from the study at any time. Participants were also assured that their responses were confidential.

References

1. Babatabar-Darzi H., Jafari-Iraqi I., Mahmoudi H., Ebadi A. Overcrowding Management and Patient Safety: An Application of the Stabilization Model. Iran. J. Nurs. Midwifery Res. 2020;25:382. doi: 10.4103/ijnmr.IJNMR_254_19. [PMC free article] [PubMed] [CrossRef] [Google Scholar].

2. Marina Sartini,1,2, Alessio Carbone,1 Alice Demartini,1 Luana Giribone,1 Martino Oliva,1 Anna Maria Spagnolo,1,2 Paolo Cremonesi,3 Francesco Canale,4 and Maria Luisa Cristina1,2. Overcrowding in Emergency Department: Causes, Consequences, and Solutions—A Narrative Review. Healthcare (Basel). 2022 Sep; 10(9): 1625. doi: 10.3390/healthcare10091625*

3. Al-Kalaldeh M., Al-Bdour E., Shosha G. A. (2021). Patients' evaluation of the quality of emergency care services in Jordan: Integration of patient centeredness model. Research and Theory for Nursing Practice, 36(1), 25–32. doi: 10.1891/RTNP-D-21-00037.

4. Hinson J., Martinez D., Schmitz P., Toerper M., Radu D., Levin S. (2018). Accuracy of emergency department triage using the Emergency Severity Index and independent predictors of under-triage and over-triage in Brazil: A retrospective cohort analysis. Int J Emerg Med. 2018 Jan 15;11(1):3. doi: 10.1186/s12245-017-0161-8.

5. Mistry B., Stewart S., Kelen G., Balhara K P. S. K. S., Hinson J. (2018). Accuracy and reliability of emergency department triage using the emergency severity Index: An international multicentre assessment. Ann Emerg Med. 2018 May;71(5):581-587.e3. doi: 10.1016/j.annemergmed.2017.09.036.

6. Farcas A., Ko J., Chan J., Malik S., Nono L., Chiampas G. (2020). Use of incident command system for disaster preparedness: A model for an emergency department COVID-19 response. Disaster Med Public Health Prep. 2021 Jun;15(3):e31-e36. doi: 10.1017/dmp.2020.210.

7. Ali M. Al Yasin, Mohsen Alyaseen, Salman Alyaseen (2023). The Effectiveness of Emergency Triage Systems:A Systematic Review. Saudi J Nurs Health Care, 6(8): 272-282.DOI: 10.36348/sjnhc.2023.v06i08.004

8. Johnson K, Motavalli M, Gray D, Kuehn C. Causes and occurrences of interruptions during ED triage. J Emerg Nurs. 2014 Sep;40(5):434-9. doi: 10.1016/j.jen.2013.06.019.

9. Lorella Cannavacciuolo , Cristina Ponsiglione , Antonio D'Ambrosio. How to improve the Triage: A dashboard to assess the quality of nurses' decision-making.International Journal of Engineering Business Management Pub Date: 2021-12-20 , DOI:10.1177/18479790211065558

10. Bereket Duko, Ephrem Geja, Zewdie Oltaye, Fanuel Belayneh, Addisu Kedir, Melese Gebire. Triage knowledge and skills among nurses in emergency units of Specialized Hospital in Hawassa, Ethiopia: cross sectional study. 2019 Jan 14. BMC Res Notes. 2019; 12: 21.doi: 10.1186/s13104-019-4062-1.

11. Baiq Fitrihan Rukmana, Ahsan.The Correlation between Knowledge and Experience of Nurses toward Triage Decision Making at Lombok Nusa Tenggara Barat. January 2019.Indian Journal of Public Health Research and Development 10(9):629.DOI:10.5958/0976-5506.2019.02502.6

12. Mohammad AlShatarat, Ahmad Rayan, Nidal F. Eshah, Manal Hassan Baqeas, Mohammad Jamil Jaber, and Mohammed ALBashtawy,.Triage Knowledge and Practice and Associated Factors Among Emergency Department Nurses. SAGE Open Nurs. 2022 Jan-Dec; 8. . doi: 10.1177/23779608221130588

13. Ducharme J, Tanabe P, Homel P, Miner RJ, Chang KA, Lee J, Todd HK. The influence of triage systems and triage scores on timeliness of ED analgesic administration. Dalhousie American Journal of Emergency Medicine (2008) 26, Pages:867–873. DOI: 10.1016/j.ajem.2007.11.020

14. Dong SL, Bullard MJ, Meurer DP, Blitz S, Holroyd BR, Rowe BH. The effect of training on nurse agreement using an electronic triage system. Canadian Journal of Emergency Medicine. 2007 Jul;9(4):260-6. DOI: 10.1017/s1481803500015141

15. McNally, S. (1996). The triage role in emergency nursing: Development of an educational programme.

International Journal of Nursing Practice, 2(3), 122–128. https://doi.org/10.1111/j.1440-172X.1996.tb00037.x

16. Qureshi NA. Triage systems: a review of the literature with reference to Saudi Arabia. EMHJ. [Internet].2010; 16(6):[about 8 p]. Available from: https://applications.emro.who.int/emhj/V16/06/16_6_2010_0690_0698.pdf: Pages-690-698. DOI:10.26719/2010.16.6.690

17. Kumar N, Thomas N, Singhal D, Puliyel JM, Sreenivas V. Triage score for severity of illness. Indian Pediatrics 2003; 40(3): pages:204-210