

## Knowledge on Triage among Pediatric Nurses in Pediatric Emergency Services (PES)

Margaret Manoharan, M. Sc (N)<sup>1</sup>., Vinitha Ravindran, M. Sc (N) ., Ph. D (N)<sup>2</sup>., Kala Ranjini, DCh<sup>3</sup> ., MD, ., Ebor Jacob, DCh., DNB<sup>4</sup>., Mary A. Johnson, M. Sc (N)<sup>5</sup> ., Ruma Nayak, M. Sc (N)<sup>6</sup>

<sup>1</sup>(Paediatric Nursing, College of Nursing, Christian Medical College, Vellore, India)

<sup>2</sup>(Paediatric Nursing, College of Nursing, Christian Medical College, Vellore, India)

<sup>3</sup>(Paediatrics, Christian Medical College, Vellore, India)

<sup>4</sup>(Paediatrics, Christian Medical College, Vellore, India)

<sup>5</sup>(Paediatric Nursing, College of Nursing, Christian Medical College, Vellore, India)

<sup>6</sup>(Paediatric Nursing, College of Nursing, Christian Medical College, Vellore, India)

Corresponding Author: Margaret Manoharan

**Abstract:** Triage, is often one of the weakest parts of the health care system in low-income countries as compared to industrialized countries; but if well-organized it can be life-saving and cost-effective. Many hospitals in low-income countries lack a formal triage system. knowledge about triage is a key in triage decision making. Effective decision making can influence the health outcomes of presenting children. Anxious parents visiting Pediatric Emergency Services (PES) insist the management of their children first. Because of the potentiality for rapid deterioration of a child, children who require emergency life saving support are missed causing adverse effects. A descriptive design was undertaken to assess the knowledge of the nursing personnel regarding paediatric triaging in a tertiary care hospital of south India. Purposive sampling technique was employed and fifty nurses were recruited. Data was collected using a self administered questionnaire which had 25 triage scenarios to assess the nurses' knowledge on triaging. The study findings revealed that, 26% of the respondents had good knowledge, 62% had moderate knowledge and 12% had inadequate knowledge on pediatric triaging. Seventy nine percentage of the nurses had adequate knowledge in identifying children with fever. It was noted that, nurses had moderate and inadequate knowledge in recognizing children with ear pain (54%), stomach pain (44%) ,infant with jaundice (54%), lymph node enlargement (60%), loose stool with vomiting (58%), allergic reaction (44%) and cry while micturition (54%). The study also found that, there was a significant association between nurse's knowledge and years of experience in PES ( $p < 0.04$ ). Present study showed nurses' knowledge on triaging was moderate in many scenarios and to correct these deficits, immediate in-service training or education workshops can be carried out, followed by continuous professional development on a regular basis, including refresher training, supportive supervision and clinical skill sessions. The above syteps will facilitate nurses to develop skills in taking correct triage decision which will save lives of children visiting Emergency Services.

**Keywords:** Triage knowledge, Paediatric nurses , Paediatric Emergency Services (PES), Triage scenarios.

Date of Submission: 12-01-2018

Date of acceptance: 31-01-2018

### I. Introduction

Triage in the paediatric Emergency Services (PES) is necessary to prioritise management according to the severity of a child's condition. The term 'triage' is derived from the French word "tier", meaning to "pick" or "to sort". Triage is the keystone of an organization of care in PES and it means "sorting of children" for treatment priority in PES. Triage, a process of collecting pertinent information about children who are seeking emergency care in order to initiate a decision-making procedure by using a valid and reliable triage acuity designation system. Rapid and accurate triage decisions are necessary for successful Emergency Department (ED) operations and optimal child's outcomes. Many factors influence the outcome of a child's triage result, and hence evaluation of performance is pivotal. The triage nurse in the PES is the first person a child and the family encounters. Triage nurses' knowledge has been cited as an influential factor in triage decision-making<sup>1</sup>. Triage aims to promote the safety of children by ensuring timely care and resource allocation that is required to the degree of illness or injury. Many triage education programmes are underpinned by the assumption that knowledge acquisition will result in improved triage decisions.

## **II. Background And Need For The Study**

Triage is not a comprehensive assessment but a rapid, focused assessment. Emergency care for the paediatric population remains a challenge because of the varying physiological and developmental stages in children. Triage is the key stone in treating children visiting PES and the triage system is a frame work where children are sorted or classified according to their presenting symptoms. Triage is defined as rapid, focused zero to five minute's evaluation of children that gathers pertinent subjective and objective data to determine the severity of illness. This initial screening and classification of a child frequently determines how quickly the child receives medical and nursing interventions. The triage process includes evaluation and classification of all incoming children to the PES and performing ongoing patient reassessment. The initiation of emergency care primarily depends on the decisions made by the triage nurse. Triage decisions can therefore have a profound effect on the health outcomes of children who present for emergency care<sup>2</sup>.

Aloyce, Leshabari, and Brysiewicz in their study found that, there was a significant deficit in knowledge and skills regarding triaging. Triage nurse's ability to make accurate clinical judgments about urgency of children and their need for intervention are essential to the delivery of safe and effective emergency care<sup>3</sup>. Hence, this study was undertaken to assess the nurses knowledge regarding triage which in turn bring positive outcome in child's health status. The objectives were to assess the knowledge of the Nurses regarding paediatric triaging and to determine the association between nurses knowledge and their selected demographic variables

## **III. Methodology**

### **Design and Sampling**

A descriptive design was undertaken to assess the knowledge of the nursing personnel regarding paediatric triaging in a tertiary care hospital of south India. A total of fifty nurses were selected by using purposive sampling technique. Nurses who had minimum three months of working experience in PES and who were involved in performing triaging and were available at the time of data collection were included in the study. Registered nurses who were not exposed to triage area were excluded from this study.

### **Instruments**

A self administered questionnaire consisting of 25 questions based on pediatric triage scenarios prepared by the investigator was used to collect the data for the study. The content validity of the instrument was established by six research experts in medical and in nursing field. The Content Validity Index (CVI) was 0.84.

The instrument had the following sections:

**Section A:** Demographic Profile: It included age, gender, institution where the nursing training was undertaken, years of experience in PES, and whether exposed to triage training.

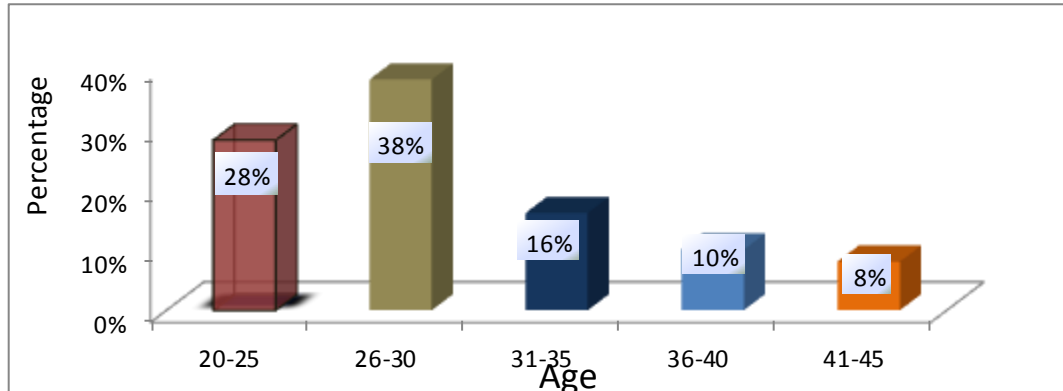
**Section B:** Knowledge Questionnaire: It consisted of five introductory questions about meaning of triage, components of initial impression, meaning and time limits for each priority. Twenty one Triage scenarios on various clinical situations included as a paper exercise which aimed to assess the knowledge of the nursing personnel on assigning correct priority to each scenario. Each question with one correct answer. The correct answer was given a score of "one" and the wrong answer was scored "0". The Maximum score was 25. Total score was calculated, converted into percentage and interpreted as follows: Adequate Knowledge: >76%, Moderately Adequate knowledge: 50-75 % and Inadequate Knowledge: <50.

### **Data Collection Procedure**

Data were collected using a structured questionnaire. The structured questionnaire was developed by the researcher and was based on existing literature on triage. After ethical clearance was obtained from the Institutional Review Board, permission was sought from the Nurse Manages of the PES, the questionnaires were then administered to PES nurses who were willing to participate. The purpose of the study was explained, and a time frame of about half an hour was allocated to each participant, making sure that participant never referred to any information that would assist them to answer the knowledge part of the questionnaire. They were also discouraged to discuss their responses to the questions among themselves so as to determine their individual level of knowledge. After the participants had finished answering the questionnaire, the researcher immediately collected the answered questionnaires and placed them in a sealed envelope. Data was collected on 10<sup>th</sup> May 2017. A total of fifty Nurses who consented to participate in the study were selected. Nurses who were on day shift, off duty and night shift were asked to fill the questionnaire in the morning and the evening shift nurses were given the questionnaire in the evening.

**IV. Results**

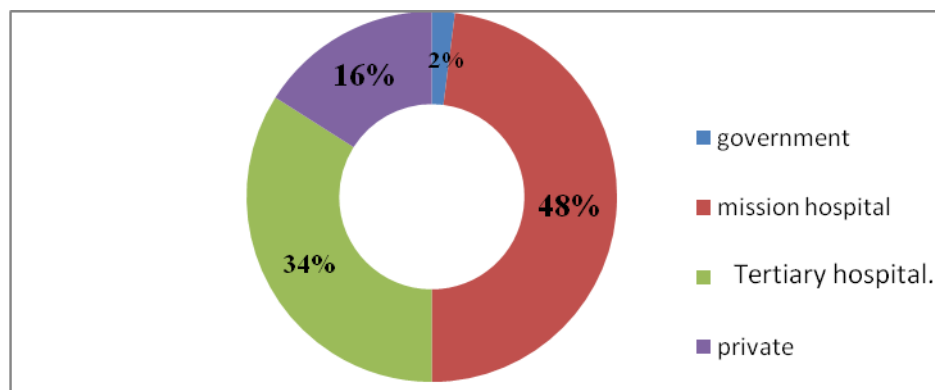
Data was tabulated and analyzed using descriptive and inferential statistics. The demographic findings revealed that, all (100%) were female participant.



**Figure 1.** Distribution of nurses based on their age

This figure reveals that majority of the subjects (28%) belonged to age group of 20-25 years; 38% were between 26-30 years, 16% between 31-35 years, 10% were between 36-40 years and only 8% were between 41-45 years. A study done by Afaya also found that, majority of the nurses (70.8%) were Between 21-30 years of age. Minimum age was 21 years and maximum age was 41 years<sup>4</sup>.

Majority of the study participants (94%) completed general nursing and midwifery. Of the total, nearly 48% completed their nursing training from mission hospital as shown in figure 2.



**Figure 2.** Distribution of nurses based on the institution from where they received their nursing training.

This table reveals that 48% of the subjects had their nursing training in mission hospital; 34% were from tertiary care hospital south India; 16% were trained from private institution and only 2% from government hospital.

Study revealed that, 59% of nurses had undergone formal triage training. PES experience showed that, 36% of the nurses had less than one year of experience, 32% had up to three years, and 16% of nurses had more than five years of experience in Paediatric Emergency Service as shown in table one.

**Table 1:** Distribution of nurses based on their experience in PES.

No of years	Frequency	Percent
<1yr	18	36%
1-3yr	16	32%
3-5yrs	8	16%
>5yrs	8	16%

Table I This table reveals that majority 36% of the subjects had less than 1 yr of experience; 32% had 1-3yrs of experience; 16% had 3-5yrs of experience and another 16% had more than 5 yrs of experience in PES.

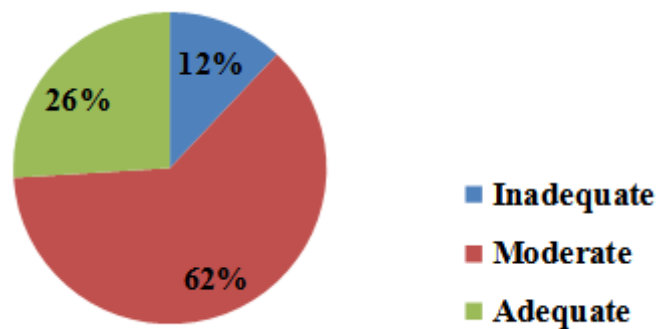
With regard to nurses knowledge on the “meaning of triage” 70% of nurses didn’t know the correct answer. Around half of the participant could give the correct meaning of “triage initial impression”(54%) and “triage priority level” one (52%), but most of them (84%) in priority two and 90% in priority level three got the incorrect answer as shown in table 2. When assessed on estimated waiting time limits in PES for medical care, it

was found that, 74% of nurses in priority one, 70% in priority two and 60% in priority three were able to give correct answer. A study done by Aloyee et al (2013) found that fifty eight percent of the respondents had no knowledge on waiting time limits for the triaged categories .

**Table 2:** Distribution of nurses’ knowledge on basic Knowledge on triaging.

Sl.No	Triage knowledge	Answered correctly (%)	Answered Incorrectly (%)
1	Meaning of triage	30	70
2	Initial Impression	54	46
3	Meaning of priority one	52	48
4	Meaning of priority Two	16	84
5	Meaning of priority Three	10	90
6	Estimated Waiting Time in priority one	74	26
7	Estimated Waiting Time in priority Two	70	30
8	Estimated Waiting Time in priority Three	60	40

Table2, showed that, nurses had inadequate knowledge regarding meaning of triage 30%, priority two 16% and in priority three 10%. Regarding over all knowledge (figure 3) revealed that, 26% of the respondents had adequate knowledge, 62% had moderately adequate knowledge and 12% of the nurses had inadequate knowledge in recognizing and assigning appropriate priority to the triage scenarios. Sapp, Brice, Myers, and Hinchey analysed triage knowledge of medical students found that, the mean accuracy score of triage assignment by medical student volunteers was 64.3%<sup>5</sup>. Afaya (2017) also found in her study that, 62.6% of the respondents were knowledgeable about triage by correctly answering more than 50% of the questions, in the self-administered questionnaires<sup>4</sup>.



**Figure 3.** Overall distribution of nurses knowledge on triaging.

This figure reveals that most of the staff (62%) had moderate knowledge on triaging, 26% had adequate knowledge and 12% had inadequate knowledge.

The results of the triaging in terms of specific conditions revealed that, nurses’ knowledge was adequate in recognizing children with fever 86%, floppy and unresponsive child 94%, infant with febrile seizure 90%, newborn with vomiting 82%, poor feeding children 84% respiratory difficulty 82% ,seizure disorder 86%,near drowning 94%.This could be due frequent encounters with such children on regular basis. Present Study also identified, nurses knowledge was moderate and inadequate in recognizing children with ear pain (54%), stomach pain (44%), infant with jaundice (54%), lymph node enlargement (60%), loose stool with vomiting (58%), allergic reaction (44%) and cry while micturation (54%). Present study revealed that,79% of the nurses accurately assessed the child with febrile illness. Bergeron, Gouin, Bailey, and Patel studied the agreement of triaging by General Emergency Medical (GEM) and Paediatric Emergency Medical officer (PEM) found that, PEM participants were more likely to triage children with certain febrile illnesses at higher acuity levels as compared with their PEM counterparts<sup>5</sup>.

In the present study, the researcher analysed for any statistically significant association between the knowledge on triaging and their selected demographic variables . It was found that, there was an association between nurses knowledge and the years of experience (p = 0.04) . This finding is supported by the study done by Afaya (2017) which showed that as the nurses had increased years of working experience their triage knowledge level also improved. A study done by Hicks, Merritt and Elstain found that more years of experience increased the decision-making consistency in triage I (r = .42, p =.004)<sup>6</sup>. In contrast to the current findings, Considine, Botti and Thomas reviewed four studies which established that there was no significant association between experience and triage decision making in triage skill<sup>7</sup>.

**Table 3:** Association between nurses' knowledge and selected demographic variables.

Knowledge of the staff						X2	P value	
Demographic variable	InAdequate		Moderate		Adequate			
	n	%	n	%	n	%		
<i>Age(yrs)</i>								
20-25	3	50	6	19.4	5	38.5	8.335	0.401
25-30	2	33.3	13	41.9	4	30.8		
30-35	00		7	22.6	1	7.7		
35-40	00		4	12.9	1	7.7		
40-45	1	16.7	1	3.2	2	15.4		
<i>Bachelor Training</i>								
Govt hospital							3.668	0.722
Mission hospital	0	0	1	3.2	0	0		
CMC	4	66.7	12	38.7	8	61.5		
Private hospital								
	1	16.7	13	41.9	3	23.1		
	1	16.7	5	16.1	2	15.4		
<i>Experience in PES</i>								
<1yr	5	83.3	11	35.5	2	15.4	12.914	0.04
1-3	0	0	10	32.3	6	46.2		
3-5	1	16.7	3	9.7	4	30.8		
>5	0	0	7	22.6	1	7.7		
<i>Triage training</i>								
Yes	3	50	16	51.6	9	69.2	1.720	0.787
No	3	50	15	48.4	4	30.8		

The important highlights of this study included: nurses' working in PES had moderately adequate level of knowledge(62%) in assigning triage priority and the knowledge was found to have association with number of years of experience in triage area.

### V. Conclusion

As nurse's knowledge about triage is a key tool in triage decision making, there is a need to improve on nurses' knowledge level in triaging at the PES, because score of nurses' knowledge about triage is not impressive. To improve on the knowledge level, workshops or in-service training should be carried out, followed by continuous professional development on a regular basis for nurses in PES is imperative. Nurses in the PEs should be encouraged to undergo training in emergency, critical care as this will go further to enhance their knowledge on triage which will improve the standards of Pediatric Emergency Nursing ,further reduce mortalities and saves lives of babies visiting PES. Although the study findings revealed only 26% adequate knowledge in triage knowledge level, there were still deficits in the triaging knowledge of nurses working in the PES. With these findings it is therefore imperative to establish formal unit-based triaging training programmes that will help to establish and improve emergency nurses' knowledge and skills on triaging in Tertiary Hospital in south India.

### References

- [1]. Aloyce, R., Leshabari, S., & Brysiewicz, P. (2014). Assessment of knowledge and skills of triage amongst nurses working in the emergency centres in Dar es Salaam, Tanzania. *African Journal of Emergency Medicine*, 4(1), 14-18.
- [2]. Considine, J., Ung, L., & Thomas, S. (2000). Triage nurses' decisions using the National Triage Scale for Australian emergency departments. *Accident and emergency nursing*, 8(4), 201-209.
- [3]. Agani Afaya , Thomas Bavo Azongo , Vida N. Yakong "Perceptions and Knowledge on Triage of Nurses Working in Emergency Departments of Hospitals in the Tamale Metropolis, Ghana." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)* Vol 6, Issue 3 May - June 2017 .PP 59-65.
- [4]. Sapp, R., Brice, J. H., Myers B, & Hinchey, P. (2017) "Triage performance of first-year medical students using a multiple-casualty scenario, paper exercise" *South African Medical Journal* 2017;107(3):243-247.
- [5]. Bergeron, S., Gouin, S., Bailey, B., & Patel, H. (2002). Comparison of triage assessments among pediatric registered nurses and pediatric emergency physicians. *Academic Emergency Medicine*, 9(12), 1397-1401.
- [6]. Hicks FD, Merritt SL, Elstein AS. Critical thinking and clinical decision making in critical care nursing: A pilot study. *Heart & Lung: The Journal of Acute and Critical Care*, 2013; 32: 169-180.
- [7]. Considine, J., Botti, M., & Thomas, S. (2007). Do Knowledge and Experience Have Specific Roles in Triage Decision-making?. *Academic emergency medicine*, 14(8), 722-726.

Margaret Manoharan "Knowledge on Triaging among Pediatric Nurses in Pediatric Emergency Services (PES)." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)* , vol. 7, no.1, 2018, pp. 01-05.