

KNOWLEDGE AND PRACTICES OF TRIAGE AMONG EMERGENCY DEPARTMENT NURSES AT KANTI CHILDREN'S HOSPITAL

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Article Received: 21 April 2026 | Article Revised: 11 May 2026 | Article Accepted: 01 June 2026

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DOI: <https://doi.org/10.5281/zenodo.20688608>

How to cite this Article: Anupama K. Yadav, Bulu Wagle (2026) KNOWLEDGE AND PRACTICES OF TRIAGE AMONG EMERGENCY DEPARTMENT NURSES AT KANTI CHILDREN'S HOSPITAL. World Journal of Pharmaceutical Science and Research, 5(6), pg: xx-xx.



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ABSTRACT

Introduction: Triage plays a critical role in optimizing emergency care delivery, especially in resource-limited settings like Nepal. However, inadequate training and inconsistencies in triage knowledge among nurses may compromise patient outcomes. Kanti Children's Hospital, the only government-run pediatric tertiary care center in Kathmandu, handles high patient volumes but operates partial triage services (1 PM to 7 PM) due to limited staffing. **Objective:** To assess the knowledge, practice, and confidence of emergency nurses regarding triage and to determine associations between training, knowledge accuracy, and practices. **Methods:** Informed verbal consent was taken and a descriptive cross-sectional study was conducted among 27 female nurses out of 29 working in the emergency department at Kanti Children's Hospital who consented were included in this study from May 5 to May 12, 2025. A structured questionnaire consisting of 20 multiple-choice questions was used to evaluate participants demographic profiles, triage knowledge, perceived practices. Data were analyzed using SPSS version 27, and chi-square tests were applied to assess associations. A p-value of <0.05 was considered statistically significant. **Results:** Only 40.7% of participants had received formal triage training. The majority (74.1%) were aged 20-30 years, and 63% had less than one year of emergency experience. Although 62.9% reported feeling very confident in triaging patients, only 40.7% correctly answered triage-related knowledge questions. There was a significant association p value <0.05 between formal training and triage knowledge accuracy. However, no statistically significant association was found between confidence levels and knowledge scores indicating that self-reported confidence does not reliably predict competence. **Conclusion:** The study revealed notable gaps in triage knowledge among emergency nurses, despite high self-reported confidence. Formal training was significantly associated with better triage knowledge, emphasizing the urgent need for structured training programs, 24-hour triage implementation, and regular competency assessments, and conduction of triage training before emergency posting. Bridging the gap between confidence and actual knowledge is essential for improving emergency care quality and patient outcomes in pediatric settings.

KEYWORDS: Triage, Emergency nursing, Triage knowledge, Pediatric emergency care.

INTRODUCTION

Triage is crucial and important in resource limited settings particularly in busy hospitals where the demand for emergency care often exceeds available resources. Triage is considered sorting mechanism of patients in hospital-based emergency departments. Triage refers to assessment and classification of patients visiting emergency department to prioritize their health problems from life-threatening to low risk to receive appropriate treatment as per requirements.^[1,2]

At Kanti Children's Hospital, 25 beds are allocated for emergency, the only national tertiary-level government pediatric hospital in Nepal, the emergency department handles a substantial patient load, last year as per official website of hospital, 42262 children in a year visited emergency department. However, due to inadequate staffing and infrastructure, partial triage services are only operational between 1:00 PM to 7:00 PM in evening. Outside these hours, emergency care is often administered without standardized triage protocols, increasing the risk of delayed treatment and potential clinical deterioration in critically ill children.^[3]

If there is lack of triage system or lack of knowledge of triage it can lead to devastating complications or higher mortality which could have been prevented otherwise.^[4,5] The quality of services provided in emergency department has its consequences not only on patients survival but also on their hospital experience, care satisfaction, and psychological well-being.^[6,7]

Materials & Methods

Ethical approval was obtained from the Institutional Review Board (IRB) of Kanti Children's Hospital, Kathmandu, (Approval number: 894). All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee and with comparable ethical standards. Verbal informed consent was obtained from all individual participants included in the study.

After receiving ethical clearance from the Institutional Review Board of Kanti Children's Hospital, a descriptive cross-sectional study was conducted among nurses working in the emergency department. The study aimed to assess their knowledge, practices regarding triage. Among 29 nursing staff working in emergency department, 27 were included who consented for this study.

A structured, self-administered questionnaire consisting of 20 multiple-choice questions was adopted based on previous studies outside Nepal was used.^[8] The questionnaire was divided into four sections: {1} demographic details, {2} knowledge of triage and {3} triage practices.^[9]

Participants completed the questionnaires during their shift breaks.

The data were coded and entered into IBM SPSS Statistics Version 27. Descriptive statistics including , percentages, and p value were used to summarize the responses. Findings were presented using tables for clarity.

RESULTS

Among 27 emergency department nursing staff, all were female. Regarding qualifications: 48.1% held a PCL degree, 40.7% had a BSc in Nursing, and 11.1% had other qualifications including a master's degree. As for experience, 63% had less than 1 year of experience and 22.2% had 1-5 years of experience and 14.8% had more than 5 years of experience.

On answer to question of main purpose of triage in emergency department, 92.6% correctly answered as patients are treated based on urgency and 7.4% answered to reduce overcrowding. None of them choose other options such as treatment to those who arrive first and to improve hospital efficiency.

Regarding use of triage system, only 63% of participants knew World Health Organization(WHO) system is used. 33.3% answered as Australasian Triage Scale (ATS) and 3.7% answered as Manchester Triage System.

Regarding formal triage training, only 40.7% had received such training and 92.6% answered correctly that triage aimed to provide treatment based on urgency. 77.8% correctly identified “Red” as the highest priority category.

Table 1: Table showing result based on first priority for treatment.

Condition	Number	Percent %
Fever	2	7.4
Chest pain and difficulty breathing	21	77.8
Broken arm	2	7.4
1 and 2	2	7.4

Table 1 describes about the answer to question which condition should be prioritized. 77.8% answered correctly as chest pain and difficulty breathing. 6 participants choose as fever, broken arm and fever with chest pain difficulty breathing.

Table 2: Table showing answers to question if two critically ill patients arrive at same time.

Action	Number	Percent %
Treat both	3	11.1
Help	11	40.7
Survival basis	9	33.3
Arrival basis	2	7.4
2 and 3	2	7.4

As stated in Table 2 only 40.7% answered correctly as ask for help in case if two sick case arrives simultaneously.

Table 3: Table showing answer to reassessment in waiting area.

Reassessment Time	Number	Percent %
15 minutes	11	40.8
30 minutes	6	22.2
60 minutes	2	7.4
If condition changes	8	29.6

Only 40.7% knew that every 15 minutes reassessment of patients should be done, Table 3.

Table 4: This table shows answer to question of correct triage process.

Response	Percent (%) (Number)
Assess, Prioritize, Document, Refer	77.5 (21)
Assess, Treat, Discharge, Document	7.5 (2)
Document, Refer, Assess, Prioritize	7.5 (2)
Treat, Document, Assess, Discharge	7.5 (2)

77.8% correctly identified the sequence: Assess → Prioritize → Document → Refer; Table 4.

Table 5: This table shows how frequently emergency nurses perform triage duties.

Frequency	Percent (%) (Number)
Always	55.5 (15)
Sometimes	29.6 (8)
Often	11.1 (3)
Rarely	3.7 (1)

Table 5 shows answer to question how frequently did they do triage, 55.5% answered as always.

Table 6: This table shows answer to question whether they feel confident to triage patients correctly.

Confidence Level	Percent (%) (Number)
Very confident	63 (17)
Somewhat confident	25.9 (7)
Neutral	7.4 (2)
Not confident	3.7 (1)

62.9% answered that they were very confident in performing triage; Table 6.

Table 7: This table shows answer to question as biggest challenges when performing triage.

Challenge	Percent (%) (Number)
Overcrowding	81.4 (22)
Lack of formal training	62.9 (17)
Limited staff	44.4 (12)
Inconsistent guidelines	25.9 (7)

Table 7 states answers to challenges faced during triage, the answers were overlapped since more than one answer was chosen by staffs:

22 answered as Overcrowding ,17 choose Lack of formal training ,12 answered as Limited staff ,Inconsistent guidelines were chosen by 7.

Table 8: This chart shows answer to question waiting time for patients before receiving treatments.

Waiting Time	Percent (%) (Number)
<15 minutes	66.9 (18)
15–30 minutes	33.3 (9)

Table 8 states answer to question how is the queue, 66.9% answered as less than 15 minutes, which shows waiting time is not very long.

Table 9: This table shows ways to update knowledge.

Method	Percent (%) (Number)
Attending workshops	29.6 (8)
Reading medical literature	62.9 (17)
Consulting colleagues/mentors	70.3 (19)

Table 9 shows answer to question how does the staff improve their knowledge, the answers chosen were:

Attending workshops and training sessions – 8, Reading medical literature – 17, Consulting colleagues and mentors – 19

Table 10: This chart shows answer to ways to improve triage efficiency in this hospital.

Suggestion	Percent (%) (Number)
More training programs	100 (27)

Clearer guidelines	66.9 (18)
Increase staff	44.4 (12)
Computerized triage systems	40.7 (11)

Suggestions for Improvement of triage Table 10:

27 staff recommended more triage training programs., 18 supported the need for clearer triage guidelines., 12 suggested to increase number of staff., 11 supported implementing computerized triage systems.

Table 11: Table shows relation between confidence and correct answer.

Confidence Level	Correct	Incorrect	p value
Very Confident	2	15	< .001
Somewhat Confident	9	1	

Although the confidence level was high its association with correct answer was inversely proportional making it statically significant, Table 11.

Table 12: Table showing relation between training and correct answer.

Training	Correct	Incorrect	p value
Yes	11	0	< .001
No	0	16	

Those who received formal triage training got more answers correct making it statically significant, Table 12.

Our study showed formal triage training is key to improve knowledge and confidence level should not be associated with knowledge.

DISCUSSION

At Kanti Children's Hospital, there is still a lack of 24-hour triage services due to insufficient human resources, which is vital for the emergency department. As the only tertiary government children's hospital in Kathmandu receiving patients nationwide, the need for an effective triage system is critical. High levels of triage knowledge and practice can reduce overcrowding, shorten waiting times, improve patient flow, and increase practices.^[10]

The outcome of treatment depends heavily on quick and accurate triage. Studies demonstrate that appropriate triage decreases mortality and enhances resource utilization.^[9] Accurate triage supports the processes of admission, stabilization, and treatment.^[11]

Conversely, lack of triage system knowledge results in wasted resources, delayed admissions, patient dissatisfaction, and adverse outcomes. An accurate triage system can determine treatment trends and facilitate effective patient management.^[12,13]

This study revealed that only around two-thirds of emergency triage nurses (Table 1, 2, 4) demonstrated up-to-date knowledge, indicating a significant gap.^[11] All nurses agreed that a standardized triage protocol was followed. Over 60% felt confident performing triage, though overcrowding (Table 7) was the biggest challenge, likely due to public awareness gaps, lack of formal training, understaffing, and inconsistent guidelines,(Table 10) reflecting both systemic issues and patient trust.^[14]

Nurses updated their knowledge mainly by consulting colleagues and mentors, reading medical literature, and attending workshops. Correct triage is linked with better health outcomes, as timely assessment facilitates early doctor evaluation. However, over-triage and under-triage-assigning a patient to a higher or lower acuity category than necessary-can negatively impact care.^[15]

To improve triage efficiency, respondents suggested more training programs, clearer guidelines, increased staffing, and computerized triage systems, Table 10. Standardization is expected to enhance triage quality, classification accuracy, and overall emergency care; and confidence of staff doesn't necessarily shows knowledge of triage.^[15,16]

Since early assessment improves patient outcome recurring triage training should be conducted as our study showed 63% of nursing staff had <1 year of experience signifying increase turn over of staffs. This study showed association between training and increase knowledge, Table 12 similar with other studies; emphasizing need for triage training before emergency department posting.^[15]

Since the study population is small further extensive multicentric studies are required to validate the questionnaire showing limitation of study.

CONCLUSIONS

This study highlights critical gaps in triage knowledge and practice among emergency department nurses at Kanti Children's Hospital, the only government-run tertiary pediatric center in Kathmandu. Despite all participants expressing high levels of self-reported confidence in performing triage, only a portion demonstrated accurate understanding of key triage principles and protocols.

Given the hospital's high patient inflow and the limited hours during which triage services are available (1 PM to 7 PM), there is a pressing need to: Expand triage services to a 24-hour model, develop and implement structured triage training programs, reinforce the use of standardized triage protocols, address system-level issues like overcrowding and staff shortages.

Improving triage knowledge through structured training and regular evaluation will not only enhance clinical decision-making and reduce waiting times but also contribute significantly to patient safety, satisfaction, and overall quality of emergency care. Institutional commitment to capacity building and triage system reform is essential for sustainable improvement in pediatric emergency care delivery.

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Appendices

Questionnaire

SECTION A: DEMOGRAPHIC DATA

Gender:

- ☐ Male
- ☐ Female
- ☐ Other

Age group:

- ☐ 20-30 years
- ☐ 31-40 years
- ☐ 41-50 years
- ☐ Above 50 years

Level of nursing qualification:

- ☐ PCL
- ☐ BSc Nurse
- ☐ Master Nurse

OTHER specify

Years of experience in emergency care:

- ☐ Less than 1 year
- ☐ 1-5 years
- ☐ 6-10 years
- ☐ More than 10 years

Have you received formal training in triage?

- ☐ Yes
- ☐ No

If yes, what type of triage training have you received?

- ☐ On-the-job training
- ☐ Formal training course
- ☐ Workshop or seminar

SECTION B: TRIAGE KNOWLEDGE

What is the main purpose of triage in an emergency department?

- ☐ To reduce overcrowding
- ☐ To ensure patients are treated based on urgency
- ☐ To provide treatment to those who arrive first
- ☐ To improve hospital efficiency

Which triage system is most commonly used in Nepal?

- ☐ World Health Organization (WHO)

☐ Australian Triage Scale (ATS)

☐ Manchester Triage System (MTS)

What is the highest priority category in triage?

☐ Red (Emergency)

☐ Yellow (Urgent)

☐ Green (Non-Urgent)

☐ Black (Dead on Arrival)

Which patient should be seen first in an emergency department?

☐ A child with a fever of 39°C

☐ A patient with chest pain and difficulty breathing

☐ A patient with a broken arm

☐ A patient with a minor laceration

What should be done if two critically ill patients arrive at the same time?

☐ Treat both simultaneously

☐ Call for additional medical staff

☐ Prioritize based on survival probability

☐ Treat the one who arrived first

How often should triage nurses reassess patients in the waiting area?

☐ Every 15 minutes

☐ Every 30 minutes

☐ Every hour

☐ Only when the patient's condition changes

Which of the following best describes the correct triage process?

☐ Assess, prioritize, document, refer

☐ Assess, treat, discharge, document

☐ Document, refer, assess, prioritize

☐ Treat, document, assess, discharge

SECTION C: TRIAGE PRACTICES AND WAITING TIME

How frequently do you perform triage duties in your emergency department?

☐ Always

☐ Often

☐ Sometimes

☐ Rarely

Do you feel confident in your ability to triage patients correctly?

☐ Yes, very confident

☐ Somewhat confident

☐ Neutral

☐ Not confident

What are the biggest challenges you face when performing triage? (Select all that apply)

☐ Lack of formal training

☐ Overcrowding in the emergency department

☐ Limited staff availability

☐ Inconsistent triage guidelines

How long do patients in your emergency department typically wait before receiving treatment after triage?

☐ Less than 15 minutes

☐ 15-30 minutes

☐ 31-60 minutes

☐ More than 1 hour

Do you follow a standardized triage protocol in your hospital?

☐ Yes

☐ No

☐ Not sure

How do you update your knowledge on triage principles? (Select all that apply)

☐ Attending workshops and training sessions

☐ Reading medical literature

☐ Consulting colleagues and mentors

☐ No continuous learning

In your opinion, what can improve triage efficiency in your hospital? (Select all that apply)

☐ More triage training programs

☐ Hiring more staff

☐ Using a computerized triage system

☐ Clearer triage guidelines

Ethical Approval letter from Institutional review board of Kanti Children's Hospital, Nepal


 नेपाल सरकार
 स्वास्थ्य तथा जनसंख्या मन्त्रालय
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Ref. No.: ८१४

Date: 21 January, 2025

To
Dr. Anupama Kumari Yadav
 Principal Investigator
 Kanti Children's Hospital
 Maharajgunj, Kathmandu

Subject: Knowledge and practices of triage among emergency department nurses at Kanti Children's Hospital.

Dear Dr. Yadav,

With reference to above mentioned proposal, the protocol and related documents were discussed in IRC on 14 Poush 2081 (29 Dec, 2024) at 12:30 PM. Following members of the IRC and special invitee attended the meeting:

1. Dr. Bina Prajapati Manandhar	Chairman
2. Dr. Anupama Thapa Basnet	Member
3. Sadikchya Shah Malla	Member
4. Dr. Madhusudhan Kayastha	Member
5. Dr. Sanjit Kumar Shrestha	Member
6. Dr. Neera Pathak Pangen	Member
7. Mr. Santosh Ghimire	Member
8. Dr. Jagat Jeevan Ghimire	Member-Secretary

Special invitee

1. Dr. Prakash Joshi	Chief Consultant Paediatrician, KCH
2. Dr. Sumit Agrawal	Senior Consultant Paediatrician
3. Dr. Anil Kumar Shrestha	Senior Consultant Paediatrician

1 | 2 P a g e


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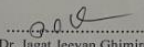
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Ref. No.: ८१४

The protocol have been **approved** from the ethical board with effective from 09 Magh, 2081 (22 January, 2025) subject to the following condition:

- The approval is valid for the study period of the conduct of the study according to the protocol. It is the responsibility of principal investigator to ensure it.
- No significant change in the protocol should be made and implemented without prior permission from IRC. Any planned changes should be approved by IRC.
- It was voted by all members attending the meeting.
- Principal investigator responsible to ensure timely monitoring of the study by reviewer as per SOP of IRC.
- Principal investigator should furnish 6 months study progress report and should complete the completion report by 6 months of completion of study. Completion report should be mailed to IRC Kanti children Hospital.
- Extended review from IRC is to be done if the study duration exceeds a period of 1 year.

With Best regards


 Dr. Jagat Jeevan Ghimire
 Member Secretary

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