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Correspondence:

Dr. Rakshya Dhungana
Dept. of General Practice & Emergency
Medicine, BP Koirala Institute of Health
Sciences, Dharan, Sunsari, Nepal
Email: swet.rakshya@gmail.com

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Assessment of knowledge of triage among patient attendants presenting in the emergency department: a single center observational study

Rakshya Dhungana¹ ✉, Rabin Bhandari², Gyanendra Bahadur Malla², Ritesh Chaudhary³, Pramendra Prasad Gupta³

¹MDGP & EM, ²Prof., ³Assoc. Prof., Dept. of General Practice & Emergency Medicine, BP Koirala Institute of Health Sciences, Dharan, Sunsari, Nepal

Abstract

Introduction: A triage system is a process by which a clinician assesses a patient's clinical urgency. Knowledge of the triage systems among patients is not a widely investigated topic in our country and public awareness is lacking. It has been used in BPKIHS since 2003. A study was done to assess knowledge of the triage system inpatient attendants who present to the emergency department in BPKIHS and to describe the knowledge and attitude about triage in the patient attendants. The importance of addressing this issue lies in the fact that increased knowledge of triage systems is associated with a positive attitude in the population towards triage.

Method: After ethical approval from IRC, an observational cross-sectional study designed to assess the knowledge of patient attendants was conducted. The sample size was 284, and the sampling was done with convenience sampling. Data was collected using a self-structured questionnaire. Descriptive analysis was performed using a chi-square test for inferential statistics (p 0.05 was considered significant). SPSS 25 was used for statistical analysis.

Result: Four item questionnaires were used in 284 patient attendants to determine knowledge. The correct response rate to questions related to information, time to wait before doctor assessment, reason and method were 102(35.8%), 202 (70.6%), 186(65.3%), and 175(61.4 %) respectively. Education and previous visits to the emergency were associated with a positive attitude to triage (p 0.001).

Conclusion: The knowledge about the triage in patient attendants was fairly good and patient attendants who know have positive attitude toward the process of triage.

Keywords: Attitude, Knowledge, Triage

INTRODUCTION A triage system is a basic structure in which all incoming patients are categorized into groups using a standard urgency rating scale or structure. Triage of the patient as a first step of emergency care helps in the initiation of care with varying urgency across the triage category in a busy emergency department.¹

In Nepal, various types of triage systems are being used. Among them WHO triage guideline is used which divides the patients into three categories red, yellow, and green areas which are used in Tribhuvan University Teaching Hospital and Patan Academy of Health Science.^{2,3} In B.P Koirala Institute of Health Science Australasian triage scale is used.⁴

B.P. Koirala Institute of Health Sciences (BPKIHS) is an 800-bed tertiary care and teaching hospital in the eastern region of Nepal.⁵ It has used the Australasian triage scale system since 2003.⁶ The benchmark is that 80% of ATS 2 patients are seen within 10 minutes.⁷ It was found that a triage liaison provider is an effective intervention to mitigate the effects of ED overcrowding.⁸ The patient's satisfaction is positively related to better access to the health system.⁸

This study was planned to understand attendants' knowledge and attitudes towards triage in the local context.⁹ The information obtained will be helpful to further improve the triage system in the hospital.⁹ It helps in reducing crowd in the emergency room making the working environment easy and comfortable. The information obtained will help identify the information gap to the public and focus efforts to decrease it. ^{7,8}

METHOD

An observational cross sectional study was done in the emergency department of BPKIHS Dharan from December 2020 to December 2021. The study was approved and validated by the Institutional Review Committee (Ref. No.: 251/077/78-IRC). Written and verbal consent was obtained regarding enrollment in the study. A self-administered questionnaire was prepared to assess knowledge and attitudes among patient attendants about emergency triage. The questionnaire was translated into and back-translated until a satisfactory version was reached. The survey was done at the emergency department at BPKIHS from 1 Dec 2020 to 1 Jan 2021 for piloting purposes, slight modification related to language to make questions more understandable was done and the validity of the questionnaire was ascertained with Cronbach's alpha value above 0.6. Exclusion criteria for the study were if the patient attendant was less than 18 years old or didn't give consent to enroll in the study.

Convenience sampling was done coinciding with the duty hour of the researcher. The sample size is calculated with

the following formula. (alhabdan et al¹³)

$$n = \frac{(Za/2)^2 pq}{d^2}$$
 where,
 $Za/2 = 1.96$ at 95% of CI
 $P =$ prevalence of knowledge (60% ¹³)
 $q = 100 - p$
 $d = 10\%$ of p that is at 90% power
 $d = 6$
 $n = \frac{(1.96)^2 * 60 * 40}{(6)^2}$
 $n = 256.10$ (approx. 257)
 adding 10% as error $n = 25.7$ (approx. 26)
 Total sample size $= 257 + 26 = 283$

Knowledge about the triage was tested by asking about the reason for triaging. It was also indirectly tested by asking the patient why the patient is seen at different times, the variable urgency of other patients, and the method of triage. Attitudes are tested by different statements like triaging is important, triage information is important and it helps to decrease overcrowding. Perceived urgency was also seen by comparing the association between fairness of triage and satisfaction of patient attendants. We also assess how the patient attendant gains knowledge of triage.

The collected data was entered in Microsoft Excel and exported into SPSS (Statistical Package for Social Science) software for statistical analysis by using version SPSS 25. For descriptive analysis, proportion, percentage, mean, median, and Standard deviation were calculated along with graphical and tabular presentation. For inferential analysis, Chi-square was used to compare the two categorical variables.

RESULT

A total of 285 patient attendants were screened with four screening questions to determine knowledge about triage. Among them 171(60%) were male and 114(40%) were female. The mean age of patient attendants involved in the study was 40.56 years (SD-14.520). Four screening questions were used to determine knowledge about triage. The positive response to the 1st question "Have you heard about the term "triage"?" was 102(35.8%). The positive response to the 2nd question "Do you know why patients are taken to different areas and seen before even though they may not have waited as long?" was 202 (70.6%). The correct response to the 3rd question "What do you think is the reason behind doing triage?" was 186(65.3%). The correct response to the 4th question "What do you think is the method of triage in BPKIHS?" was 175(61.4%).

A univariate comparison was made among the patient attendants who correctly identified the reason behind doing triage with sociodemographic and clinical profiles. During comparison between univariate variables, it was found to have a positive association with education and the number of emergency visits within 6 months with a p-value of less than 0.001 (Table 1). The rate of the statement to

Table 1. Comparison between univariate variable and patient attendant's response about the reason behind doing triage

	What do you think is the reason behind doing triage?		P value
	Correct response(N=186)	Incorrect response(N=99)	
Mean age	40.41 ± 14.22	40.86 ± 15.12	0.390
Male	115(61.8%)	50(56.6%)	0.388
Female	71(38.2%)	43(43.4%)	
Sunsari	103(55.4%)	83(44.6%)	0.977
Outside Sunsari	55(55.6%)	44(44.4%)	
Illiterate	65(34.9%)	90(90.9%)	<0.001
Literate	121(65.1%)	9(9.1%)	
No visits within 6 months	73(38.2%)	56(56.6%)	
1-3 visits within 6 months	45(24.2%)	27(27.3%)	<0.001
More than 3 times within 6 months	68(36.6%)	16(16.2%)	

Table 2. Distribution of attitude score in the Likert scale

	Strongly disagree (1) N(%)	Disagree (2) N(%)	Neutral (3) N(%)	Agree (4) N(%)	Strongly agree (5) N(%)
Triaging every patient in an emergency is very important	15(5.3%)	19(6.7%)	49(17.2%)	56(19.2%)	145(51.2%)
Getting information about triage and how triage work is very important	11(3.9%)	17(6%)	43(15.1)	53(18.6%)	151(66.5%)
Triaging helps to decrease overcrowding and helps prompt the management of Patient	8(2.8%)	18(6.3%)	51(17.9%)	75(26.3%)	133(46.7%)

Table 3. Comparison between attitude statement and correct and incorrect response for the question "What do you think is the reason behind doing triage?"

Likert scale	What do you is the reason behind doing triage?										P value
	Strongly disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly agree (5)		
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	
Triaging every patient in an emergency is very important	2 (13.3%)	13 (86.7%)	4 (21.4%)	15 (78.9%)	7 (14.3%)	42 (85.7%)	44 (78.6%)	12 (21.4%)	128 (88.4%)	17 (11.6%)	<0.001
Getting information about triage and how triage works is very important	7 (63.6%)	4 (36.4%)	2 (11.8%)	16 (88.9%)	17 (33.3%)	34 (66.7%)	39 (73.6%)	14 (26.4%)	133 (82.6%)	28 (17.4%)	<0.001
Triaging helps to decrease overcrowding and helps prompt management of patient	3 (37.5%)	5 (62.5%)	2 (11.1%)	16 (88.9%)	17 (33.3%)	34 (66.7%)	54 (72%)	21 (28%)	110 (82.7%)	23 (17.3%)	<0.001

Table 4. Comparison between attitude statement with correct and incorrect responses for the question "What do you think is the method of triage in BPKHS?"

Likert scale	What do you think is the method of triage?										P value
	Strongly disagree (1)		Disagree (2)		Neutral (3)		Agree (4)		Strongly agree (5)		
	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	Correct	Incorrect	
Triaging every patient in an emergency is very important	3 (20%)	12 (80%)	2 (10.5%)	17 (88.5%)	5 (10.2%)	44 (89.8%)	36 (64.3%)	20 (36.7%)	129 (88.4%)	17 (11.6%)	<0.001
Getting information about triage and how triage works is very important.	0 (0%)	11 (100%)	3 (17.6%)	14 (82.4%)	5 (11.6%)	38 (88.4%)	38 (71.7%)	15 (28.3%)	129 (80.1%)	32 (19.9%)	<0.001
Triaging helps to decrease overcrowding and helps prompt the management of patient	2 (25%)	6 (75%)	3 (16.7%)	15 (83.3%)	11 (21.6%)	40 (78.4%)	53 (70.7%)	22 (29.3%)	106 (79.7%)	27 (20.3%)	<0.001

judge the attitude of patient attendants toward the triage was scored by the Likert scale (Table 2).

A comparison was made among the patient attendants who correctly identified the reason behind doing triage with attitude statements. During the comparison, it shows a positive association between attitude and patient attendants who knew the reason behind the triage with p values of less than 0.001 with all statements of triage related to attitude. (Table 3) Similarly, a comparison was made among the patient attendants who correctly identified the method of triage with attitude statements. During the comparison, it shows a positive association between attitude statements and patient attendants who knew the method of triage with p value less than 0.001 with all the statements of triage related to attitude (Table 4).

Two questions were asked to assess the fairness and satisfaction of patient attendants. There was a positive association between people who thought the triage process was fair and their satisfaction level ($p < 0.001$) (Table 5).

Out of 285, 202(70.9%) were positive responders out of which 99(51.4%) said they knew about triage by doctors and nurses and 92(45.54%) said they knew about triage during previous visits.

We also asked patient attendants about their perceived urgency from 1 to 10. The means perceived urgency of patient attendants was 7.56(SD 1.19) with a minimal score of 5 and a maximal score of 10. It shows no association between the patient attendant's perceived urgency and correct response toward the knowledge of triage (p -value > 0.05) (Figure 1).

DISCUSSION

The triaging of every patient who is present in the emergency room is one of the most crucial parts as it helps in recognizing and prompt management of sick patients in a poor resource setting like ours.¹ So, it helps in reducing the mortality and morbidity of the patient as well as reducing the crowd in the emergency room making the working environment easy and comfortable.¹

This study done by Anna Ekwall, et al. concluded that helping the patient to understand the severity of his medical condition and providing information about the triage category and its implications for care in the emergency department helps to reduce patient's anxiety levels and increase their satisfaction.⁹ Our study also has given a similar response as those patient attendants who have a better understanding of triage have more satisfaction with triage.

Knowledge of the triage systems among the general population is not a widely investigated topic in the literature.

The importance of addressing this issue lies in the fact that increased knowledge of triage systems is associated with a positive attitude in the population towards triage.^{10,11}

A study done by Sibert, et al., at the University of Colorado, School of Medicine, Dept. of Emergency Medicine, shows good knowledge of triage in their population.¹³

In a study of King Abdulaziz Medical City emergency department visitors using previously validated questionnaires (Sibert 2014) done by Alhabdan, et al., when participants were asked "Do, they knew why some patients were seen earlier?" 60% answered "yes" and among the participants who gave valid answer were 96.2%.¹⁴

In a study done by Rijal S, et al., Dept. of General Practice & Emergency Medicine, Patan Academy of Health Sciences among 384 participants, 68.75% of participants thought the purpose of triage was for efficient identification of sick patients and prompt management.³

A study was done by Meek R, et al., where convenience sampling of 289 ED consumers, 147(50.8%) correctly responded that it was to judge how urgently medical attention was required. This study shows fairness was good similar to our study.⁸

The study done by Khin Thander, et al.,¹⁴ stated that knowledge and perceptions can be improved by public awareness programs.

A descriptive study comprising 198 patients who visited the emergency department at an education and research hospital was done by Yasemin et al with a mean total Triage Satisfaction Scale mean score was 7.37 ± 2.11 .¹⁵

In the international study, the level of knowledge where higher than in our group which can be increased by various processes as done by Sangal, et al., study in which information was given to patients in the waiting area by the distribution of pamphlets. Conclusion of the study by Sangal, et al., when the pamphlet was utilized by patients, it did improve patient understanding of some aspects of the ED visit but does not appear to be the best tool to convey all information. However, a multifactorial approach can be done to improve knowledge which also improves the satisfaction of patient attendants.¹⁶

Papa, et al., study shows improving knowledge and satisfaction by showing a video.¹⁷

In our study, there was a positive association between the population who knew various aspects of triage and the attitude of patients toward triage. Various studies also showed a positive attitude of the population toward triage in whom knowledge of triage was present. Like study done

by Anna Ekwall, et al., showed that the patient's anxiety level is reduced and satisfaction is increased if the triage is understood by them.¹⁸

Our study reported a low knowledge level compared to the study done in Colorado by Sibert, et al.¹¹ This is due to the education level being different among the population. In our study 18.2% of the population were illiterate. Colorado, being part of a developed country, people knew about their health facilities, and health insurance provided by their government encouraged them to use health facilities. Education and the number of emergency visits show a significant association with knowledge of triage, this is a reason for higher knowledge in the developed part of the world.

A study done at Patan Hospital³ and our study have similar results. This is because both the study was done on a similar group of populations.

- In our study, there was a significant association between number of emergency visits within 6 months and knowledge of triage. Our study shows participants who had more than 3 visits in the last 6 months had more knowledge of triage than others who had fewer visits. This is an expected finding considering experience leads to knowledge.
- Informative posters and other modes of communication when used more frequently by the hospital, may lead to better dissemination of knowledge. Word of mouth is a slow process but effective process. However, there was no available study done from which we can compare our findings. There was also an association between knowledge of the reason behind doing triage and the method of triage and the population group in our study who were residents of Sunsari. It is because we were providing information about triage in local media using Radio.
- The limitation of our study we have taken a sample from one hospital if we involved multiple hospitals who used triage in our study then it would have been statistically better. Further study should be done including multiple centres that used different triage systems regarding knowledge and satisfaction as well as how to make it better.

CONCLUSION

This study shows that knowledge about triage in the study population was similar to the study done in a similar population. But lower than studies done on other sides of the world.

DECLARATIONS

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The authors would like to acknowledge all the patients and their relatives involved in this study.

Conflict of Interest

None

Funding

None

Ethical Clearance

The ethical clearance was taken from the BPKIHS Institutional Review Committee (Ref. No.:251/077/78-IRC).

Consent of the Study

The consent was taken from the patient attendants who were involved in the study.

Consent for Publication from Authors

All the authors consented to the publication of the findings.

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