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Patients Triage: Key Factor in Improving Quality of Nursing Care and Patient Satisfaction

Tadrous Abdo Mosaed[1], Samah Mohamed Abdalla[2] & Reda Hassan Hussein[3]
[1.] Clinical Instructor of Nursing Administration Faculty of Nursing Assiut University, Egypt.
[2.] Professor of Nursing Administration Faculty of Nursing Assiut University, Egypt.
[3.] Assistant Professor of Nursing Administration Faculty of Nursing Assiut University, Egypt.

Abstract
Background: Patients' triage plays a pivotal role in enhancing the quality of nursing care and ensuring patient satisfaction. **Aims:** To assess nurses' awareness about triage system and its effect on quality of nursing care and patient satisfaction **Research design:** Descriptive correlational research design was used. **Setting:** This study was conducted at emergency unit at Trauma Assiut University Hospital. **Subjects:** Consisted of all available nursing staff (N=97), and all available patients in the time of data collection (N=108). **Tools:** The study data collected include Tool (1): A structured interview questionnaire Part (1): Personal data form and Part (2): Nurses' awareness about triage system questionnaire. Tool (2): Patient satisfaction scale Part (1): Personal characteristics data form. Part (2): Patient satisfaction levels questionnaire. Tool (3): Quality of nursing care assessment post-triage. **Results:** Showed that nearly to three quarters of the nursing staff had a low level of awareness regarding the triage system following the implementation of the triage plan, 74.1% of the patients reported a high level of satisfaction with emergency nursing care, Additionally, 73.1% of the nursing staff demonstrated a high level of total quality in nursing care**. Conclusions:** High statistically significant positive correlation between the total quality of nursing care and total patient satisfaction post triage**. Recommendations:** Strengthening Triage Protocol by establish standardized guideline and ensure continuous updating of triage tools with international standards.

Keywords: Patient triage, Patient satisfaction & Quality of nursing care.

Introduction
The primary challenge of emergency department (ED) services is to maintain the level of quality despite the large volume of patient admissions to the emergency department at any time of day and to be able to individualize treatment according to the needs of each patient **(Al-Kalaldeh et al., 2021)**.

Patient triage refers to the process of prioritizing patients for treatment according to the severity of their condition. It is considered one of the most essential management and decision-making practices in emergency departments (ED) (**Reisi et al., 2018**). Triage is applied in various contexts and is generally categorized into three main types: military, disaster, and emergency department triage (**Bazyar et al., 2022**).

Nurses' knowledge of triage plays a critical role in supervision and decision-making within the ED; when not performed to standard, it can negatively affect patient outcomes and the efficiency of the department. Triage Registered Nurses (RNs) are central to managing patient flow in the ED, which helps minimize patients' length of stay (**Kerie et al., 2018**). Furthermore, efficient triage is vital for aligning healthcare system capacity with patient needs, particularly during crises such as disasters, pandemics, and other public health emergencies (**Farcas et al., 2020**).

Quality of nursing care is essential for ensuring positive patient outcomes, particularly in high-pressure healthcare environments. The adequate nurse staffing levels are directly correlated with improved patient safety and satisfaction. The hospitals with higher nurse-to-patient ratios experienced significantly lower rates of adverse events, such as medication errors and hospital-acquired infections **(Griffiths, et al., 2021)**.

Patient satisfaction serves as a key measure for assessing service quality and guiding improvements in healthcare delivery. Creating satisfaction scales tailored to each specialty has been shown to address specific challenges effectively. Within nursing, patient satisfaction is understood as the difference between patients' expectations of ideal nursing care and their actual perception of the care provided. Utilizing feedback from patient satisfaction is essential for enhancing nursing care and advancing the overall quality of healthcare services **(Haruna et al., 2022).**

Triage system plays a critical role in shaping patient outcomes in emergency departments, significantly influencing both patient satisfaction and the quality of nursing care. Effective triage systems can streamline patient flow, reduce wait times, and enhance overall care experiences, leading to higher levels of patient satisfaction **(Mason et al., 2018)**. The well-implemented triage protocols positively correlate with improved perceptions of care quality among patients **(Huang et al., 2020)**.

Significance of the Study

The implementation of triage system in healthcare settings is essential for managing patient care effectively and enhancing satisfaction levels as it can lead to reduced anxiety among patients, and their needs are being acknowledged and addressed promptly **(Davis et al., 2019).** It not only helps in prioritizing patients based on their clinical needs but also allows nursing staff to allocate their time and resources more effectively, thus improving the quality of nursing care provided **(Mason et al., 2018).** There are many studies internationally was done about triage system as Emergency department nurses' knowledge regarding triage **(Al Marzooq,2020).** Assessment of knowledge and skills of triage amongst nurses working in the emergency **(Malak, et al., 2022)** on the other side many studies were done in Egypt as: Nurses Perception toward Implementation of an Emergency Department Triage System **(Badawy, et al., 2018)** Assessment of staff nurse's knowledge and performance regarding triage **(Mustafa, et al., 2019).** In Trauma Assiut University Hospital, there is little research and knowledge about triage system. Therefore, the sorting should be applied to all treatment centers. additionally, it is essential that hospitals apply Triaging system to reduce the burden on the patients and improve quality of patient care. so that the researcher interested to apply triage process in emergency department and measure it's' effect on quality of nursing care and patient satisfaction at Trauma Assiut University Hospital.

Aim of the Study:

To assess nurses' awareness about triage system and its effect on quality of nursing care and patient satisfaction at Trauma Assiut University Hospital.

Study objectives:

- Assess nurses' awareness about triage system.
- Assess the influence of triage system on quality of nursing care and patient satisfaction.
- Formulate a plan about triage system.

Study Questions:

To fulfill aims of present study the following research questions are formulated:

Q1. What is the level of awareness for nurse about triage system?

Q2. To what extent does triage system affect the quality of nursing care?

Q3. To what extent does triage system affect patient satisfaction levels?

Subjects and Methods

Technical design:

It included the research design, setting, subjects and data collection tools.

Research design:

Descriptive correlational research design was used to carry out the present study.

Setting:

The study was conducted at emergency unit at Trauma Assiut University Hospital.

Study subjects:

The present study included:

1. All available nursing staff working at emergency unit at Trauma Assiut University Hospital (N=97).
2. All available patients who admitted at Trauma Assiut University Hospital (emergency department) within a period of three months throughout data collection were included in the study (N=108).

Data collection tools:

Three tools were used for data collection

Tool (1): A structured interview questionnaire which consists of two parts.

Part (1): Personal data form .

Which developed by the researcher and included data about nurses' age, gender, marital status, educational level, position, years of experience in hospital for current job.

Part (2): Nurses' awareness about triage system questionnaire.

Which developed by **(Mustafa et al., 2019)** and modified by researcher. It includes (5) domains concepts of the triage system it consists of (5 items) the importance of triage system it consists of (7 items), triage nursing role it consists of (6 items), types of triage systems it consists of (13 items) and hospital policy it consists of (4 items) and the tool questions ranging from (one) for agree and (zero) for disagree.

Scoring system:

The total score divides into three levels.

1- Lower level less than 60%.
2- Moderate level ranges from 60% to 75%.
3- High level up to 75%.

Tool (2): Patient satisfaction scale which Consists of two parts:

Part (1): Personal data form.

Which developed by the researcher and included data related to personal characteristics of the patients; it includes: age, gender, marital status, occupation, educational level

Part (2): Patient satisfaction Levels questionnaire.

Prepared by **(Haruna, et al., 2022)** to asses patient satisfaction level it includes (21) items each item is measured on 5-point Likert scale ranging from (0 = not applicable, 1= strongly disagree, 2 = slightly disagree, 3 = neutral, 4 = slightly agree and 5 = strongly agree).

Scoring system:

The total score divides into three levels.

1- Lower level less than 60%.
2- Moderate level ranges from 60% to 75%.
3- High level up to 75%.

Tool (3): Quality of nursing care assessment post-triage.

To assess the quality of nursing care provided after the triage process in an emergency unit, focusing on the aspects most relevant to nurses, it developed by researcher based on reviewing scientific literatures as development and validation of a quality assessment tool for nursing care in emergency settings **(Smith, et al., 2022)** and quality of nursing care provided in the emergency department after the triage phase **(Doe, et al.,2023).**

It consists from (10) domains of assessment:

Communication it consists of (4) items, Patient safety and monitoring it consists of (4) items, Care efficiency it consists of (2) items, Clinical competence it consists of (2) items, Emotional support it consists of (2) items, Documentation it consists of (2) items, Triage to care transition it consists of (2) items, Nursing intervention it consists of (2) items, Coordination of care it consists of (2) items and Work environment it consists of (2) items. Each item measured on 5-point Likert scale ranging from (1 = never, 2 = rarely, 3 = sometimes, 4 = oftenly and 5 = always).

Scoring system:

The total score divides into three levels.

1- Lower level less than 60%.
2- Moderate level ranges from 60% to 75%.
3- High level up to 75%.

Administrative design:

Official approval to carry out this study was obtained from the Dean of Faculty of Nursing, Assiut University, Director of Assiut University Hospital (Trauma hospital), Nursing Directors, and Head of department to collect the necessary data.

Operational design:

Operational design consisted of four stages 1st preparatory phase, 2nd ethical considerations, 3rd pilot study and 4th field work as described.

Preparatory phase:

This phase took one month from the beginning of October to the end of it (2024) to review the available literature concerning the topic of the study and translation of the study tools from English to Arabic.

Validity of tools:

Validity of study tool was done by jury composed of five expert professors in nursing administration department and correction was carried out accordingly.

Reliability:

- Reliability of study tool was done by Cronbach's Alpha Co efficient test, it was ($\alpha = 0.932$) .
- The awareness of nursing staff about triage system was (0.87), quality of nursing care was (0.712) and patient satisfaction was (0.848).
- The overall of the all tools of the study had internal consistency ($\alpha = 0.932$).

Pilot study:

A pilot study was carried out before starting actual data collection to ensure the clarity, accessibility, understandability of the study tools and for time estimation. Moreover, to identify problems that may be encountered during the actual data collection. It carried out on 10% of study sample including 10 nurses and 11 patients, took about three months from October to December.

The data obtained from the pilot study was analyzed and no necessary modification were done for the study tool, so nursing staff and patients included in the pilot study were included in the total studied participants.

Ethical considerations:

Were carefully addressed throughout the study. Research proposal was approved from Ethical Committee at the Faculty of Nursing, Assiut University, dated on 27/10/2024 and committee number (1120240911). Participation in the study posed no risk to the participants. Both oral and written consent were obtained from all participants after providing them with a clear explanation of the study's purpose and procedures. Participants were informed of their right to refuse participation or to withdraw from the study at any time without providing any justification. Confidentiality and anonymity were strictly ensured, and participants' privacy was fully respected during data collection. The study adhered to the common ethical principles governing clinical research.

The Field work

- The data was collected by the researcher through structured questionnaire with nurses according to their schedules (morning, evening and night shifts) to explain the purpose of the study and to measure awareness about triage system.
- The researcher was formulated a plan and gave an educational session about the triage system regarding information needed for nurses N :(97) working at Trauma Hospital.
- The educational session was conducted three days a week for two months, every session took approximately from 30 to 75 minutes.
- The researcher used teaching aids (power point) for illustration and gave them booklets for training.
- The researcher measured the effect of triage on the quality of nursing care and patient satisfaction.
- This phase took two months from the beginning of November to the end of December (2024); therefore, the total period of data collection was three months.

Statistical design:
The statistical analysis was performed using the SPSS software package. After data collection was completed, the information was organized, tabulated, and analyzed using IBM SPSS version 24. Descriptive statistics, including numbers, percentages, means, standard deviations, minimum, and maximum values, were used to present the data. The chi-square test was applied to compare qualitative variables, while Pearson correlation was used to examine relationships between study variables. Data were also illustrated using bar charts. A p-value of ≤ 0.05 was considered statistically significant, whereas a p-value of ≤ 0.001 indicated a highly significant difference.

Results:

Table (1): Distribution of the personal data of staff nurses in the study (n=97)

Personal data	No.	%
Age (years)		
22-32 years	67	**69.1**
33-43 years	25	25.8
44 years and more	5	5.1
Mean ± S.D 29.9 ± 6.8		
Marital status		
Married	55	**56.7**
Divorced	1	1.0
Widow	0	0
Single	41	42.3
Gender		
Female	49	**50.5**
Male	48	49.5
Educational qualification		
Bachelor's degree in nursing science	49	**50.5**
Specialized diploma in nursing	42	43.3
Master	5	5.2
Doctorate	1	1.0
Years of experience		
0-9 years	72	**74.2**
10-20years	19	19.6
21-30	6	6.2
Mean ± S.D 6.3 ± 6.6		
Current job		
Staff nurse	76	**78.4**
Nurse director	1	1.0
Nurse supervisor	15	15.5
Head nurse	5	5.2

Table (2): Distribution of the personal data of patients in the study (n=108)

Personal data of patients	No.	%
Age (years)		
≤ 25 years	31	**28.7**
26-44 years	28	25.9
45-65 years	25	23.1
Above 65 years	24	22.2
Mean ± S.D 45.6 ± 15.78		
Gender		
Male	74	**68.5**
Female	34	31.5
Marital status		
Married	53	**49.1**
Widow	20	18.5
Single	35	32.4
Divers	0	0

Personal data of patients	No.	%
Occupation		
Employed	29	26.9
Unemployed	32	**29.6**
Retired	23	21.3
Student	24	22.2
Educational level		
Elementary level	23	21.3
Secondary level	20	18.5
Undergraduate level	28	25.9
Professional level	31	**28.7**
Advanced level	6	5.6

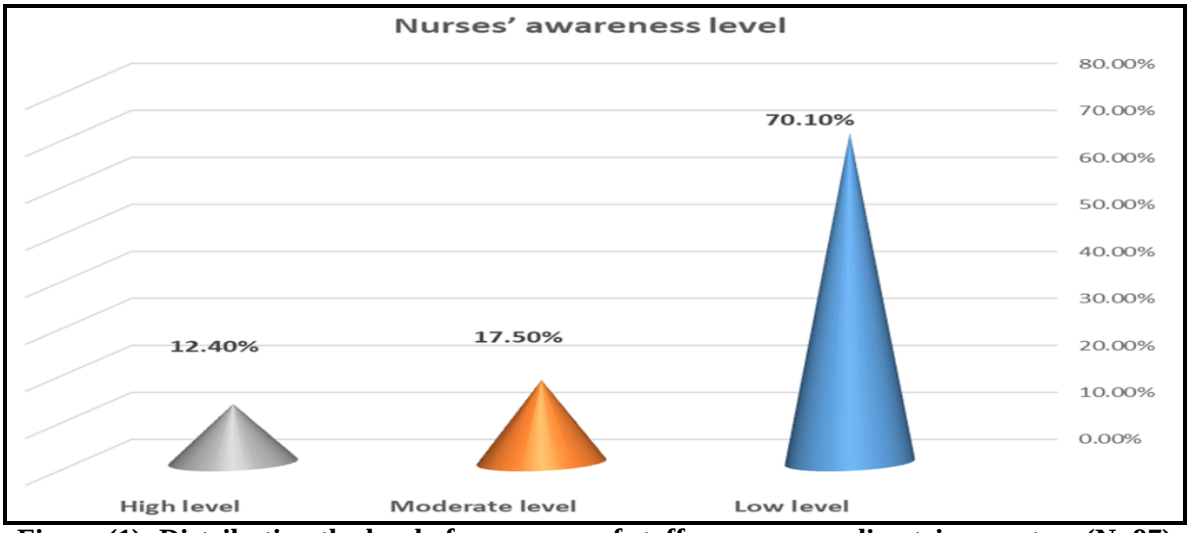

Figure (1): Distribution the level of awareness of staff nurses regarding triage system (N=97)

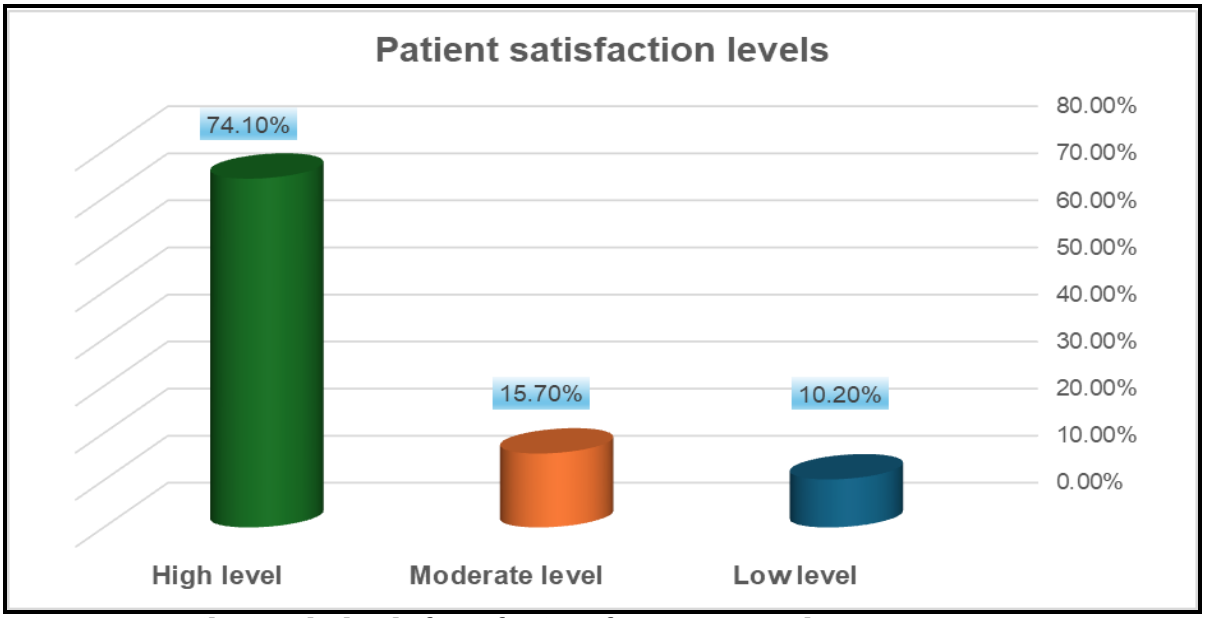

Figure 2: Distribution the level of satisfaction of patients regarding to emergency nursing care (N=108)

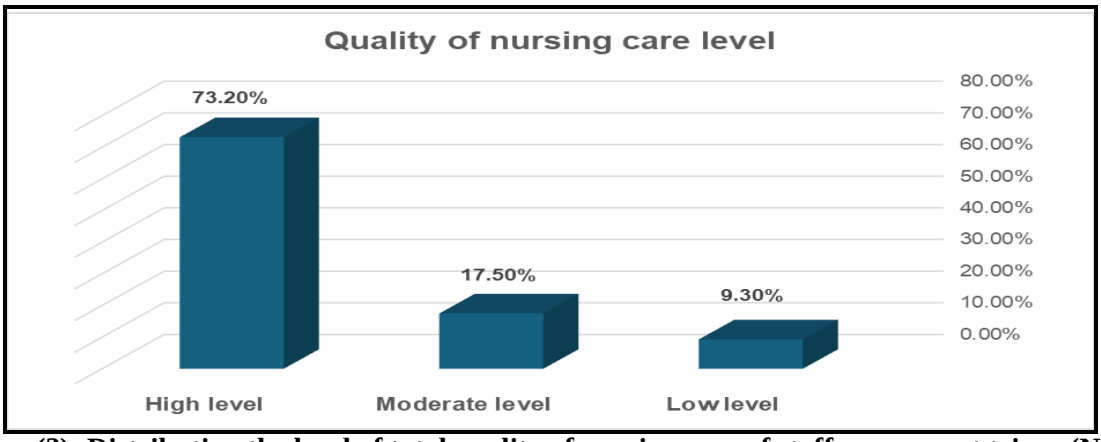

Figure (3): Distribution the level of total quality of nursing care of staff nurses post triage (N=97)

Table 3: Correlation between total quality of nursing care and total patient satisfaction post triage

		Total patient satisfaction
Total quality of nursing care	R	.642**
	p-value	.000

**. Correlation is significant at the 0.01 level (2-tailed).
r= Pearson correlation coefficient.

Table (1): Illustrates that **69.1%** of the studied nursing staff have 22-32 years old, **56.7%** are married and **50.5%** are female. Regarding Educational qualification**, 50.5%** of them have Bachelor's degree in nursing science and **74.2%** of them have 0-9 years of experiences. As regard to current job of the studied nursing staff, **78.4%** of them are staff nurse.

Table (2): Shows that, **28.7%** of the studied patients are ≤ 25 years, **68.5%** of them are male and **49.1%** are married. Regarding Occupation**, 29.6%** of them Unemployed. As regard to educational level of the studied patients, **28.7%** of them have Professional level.

Figure (1): Shows that, about more than two third **(70.1%)** of the studied nursing staff have low level of total awareness toward triage system, while only more than one tenth **(12.4%)** of them have high level of total awareness toward triage system.

Figure (2): Shows that, around three quarter **(74.1%)** of the studied patients have high level of total satisfaction toward emergency nursing care after applying the triage plan, while only one tenth **(10.2%)** of them have low level of total satisfaction.

Figure (3): Shows that less than three quarter **(73.1%)** of the studied nursing staff have high level of total quality of nursing care after applying the triage plan, while only less than one tenth **(9.3%)** of them have low level of total quality of nursing care.

Table (3): Clarifies that, there was a high statistically significant positive correlation between the total quality of nursing care and total patient satisfaction post triage at **(P< 0.001).**

Discussion

In the context of healthcare, patients' triage plays a pivotal role in enhancing the quality of nursing care and ensuring patient satisfaction. By effectively prioritizing patients based on the urgency of their medical needs, triage allows nurses to allocate resources efficiently and deliver timely interventions, thereby improving care outcomes. This process directly impacts the overall quality of nursing care, as it ensures that patients receive appropriate attention when needed most. Moreover, an efficient triage system fosters patient satisfaction by minimizing wait times, reducing unnecessary stress, and providing a sense of reassurance that their concerns are being addressed promptly. Ultimately, the integration of a well-structured triage process leads to a more organized healthcare environment, where both the quality of care and the patient experience are optimized **Porto etal., (2024).**

The present study finding illustrated that about half of nursing staff was female. This result may be due to the most nursing schools were for female and also in the past most of those joining nursing are females more than males to be a nurses. This finding was consistent with **Mustafa et al., (2019)** who illustrated that the highest number of the study subjects were female. About half of them have Bachelor's degree in nursing science and majority of them have 0-9 as years of experiences. As regard to current job of the studied nursing staff, majority of them are staff nurse. From the researcher's perspective, a higher level of education and greater years of experience lead to a better understanding of the Triage System. This, in

turn, reduces the training time and effort required, while enhancing clinical practice, decision-making, and patient outcomes, ultimately resulting in improved prognosis.

The results show that a significant proportion of the studied patients are under 25 years old. A majority of the patients are male, and nearly half are married. In terms of occupation, less than third are unemployed, indicating a notable portion of the sample may face economic challenges. Additionally, less than third of the patients have a professional educational level, suggesting a diverse range of educational backgrounds among the group. These findings highlight the demographic and socio-economic characteristics of the patient population, which may influence healthcare outcomes.

From the finding of current study more than two third of the studied nursing staff have low level of total awareness toward triage system. From the researcher point of view these results may attribute to insufficient training programs regarding triage in nursing schools, faculties of nursing and also in the hospitals may be due to lack of orientation program for the newly nurses, lack of job description of triage nurse, perception of the nurses regarding their role in saving life of emergent patient and the physician in the responsible for life saving of patient and the nurse is assistance to physician, and also the perception of the physician regarding role of nurse in emergent situations is only assistant and carrying out their orders. This finding was in line with **Mustafa et al., (2019)** who illustrated that generally more than half of the studied nurses had unsatisfactory knowledge regarding triage, while less than half of them had satisfactory knowledge regarding triage. Additionally, **Abdel Aleem, (2024)** who mentioned that more than half of nurses have lack knowledge and performance regarding triage application, these results were due to several factors, including a lack of formal training, limited practical exposure, and unclear or outdated triage guidelines. Additionally, heavy workloads and insufficient institutional support may prevent nurses from maintaining or improving their triage knowledge, while **Ariffin et al., (2023)** contradicted with the current study results and reported that, nurses in the Emergency Department in Saudi Arabia demonstrate a high level of knowledge and skills in triage assessment, with 100% familiarity with the Canadian Triage and Acuity Scale.

Ongoing the present study finding, around three quarter of the studied patients have high level of total satisfaction toward emergency nursing care after applying the triage plan. From the researcher point of view this result is noteworthy as it reflects the positive impact of a structured and systematic triage approach on patient experience in emergency settings. Triage systems are designed to prioritize care based on the severity of patients' conditions, potentially improving patient flow and care efficiency, which may contribute to higher satisfaction. The high satisfaction rate can be attributed to factors such as timely care, reduced waiting times, and enhanced communication between patients and healthcare providers, which are often critical components of effective emergency nursing care. The result was consistent with **Alazaka, (2024)** who illustrated that majority of the studied patients reported a high level of total satisfaction with emergency nursing care following the implementation of the triage plan. And with **Abd El-Gawad, (2014)** who reported that more than half of the triage group reported satisfaction with their emergency visit. Also, with **Butti et al., (2017)** who mentioned that a high level of patient satisfaction was achieved, with a mean satisfaction score greater than 9 points at discharge. The high levels of patient satisfaction reported in the studies can be attributed to several key factors related to the implementation of the triage system. These include improved prioritization and timely care, better communication between staff and patients, efficient use of resources, and enhanced organization within the emergency department. Additionally, the active involvement of nurses during triage increases patient interaction and trust, all of which contribute to a more positive overall experience and higher satisfaction levels.

On the other hand, the fact that only the minority of patients reported low satisfaction suggests that while the triage plan is largely effective, there is still a small portion of patients who may have had negative experiences. This discrepancy might be due to individual patient factors, such as severity of condition, expectations, or interpersonal interactions with healthcare staff. This finding was consistent with **Sousa et al., (2024)** who illustrated that while patients generally trust healthcare professionals and the triage system, concerns about waiting times and communication persist. This suggests that individual factors may influence satisfaction. Also, with **Hernández et al., (2024)** who mentioned that that individual patient factors, including condition severity and interpersonal interactions, may contribute to varying satisfaction levels. These results due to the variation in patient satisfaction, despite the overall effectiveness of the triage system, can be explained by individual patient factors. These include the severity of the patient’s condition, personal expectations, and the quality of interactions with healthcare staff. Additionally, concerns about waiting times and how information is communicated can influence how patients perceive their care. These factors suggest that satisfaction is not only linked to system efficiency but

also to the personal experiences and perceptions of each patient.

According to finding of the present study, less than three quarter of the studied nursing staff have high level of total quality of nursing care after applying the triage plan. From the researcher's perspective, this high percentage of positive responses suggests that the triage plan may have positively impacted nursing practices, possibly by streamlining patient flow, enhancing efficiency, and providing clearer priorities for care, these factors are known to help healthcare providers manage their workload and resources more effectively, which may directly contribute to an improvement in the perceived quality of care. The result was consistent with **Alazaka, (2024)** who illustrated that majority of the nursing staff exhibited a high level of total quality of nursing care following the implementation of the triage plan. Also, with **Purwacaraka et al., (2024)** who illustrated that majority of nurses successfully conducted accurate triage, leading to an 80.8% success rate in emergency care management. These results can be attributed to the implementation of structured triage systems. These systems provide clear guidelines, improve nurse training and confidence, enhance team coordination, and promote accountability. As a result, nurses are able to make accurate assessments and deliver efficient, effective emergency care.

The relatively low percentage of nursing staff reporting a low level of care quality is encouraging, as it suggests that the triage plan was largely successful in fostering a high standard of care. However, the presence of this minority indicates that some areas for improvement still exist. The reasons for these lower perceptions of care quality may include challenges such as workload stress, insufficient training in using the triage system, or communication issues within the healthcare team. These factors could negatively impact nursing staff's ability to deliver optimal care despite the overall success of the triage plan. This finding was in line with **Smith et al., (2023)** who illustrated that challenges like resource limitations and burnout affecting nursing care quality. It emphasizes the need for continuous education and addressing communication issues to improve care quality.

The present study finding illustrated that, there was a high statistically significant positive correlation between the total quality of nursing care and total patient satisfaction post triage. From the researcher's perspective, the quality of nursing care directly impacts patient outcomes, including their overall satisfaction, high-quality care generally includes effective communication, timely interventions, compassionate and empathetic interactions, and proper clinical management. All of these factors contribute to a positive patient experience, leading to higher satisfaction levels. The result was consistent with **Hernández et al., (2024)** who found that majority of patients reported satisfaction with triage care, correlating significantly with the nurses' competency levels that indicating higher nursing competence leads to greater patient satisfaction. This relationship emphasizes the importance of quality nursing care in emergency triage settings. Also, with **Huang et al. (2021)** who found a significant positive correlation between nursing care quality and patient satisfaction, emphasizing the importance of effective communication and professional skills in nursing. And with **Apriana & Ratnasari (2021)** that they found a strong correlation between nursing service quality and patient satisfaction, indicating that improved nursing services lead to higher satisfaction levels.

Generally patient triage is a crucial phase in healthcare that significantly influences the quality of nursing care and patient satisfaction. As the first point of contact, it sets the tone for the entire patient experience. High-quality nursing care during triage, which includes effective communication, empathy, and timely assessments, improves patient outcomes and fosters trust, leading to higher satisfaction. Research shows that when nurses provide clear, compassionate care, patients feel more informed and reassured, positively impacting their overall perception of care. The strong correlation between nursing care quality and patient satisfaction highlights the importance of prioritizing compassionate, patient-centered care in the triage process to enhance the overall healthcare experience.

Moreover, the results indicating that effective triage systems not only improve patient outcomes but also enhance staff satisfaction by reducing cognitive load and ensuring that nurses can focus on the most critical cases. However, it is essential to recognize that achieving high quality of care is multifactorial and can be influenced by various external factors, such as institutional support, staffing levels, and nurse-patient ratios

Conclusion

Based on the study finding, it was concluded that the majority of the studied nursing staff have low level of total awareness toward triage system, The majority of the studied patients have high level of total satisfaction toward emergency nursing care after applying the triage plan, Also, majority of the studied nursing staff have high level of total quality of nursing care after applying the triage plan.

Recommendation

Based on the findings of the present study, it was suggested that:

1- Strengthen triage protocols by establishing standardized triage guidelines and ensuring continuous updates of triage tools in alignment with international standards.
2- Build nurses' capacity by providing regular training workshops and conducting simulation-based learning sessions to handle trauma emergencies effectively.
3- Improve patient-centered approaches by enhancing communication strategies with patients and families during triage.
4- Develop hospital policies that support triage as a key factor in nursing care quality, and monitor and evaluate triage performance regularly to identify areas for improvement.
5- Encourage ongoing research and periodic evaluation studies to assess the effectiveness of the implemented triage system, identify challenges faced by nursing staff, and develop evidence-based strategies for continuous improvement in emergency care quality.

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