

Research Article

Triage Management of Trauma Patients Among the Hospitals in the 5th District of Camarines Sur: Intervention Forrapid Assessment and Care

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Abstract:

BACKGROUND AND OBJECTIVES: This study aimed to assess the triage management of trauma patients in hospitals within the 5th District of Camarines Sur. The goal was to develop an intervention for rapid assessment and care. The research specifically sought to understand the profile of the triage management team members, their intervention practices, and the significant relationship between their profile and their practices.

METHODS: The study used a descriptive research method, with a questionnaire as the main data collection tool. The respondents were 95 healthcare professionals from hospitals in the 5th District of Camarines Sur. The respondents included physicians, nurses, and other healthcare staff. The statistical tools utilized were the percentage technique, weighted mean, and chi-square test.

RESULTS: The findings showed that the respondents were predominantly female (75.79%), young professionals between 25 and 35 years old, and either single or married. The majority were nurses (69.47%) and college graduates (80%). Although many had substantial work experience, a significant portion (38.71%) had not attended any training or seminars. The study found that the triage management team members often practiced interventions for trauma patients across all areas: assessment, diagnosis, planning, intervention, and evaluation. The data revealed asignificant relationship between the team members' demographic profile and their intervention practices.

DISCUSSION AND CONCLUSION: The study concluded that the hospitals have a well-educated but predominantly female and young workforce. The lack of training for a significant number of respondents highlights a need for more professional development opportunities. The demographic factors of the team members were found to significantly influence their trauma management practices. This implies that considering these factors is essential for creating tailored strategies to optimize triage management and improve patient outcomes. The study recommends developing a comprehensive triage manual and standardized training programs to ensure accurate patient prioritization and enhance hospital response during emergencies.

Keywords: Triage, Management, trauma, intervation, rapid, assessment, care.

Introduction

The optimization of healthcare resources and the enhancement of outcomes are contingent upon the effective triage management of trauma patients. The healthcare systems and society are significantly impacted by trauma, a significant global public health concern that is the result of a variety of causes, including accidents and violence. In emergency care, triage is essential for ensuring that patients receive expeditious and appropriate attention based on their severity. Triage, which derives from the French term "trier," has undergone significant development over the course of centuries, particularly in the context of trauma care. Triage protocols are consistently improved to ensure that they are consistent with the most effective standards. In order to allocate resources efficiently, trauma necessitates rapid decision-making and precise triage, as it is a primary cause of mortality and disability worldwide.

Global trauma statistics highlight a significant public health challenge, with over 5 million deaths annually and many more suffering non-fatal injuries leading to long-term disabilities and socioeconomic impacts. The COVID-19 pandemic worsened these issues, with fewer trauma admissions but increased severity and fatalities. Low and middle-income countries (LMICs) are disproportionately affected, particularly by road traffic injuries. Optimizing trauma care through comprehensive systems, including prehospital care and standardized protocols, has shown promising results, especially in high-income countries, though disparities persist in rural areas and LMICs.

In the United States, nearly 2,000 trauma centers, including various levels, play a crucial role in triage, preventing unnecessary deaths, and enhancing care efficiency. Advanced statistical methods, like multivariable regression models, assess triage accuracy and outcome predictors, revealing demographic influences on triage decisions. Digital decision-support tools, such as the Trauma Triage (TT) app, have reduced under triage rates, as seen in a Dutch study. Continuous monitoring and refinement of triage systems are essential to prioritize patients effectively and improve trauma care outcomes globally. (Definitive Healthcare,2023).

The Philippines has enacted laws to protect patient rights and prevent hospitals from demanding upfront payments for emergency care or detaining patients due to unpaid medical bills. The Republic Act No. 10932 "Anti-Hospital Deposit Law" prohibits hospitals from demanding advance payments for emergency treatment, while the Republic Act No. 9439³ "Patient's Rights and

Responsibilities Act" prohibits the detention of patients for non-payment of medical expenses. These laws aim to ensure immediate medical attention, promote patient dignity, and prevent hospitals from making patients "prisoners" for financial reasons. However, the management of trauma victims in the Philippine healthcare system between 2019 and 2024 has faced significant challenges, including the absence of a unified national emergency medical services framework, inadequate funding, and delays in care delivery, leading to higher mortality rates compared to high-income countries. Despite progress through initiatives like trauma training hubs and specialized trauma centers, the COVID-19 pandemic has further strained the healthcare system.

Drawing from the researcher's experience as an Emergency Room Nurse, the triage process is crucial for prioritizing patients based on injury severity and ensuring timely treatment. However, challenges such as limited resources, lack of information, time constraints, inconsistent triage practices across hospitals, and overcrowding in emergency departments can impact trauma care. The research aims to establish a specialized Rapid Assessment and Care Program tailored to the needs of the healthcare institutions by identifying inadequacies in triage processes, proposing solutions, and aligning with the national commitment to prioritizing patient care. The ultimate goal is for hospitals in the district to become exemplary models in managing trauma patients, reducing morbidity and mortality through effective triage management.

The study aims to examine the challenges faced in triage management for trauma patients in selected hospitals within the 5th district of Camarines Sur. By identifying existing inadequacies and proposing solutions, the research intends to establish a specialized Rapid Assessment and Care Program tailored to the institutions in Rinconada. The study will combine the researcher's personal experiences with trauma in hospitals and relevant trauma data to improve patient care. Additionally, it will investigate the current state of trauma patient triage among the hospitals in the 5th District, identify areas for improvement, and propose solutions to enhance the effectiveness of trauma care, ultimately creating a specialized program to improve patient outcomes and establish these hospitals as excellent models in trauma patient management.

Research Methodology

Research Design

The study analyzed the collected data using a quantitative descriptive research design. A quantitative descriptive design is a research methodology that focuses on describing and summarizing numerical data to provide a thorough and precise representation of the characteristics of phenomena or samples. In general, this method seeks to provide a clear and detailed image by collecting and evaluating quantitative data, such as counts or measurements (Creswell, 2021).

The quantitative descriptive design was useful in thoroughly comprehending the viewpoints of individuals who replied to survey questions about how the respondents in the 5th District of Rinconada Area manage trauma patients. The adoption of this method allows for a systematic and quantitative study of trauma triage factors and experiences, resulting in a detailed review of present methods and setting the framework for the creation of successful quick assessment and care strategies.

Respondents of the Study

The respondents of the study were the Medical Specialists, Resident Physicians, Chief Nurse, Nurses, Midwives, Nurse Assistants, Triage officers and Emergency Medical Technicians among the Hospitals in the 5th District of Camarines Sur. The number of respondents from a study conducted across six different hospitals. Dr. Robosa Hospital and Villanueva-Tanchuling Hospital each had 10 respondents participating in the study. Catangui Health and Medical Services Corporation Lourdes Hospital had 12 respondents. Sta. Maria Josefa Foundation Hospital Incorporated has 18 respondents. Our Lady Mediatrix Hospital had a notable number of 20 respondents. Lastly, the Medical Mission Group Hospital, with 25 individuals participating. In total, the study encompassed feedback from 95 respondents across all the listed hospitals. The number of respondents was 95 obtained through Slovin's formula.

Setting of the Study

The fifth legislative district of Camarines Sur, includes one city, Iriga City, and six municipalities: Baao, Balatan, Bato, Buhi, Bula, and Nabua. The study was six district private hospitals: Medical Mission Group Hospital, Villanueva-Tanchuling Hospital, Our Lady Mediatrix Hospital, Sta. Maria Josefa Foundation Incorporated, Dr. Robosa Hospital, and Catangui Health and Medical Services Corporation Lourdes Hospital.

Catangui Health and Medical Services Corporation Lourdes Hospital. A Level 1, situated in San Roque Iriga City, is a family-owned medical facility with a capacity of 40 beds and is committed to delivering compassionate and personalized medical care, emphasizing family-centered approaches to promote the well-being of its patients.

Dr. Robosa Hospital is a family-owned infirmary situated in Sta. Cruz Baao, Camarines Sur, specializing in primary-level healthcare services. With a capacity of 18 beds, it operates at Level 1 accreditation.

Medical Mission Group Hospital and Health Services Cooperative of Camarines Sur is a cooperative healthcare facility located in Baras Sta. Elena, Nabua, Camarines Sur. With a bed capacity of 36, it operates as a level 1 healthcare institution dedicated to providing comprehensive medical services to the community.

Our Lady Mediatrix Hospital is a privately owned medical facility situated in San Jose, Iriga City. With a capacity of 50 beds and

accredited as a Level 1 hospital, it serves as a cornerstone of healthcare provision in the region. Operated by a family, it upholds a tradition of compassionate care and commitment to patient well-being.

Sta. Maria Josefa Foundation Hospital Incorporated managed by Servant of Jesus Charity is a Healthcare Institution located in Francia, Iriga City. With a capacity of 100 beds, it operates as a Level 1 facility.

Villanueva-Tanchuling Hospital is a private, family-owned medical facility located on National Highway Road in San Jose, Iriga City, is a Level 1 accredited hospital with a capacity of 18 beds.

These hospitals serve the people of Rinconada and surrounding districts, upholding their mission to promote health through early detection, disease prevention, and curative care, regardless of race, social status, creed, or color.

Data Gathering Tools

In gathering the data, the researcher used a questionnaire checklist to gather the needed data, where respondents submitted their answers. According to Creswell¹, a questionnaire collects data from individuals to acquire facts, opinions, or ideas about a topic. It usually involves answering open-ended or closed-ended questions in writing or verbally. Surveys, research projects, and social or market research use questionnaires to acquire standardized data from a sample. Structured interviews and observation were used in this study. The Triage Management Team Members answered the questionnaires.

Questionnaire

The primary data-gathering instrument used in this study was a pre-validated questionnaire checklist (Appendix E, page 177). The questionnaire was used to determine the Triage Management of Trauma Patients among the Hospitals in the 5th District of Camarines Sur: Intervention for Rapid Assessment and Care.

Preparation of the Questionnaire. After thoroughly reviewing different books, journals, articles, and previous studies, the researcher formulated a survey instrument to gather the needed data. The questionnaire has two parts. The first part is the profile of the respondents; the second part are the interventions practiced by the triage management team.

Validation of the Questionnaire. The questionnaire was presented to the researcher's adviser, oral examination committee, and the statistician for checking and some improvement and suggestions. After incorporating the suggestions made, a dry run was conducted on 10 respondents. Validation of the questionnaire was done to determine its clarity whether the purpose of the study can be achieved, and the specific objectives can be met. The questionnaires were revised and reproduced for the final run after incorporating all the suggestions in the validation process.

Administration and Retrieval of the Questionnaire. After validating the questionnaire, the researcher secured an approval to conduct the study (Appendix B, page 164). The researcher distributed the questionnaire personally to the respondents to ensure 100 percent retrieval and to guide them in accomplishing the questionnaires. After answering, the researcher retrieves the accomplished questionnaire on the same day. After retrieval, it was tallied, analyzed, and interpreted.

Statistical Tools

After collating the information taken from the data-gathering process, the responses will be grouped and tabulated systematically according to the different variables included in the study. The data gathered was presented quantitatively with the use of statistical tools specified below:

Frequency Counts. A tally was made to determine the number of responses in every item included in the questionnaire. The result can be obtained by simply counting the total number of respondents who selected a particular option in the given questions.

Percentage Technique. This was used to calculate the proportionate number of responses in a particular item. The computed frequencies for every question was used as shown in the formula below:

$$P = \frac{f}{N}$$

Where:

P = Percentage

f = Frequency

N = Total Number

Weighted Mean. The weighted mean was used to quantify the respondents' appraisal of the intervention practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District in Camarines Sur. The formula used is:

$$WM = \frac{fw}{N}$$

Where:

WM = Weighted Mean

f = Frequency of Responses

w = Weight of Category of Responses

N = Total Number of Responses

Likert-type scale was used in quantifying and interpreting the weighted mean for each variable. The interpretation of the rating scale was guided by the following sequence scale:

Scale	Interval	Verbal Interpretation
5	4.20 – 5.00	Always
4	3.40 – 4.19	Often
3	2.60 – 3.39	Sometimes
2	1.80 – 2.59	Rarely
1	1.00 – 1.79	Never

Chi-square was used to find out if there is a strong link between two separate factors. Using this method is very helpful when working with category data and making sure that variables are spread out the way they should be spread out in the real world. The test for the chi-square statistic in a contingency table looks at the differences between the frequencies that were seen and those that were expected. The formula used is:

$$\chi^2_c = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where:

O_i = observed value

E_i = expected value

Results

Profile of the Respondents

This section presents the profile of the respondents in terms of age, sex, civil status, length if service designation and trainings and seminars as shown in Table 1.

Age. Out of 95 respondents, 28 or 29.47 percent were 25-30 years old, 23 or 24.21 were 31-35 years old. 50 years old and above with 22 or 23.16 percent, 36-40 years old with nine or 9.47 percent, 46-50 years old with seven or 7.37 percent and 41-45 years old with six or 6.32 percent.

This age diversity is significant as it reflects youthful energy and experienced wisdom in the workforce. Comia et al. (2023) state that triage nurses' decision-making competence and critical thinking capacity improve with age and experience, suggesting that the older respondents may bring valuable expertise to triage management.

Table 1: Profile of the Respondents

Profile	Frequency	Percentage
Age		
25 - 30 years old	28	29.47
31 - 35 years old	23	24.21
50 years old and above	22	23.16
36 - 40 years old	9	9.47
46 - 50 years old	7	7.37
41 - 45 years old	6	6.32
	95	100.00
Sex		
Female	72	75.79
Male	23	24.21
	95	100.00
Civil Status		
Single	46	48.42
Married	41	43.16
Widowed	5	5.26

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Separated	2	2.11
With Common Law Husband	1	1.05
	95	100.00
Length of Service		
1 – 5 years	28	29.47
16 years and above	21	22.11
Less than 1 year	20	21.05
6 – 10 years	20	21.05
11 – 15 years	6	6.32
	95	100.00
Educational Attainment		
College Graduate	76	80.00
Master's degree with units	10	10.53
Doctorate Degree	8	8.42
Master's degree	1	1.05
	95	100.00
Position		
Nurse	66	69.47
Midwife	13	13.68
Resident Physician	8	8.42
Admitting Officers	3	3.16
Triage Officer	2	2.11
Chief Nurse	1	1.05
EMT	1	1.05
Medical Specialist	1	1.05
	95	100.00
Trainings and Seminars		
None	48	38.71
Basic Life Support	42	33.87
Advance Cardiac Life Support	26	20.97
Trauma Training	2	1.61
NCII - Caregiving, Home Care	1	0.81
Emergency Medical Technician- Basic Course	1	0.81
PALS/NALS	1	0.81
Fire Safety	1	0.81
First Aid	1	0.81
	124	100.00

Sex. Majority of the respondents were female with 72 or 75.79 percent and 23 or 24.21 percent were male. This gender distribution is consistent with global trends in nursing and healthcare professions, where females predominantly occupy these roles. The study by Ablin, Naim, and Borja (2021)² emphasizes the importance of training in aseptic techniques, particularly for younger and less experienced radiographers, which could be extrapolated to the predominantly female nursing staff in this study, highlighting the need for continuous professional development.

Civil Status. Most of the respondents were single with 46 or 48.42 percent, followed by married with 41 or 43.16 percent. Five or 5.26 were widowed, two or 2.11 were separated and one or 1.05 percent with common law husband. The civil status of healthcare workers can influence their availability and flexibility in work schedules. Single respondents may have fewer personal commitments, potentially allowing for more flexible work hours, which is crucial in emergency and trauma care settings. This demographic insight aligns with the findings of Jimenez et al. (2020)³, who noted that specific personal characteristics, such as civil status, can impact the likelihood of unexpected return visits to the emergency department.

Length of Service. 28 or 29.47 percent of the respondents served 1-5 years, followed by 16 years and above with 21 or 22.11

percent. There were 20 or 21.05 percent respondents with less than 1 year and 610 years of service. The remaining six or 6.32 percent had 11-15 years of service. This mix of service lengths suggests a blend of fresh perspectives and seasoned experience within the team. The Comia et al. (2023)¹ study supports that expertise enhances critical thinking and decision-making in triage, indicating that those with more extended service may play a pivotal role in improving triage management.

Educational Attainment. Majority of the respondents were collegegraduate with 76 or 80.00m percent. 10 or 10.53 of the respondents were in Master's degree with units, eight or 8.42 were with doctorate degree and the remaining one or 1.05 percent was a master's degree holder. Higher educational attainment is often associated with better clinical outcomes and more effective patient care. Research by Chadwick and Billing (2022)⁴ underscores the importance of continuous professional development, suggesting that those with advanced degrees may contribute significantly to the quality of trauma care.

Position. More than half of the respondents were nurses with 66 or 69.47 percent. 13 or 13.68 were midwife, resident physician with eight or 8.42 percent, admitting officers with three or 3.16 percent and two or 2.11 percent triage officer. There are one or 1.05 percent Chief Nurse, EMT and medical specialist. The predominance of nurses is critical as they are often the first point of contact in triage. The study by Yousefi et al. (2023)⁵ highlights the effectiveness of team triage models that integrate physicians and nurses, suggesting that the current position can enhance triage efficiency and patient satisfaction.

Trainings and Seminars. With the 95 respondents, some had a multiple trainings and seminars attended which resulted to a total of 124 responses. Most of them had no trainings and seminars attended with 48 or 38.71 percent. 42 or 22.87 responses with Basic Life Support, Advance Cardiac Life Support with 26 or 20.97 percent, Trauma Training with two or 1.61 percent. One or 0.81 each with NCII - Caregiving, Home Care, Emergency Medical Technician- Basic Course, PALS/NALS, Fire Safety and First Aid. Training is essential for maintaining high standards of care in trauma management. Bagaria et al.'s (2024)⁶ findings emphasize the importance of local training hubs for advanced trauma training, suggesting that increasing training opportunities could significantly improve the respondents' skills and preparedness.

The profile of the respondents indicates a workforce that is young, predominantly female, and well-educated, with a significant portion lacking specialized training. This demographic insight suggests several implications for the study on triage management in the 5th District of Camarines Sur. Firstly, there is a critical need for more comprehensive and frequent training programs to enhance healthcare providers' skills, particularly in trauma management. This aligns with the findings of Bagaria et al. (2024)⁶ and Chadwick & Billing (2022)⁴, who advocate for continuous professional development. Secondly, leveraging the experience of older and more seasoned staff can improve decision-making and critical thinking in triage, as supported by Comia et al. (2023)¹.

Additionally, given the predominance of female respondents, training programs should be tailored to address the specific needs and challenges faced by female healthcare workers, ensuring they are well-equipped to handle the demands of trauma care. The high percentage of single respondents may offer greater flexibility in staffing and scheduling, which is important for managing the unpredictable nature of trauma cases. Furthermore, encouraging further education and advanced degrees among healthcare providers can lead to better clinical outcomes and more effective patient care, as suggested by the research of Chadwick & Billing (2022)⁴. By addressing these implications, the study can propose targeted interventions to improve the rapid assessment and care of trauma patients in the 5th District of Camarines Sur hospitals, in the end enhancing patient outcomes and the overall efficiency of the triage system.

Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur

Assessment

Table 2 shows the interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur along with assessment.

All the indicators were practiced often with can accurately assess and prioritize trauma patients based on their clinical condition and severity of injuries.

Table 2: Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur along with Assessment

Indicator	WM	Interpretation	Rank
Can accurately assess and prioritize trauma patients based on their clinical condition and severity of injuries	4.04	Often	1
Involve in specialized trauma protocols in the assessment of trauma patients.	3.80	Often	10
Communicate effectively with other healthcare providers during the assessment and intervention process for trauma patients.	3.95	Often	4
Apply the established trauma triage criteria when assessing a patient's condition upon arrival to the Emergency Room	3.82	Often	9

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Involve family and patient communication during the assessment process of trauma patient.	3.97	Often	2.5
Review and update the trauma patient's assessment plan based on ongoing assessments.	3.84	Often	6.5
Psychological and emotional support strategies integrated into the assessment of trauma patients.	3.83	Often	8
During assessment the team can efficiently identify and categorize trauma patients based on their severity	3.84	Often	6.5
Triage management team collaborate with trauma specialists and other healthcare disciplines in the assessment process	3.97	Often	2.5
Assessment of Triage management teams conducted to ensure the effectiveness of the implemented strategies for trauma patients.	3.94	Often	5
Average Weighted Mean	3.90	Often	

got the highest weighted mean of 4.04, followed by involve family and patient communication during the assessment process of trauma patient and triage management team collaborate with trauma specialists and other healthcare disciplines in the assessment process, both with a weighted mean of 3.97. The last two indicators often practiced were apply the established trauma triage criteria when assessing a patient's condition upon arrival to the Emergency Room with 3.82 and involve in specialized trauma protocols in the assessment of trauma patients with a weighted mean of 3.80. The average weighted mean of managing trauma patient along with assessment was 3.90 interpreted as often.

Triage management team members play an important role in trauma patient management by appropriately assessing and prioritizing patients based on their clinical condition and the severity of their injuries. This entails conducting a complete assessment of vital signs, symptoms, and trauma mechanisms to provide timely and appropriate care. Effective communication with both the patient and their family members is encouraged during the assessment process in order to acquire critical information and provide reassurance. Collaboration between trauma specialists and other healthcare disciplines improves assessment quality by allowing for a more thorough examination and treatment plan.

Adherence to established trauma triage criteria guarantees consistency and efficiency in patient prioritizing, which improves resource allocation and patient outcomes (De Robles & Ayuste Jr., 2019).

Diagnosis

Table 3 presents the interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur along with diagnosis.

Ranked 1st was triage team members ensure that trauma patients receive timely diagnostic tests and imaging studies with a weighted mean of 3.99, followed by adhere to standard operating procedures when making diagnostic decisions in the triage management of trauma patients and provide timely and accurate documentation of trauma assessments and interventions, both with a weighted mean of 3.98, all interpreted as often.

The team can well interpret diagnostic tools, such as X-rays and CT scans, to aid in the diagnosis of trauma patients in Emergency setting got a weighted mean of 3.62 interpreted as often and lastly, have continuous training and education significantly contribute to improving the diagnostic skills in the context of trauma patients with a weighted mean of 3.37 interpreted as sometimes. The average weighted mean of managing trauma patient along with diagnosis was 3.86 which interpreted as often.

A timely and accurate diagnosis is critical for properly managing trauma patients. The triage team guarantees that diagnostic tests and imaging investigations are performed on time to identify injuries and determine their severity. The use of standard operating procedures in diagnostic decision-making

Table 3: Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur along with Diagnosis

Indicator	WM	Interpretation	Rank
Triage team members accurately diagnose the severity of trauma injuries in patients.	3.97	Often	4.5
Triage team members ensure that trauma patients receive timely diagnostic tests and imaging studies.	3.99	Often	1
Promptly prioritize and assign appropriate treatment based on trauma severity.	3.97	Often	4.5
The team can well interpret diagnostic tools, such as X-rays and CT scans, to aid in the diagnosis of trauma patients in Emergency setting.	3.62	Often	9

The triage team involve specialists and consult with other healthcare professionals in trauma patient management.	3.88	Often	7
Utilize effective communication skills to have accurate diagnosis of trauma patients.	3.85	Often	8
Communicate effectively with other healthcare providers during diagnosing trauma patient management.	3.96	Often	6
Adhere to standard operating procedures when making diagnostic decisions in the triage management of trauma patients.	3.98	Often	2.5
Provide timely and accurate documentation of trauma assessments and interventions.	3.98	Often	2.5
Have continuous training and education significantly contribute to improving the diagnostic skills in the context of trauma patients.	3.37	Sometimes	10
Average Weighted Mean	3.86	Often	

enhances consistency and reliability in patient treatment. Also, detailed documentation of assessments improves communication among healthcare practitioners and assures continuity of care. Continuous training and education activities are critical for the triage team to stay current with advances in diagnostic procedures and improve their diagnostic skills, thereby improving patient outcomes (Poblete et al., 2022).

Planning

Table 4 discuss the interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur along with planning.

The team encounters challenges in coordinating and planning for trauma patients in a timely manner got the highest weighted mean of 4.31 which interpreted as always. Always initiate immediate life-saving interventions for trauma patients upon arrival with a weighted mean of 4.11 and always assess and prioritize interventions based on the severity of trauma and the patient's condition with a weighted mean of 4.04 interpreted as often. The triage management team always involve interdisciplinary collaboration when planning and implementing interventions for trauma patients got a weighted mean of 3.78 interpreted as often and engage in continuous training and education to enhance their skills in planning trauma intervention has the lowest weighted mean of 3.14 interpreted as sometimes. The average weighted mean of managing trauma patient along with planning was 3.87 which interpreted as often.

Because of the urgency of trauma patients' circumstances, coordinating and planning presents considerable problems. The triage management team emphasizes the need of providing urgent life-saving interventions upon patient arrival, prioritizing interventions based on the severity of trauma and the patient's state. Interdisciplinary teamwork is vital for creating comprehensive care plans that are tailored to each patient's specific needs. Continuous training is essential for polishing trauma intervention planning skills because it allows team members to adapt to changing practices and technologies, assuring the best possible patient care (Lu & Lu, 2021)

Table 4: Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur along with Planning

Indicator	WM	Interpretation	Rank
Always initiate immediate life-saving interventions for trauma patients upon arrival.	4.11	Often	2
Often collaborate with specialized units to plan and execute interventions for complex trauma cases.	3.84	Often	8
In routine practice, the team always adhere to established protocols and guidelines when planning interventions for trauma patients.	3.87	Often	5
Always assess and prioritize interventions based on the severity of trauma and the patient's condition.	4.04	Often	3
The team encounter challenges in coordinating and planning for trauma patients in a timely manner.	4.31	Always	1
In the process of planning, the team involve family members or support systems to enhance patient care.	3.85	Often	7
The triage management team always assess and adjust intervention plans based on the evolving needs of trauma patients during their course of care.	3.87	Often	5
Engage in continuous training and education to enhance their skills in planning trauma intervention.	3.14	Sometimes	10

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In routine management of trauma patients, does the team encounter delays in executing planned interventions	3.87	Often	5
The triage management team always involve interdisciplinary collaboration when planning and implementing interventions for trauma patients.	3.78	Often	9
Average Weighted Mean	3.87	Often	

Intervention

Table 5 discusses the interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur.

The highest-ranking intervention, with a weighted mean of 4.08, was the triage team's consistent collaboration with ancillary services, such as radiology and laboratory, to expedite diagnostic procedures for trauma patients. This underscores the importance placed on swift and coordinated diagnostic efforts to enhance patient care. Following closely, with a weighted mean of 4.06, is the triage team's familiarity with the location and proper use of essential resources and equipment in the emergency room, indicating a well-prepared team capable of utilizing available tools effectively during trauma interventions. The implementation of immediate life-saving interventions for critically injured patients ranks third with a weighted mean of 4.02, highlighting the team's ability to act decisively in critical situations.

Both the familiarity with standardized trauma scoring systems and the efficient prioritization of trauma cases based on injury severity and available resources are equally ranked with a weighted mean of 3.99, reflecting the team's consistent application of structured assessment methods and resource management during trauma care. Infection control measures during trauma interventions are practiced often with a weighted mean of 3.78, though this ranks seventh, indicating room for further emphasis on these protocols.

Table 5: Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur along with Intervention

Indicator	WM	Interpretation	Rank
Triage team is familiar with the standardized trauma scoring systems (e.g., Glasgow Coma Scale, Revised Trauma Score) used in the intervention of trauma patients.	3.99	Often	4.5
Familiar with the location and proper use of essential resources and equipment needed for the intervention of trauma patients in our Emergency Room.	4.06	Often	2
The triage team efficiently prioritize trauma cases based on the severity of injuries, condition, and the available resources.	3.99	Often	4.5
Triage team implement immediate life-saving interventions for critically injured trauma patients.	4.02	Often	3
Triage management team consider and implement infection control measures during the intervention for trauma patients.	3.78	Often	7
Consistently involved in coordinating with other medical staff to streamline the transfer of trauma patients to appropriate departments.	3.88	Often	6
The degree the triage team provide emotional support and reassurance to trauma patients and their families during the initial stages of care.	3.68	Often	8
The times does the triage team initiate and follow standardized protocols for trauma patient care.	3.59	Often	9
Do triage team members consistently collaborate with ancillary services (e.g., radiology, laboratory) to expedite diagnostic procedures for trauma patients.	4.08	Often	1
Engage in continuous training and education to enhance their skills in managing trauma patients.	3.19	Sometimes	10
Average Weighted Mean	3.83	Often	

Coordination with other medical staff to streamline patient transfers is also notable, with a weighted mean of 3.88, ranking sixth, demonstrating effective interdepartmental communication. Providing emotional support and reassurance to trauma patients and their families, with a weighted mean of 3.68, and following standardized protocols for trauma care, with a weighted mean of 3.59, rank eighth and ninth, respectively, suggesting areas where additional focus could enhance the holistic care provided.

Lastly, engagement in continuous training and education to enhance trauma management skills are practiced sometimes resulted in a weighted mean of 3.19, ranking tenth, indicating a critical area for improvement to ensure ongoing competency and skill enhancement among the triage team members. Overall, the findings highlight a generally robust triage management system

with specific areas identified for potential improvement to ensure comprehensive trauma care.

The interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur reveal a high level of adherence to standardized practices, as evidenced by the average weighted mean of 3.83, interpreted as "often."

Several recent studies offer insights to improve trauma triage and management protocols. Saberian et al. (2022)¹⁰ compared hospital triage systems for geriatric trauma patients, including the modified Trauma-Specific Frailty Index, which could inform standardized scoring systems. Senda et al. (2022)¹¹ proposed a machine learning algorithm, THETA, for triaging trauma patients, aligning with the team's use of standardized trauma scoring. Savatmongkorngul et al. (2021)¹² found that CT-PANSCAN imaging reduced mortality rates in trauma patients, supporting collaboration with radiology for expedited diagnostics. Xiong et al. (2021)¹³ suggested integrating transportation data with medical records to aid triage decision-making based on injury severity. Ablin, Naim, and Borja (2021)² highlighted the need for training radiographers in aseptic techniques, aligning with infection control measures during interventions.

Gutierrez et al. (2020)¹⁴ found that centralized prehospital triage reduced undertriage cases, informing coordination for streamlined patient transfers. Comia et al. (2023)¹ discovered that triage nurses' decision-making abilities improved with age and experience, supporting the need for familiarity with essential resources and equipment. Collectively, these studies provide evidence and insights to support and inform the various interventions practiced by the triage management team in managing trauma patients in the hospitals of the 5th District of Camarines Sur.

Evaluation

Table 6 discuss the interventions practiced by the triage management teammembers in managing trauma patients among the hospitals in the 5th District of Camarines Sur along with evaluation.

Three indicators got the highest weighted mean of 3.86 namely the team examine the efficiency of communication protocols and technologies' in facilitating timely transfer of trauma patients across different healthcare setting, the triage team adhere to established protocols and guidelines for evaluation of Trauma patients and Involve patients and their families in the decision-making process during trauma evaluation which all interpreted as often.

The team employ systematic assessment tools to evaluate the severity of trauma in patients during triage got a weighted mean of 3.62 interpreted as often while the least weighted mean was 3.18 with indicator of in evaluating trauma patients, consistently the triage team participate in ongoing training and education to enhance evaluation skills. The average weighted mean of managing trauma patient along with evaluation was 3.74 which interpreted as often.

Table 6: Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur along with Evaluation

Indicator	WM	Interpretation	Rank
The team examine the efficiency of communication protocols and technologies' in facilitating timely transfer of trauma patients across different healthcare setting.	3.86	Often	2
The team employ systematic assessment tools to evaluate the severity of trauma in patients during triage.	3.62	Often	9
The triage team communicate effectively with other healthcare professionals during the evaluation process for trauma patients.	3.74	Often	8
The triage team adhere to established protocols and guidelines for evaluation of Trauma patients.	3.86	Often	2
Involve patients and their families in the decision-making process during trauma evaluation.	3.86	Often	2
The triage management team reassess and adjust evaluation based on the evolving condition of trauma patients.	3.79	Often	7
In terms of evaluation, consistently does the team review and learn from the outcomes of trauma interventions to improve future practices.	3.80	Often	6
Provide timely and accurate documentation of evaluation on trauma patients.	3.81	Often	5
Frequently the team collaborate with other departments for a comprehensive evaluation of the effectiveness of trauma interventions.	3.85	Often	4
In evaluating trauma patients, consistently the triage team participate in ongoing training and education to enhance evaluation skills.	3.18	Sometimes	10
Average Weighted Mean	3.74	Often	

Evaluation of trauma patients is a complicated process that includes examining the effectiveness of communication procedures, adhering to established criteria, and including patients and families in decision-making.

Efficient communication allows for the prompt transfer of patients between healthcare facilities, maintaining continuity of treatment. Adherence to defined norms and criteria provide consistency and quality during the review process. Involving patients and their families in decision-making fosters patient-centered care and enhances treatment results. Systematic evaluation tools help to evaluate the degree of trauma and guide future interventions. Ongoing training improves the triage team's evaluation skills, allowing them to adapt to changing procedures and improve patient care (Artiaga and Lim Bon Siong, 2019).

Relationship between the Profile and Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur

Table 7 shows the relationship between the profile and interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur.

The result of statistical data showed that age, sex, civil status, length of service, educational attainment, designation, and trainings and seminars with a computed values of 40.07, 12.51, 27.35, 30.66, 28.93, 45.78 and 48.47 were higher than the tabular value of 31.41, 9.49, 26.30, 26.30, 21.03 and 41.34, respectively at 0.05 level of significance, therefore the null hypothesis is rejected.

This implies that age, sex, civil status, length of service, educational attainment, designation, and trainings and seminars affect the Interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur.

Table 7: Relationship between the Profile and Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur

Profile	Computed Value	Tabular Value at 0.05	Decision on Ho	Interpretation
Age	40.07	31.41	Rejected	Significant
Sex	12.51	9.49	Rejected	Significant
Civil Status	27.35	26.30	Rejected	Significant
Length of Service	30.66	26.30	Rejected	Significant
Educational Attainment	28.93	21.03	Rejected	Significant
Position	45.78	41.34	Rejected	Significant
Trainings and Seminars	48.47	43.77	Rejected	Significant

The significant relationship between age and the interventions practiced by the triage management team members aligns with the findings of Comia et al. (2023)¹, which highlighted that the decision-making competence and critical thinking capacity of triage nurses improved with increasing age. Older healthcare professionals tend to have more experience and exposure, which can enhance their ability to make accurate triage decisions and implement appropriate interventions for trauma patients. This finding underscores the importance of having a diverse age range within the triage management team, as it can contribute to a well-rounded and practical approach to trauma patient care.

The relationship between sex and the interventions practiced by the triage management team members may be attributed to potential differences in communication styles, decision-making processes, and interpersonal dynamics between male and female healthcare professionals. Lu and Lu (2021) emphasized the substantial number of women involved in road accidents, highlighting the need for policies to address female road users' vulnerabilities. A diverse triage management team, comprising both male and female members, can potentially enhance the sensitivity and responsiveness of interventions to the unique needs of trauma patients of different genders.

The significant relationship between civil status and the interventions practiced by the triage management team members may be influenced by factors such as work-life balance, personal responsibilities, and emotional support systems. Married or partnered healthcare professionals may have different perspectives and priorities compared to their single counterparts, which could shape their approach to trauma patient management. This finding aligns with the broader recognition of the impact of personal and social factors on healthcare professionals' decision-making and practices (Jimenez et al., 2020)³.

The relationship between the length of service and the interventions practiced by the triage management team members is consistent with the findings of Comia et al. (2023), which highlighted that the decision-making competence of triage nurses improved with increasing years of experience. Healthcare professionals with longer service durations tend to have more exposure to diverse trauma cases, enabling them to develop a deeper understanding of effective interventions and refine their practices over time. This finding emphasizes the importance of retaining experienced healthcare professionals within the triage management team and fostering knowledge transfer to newer members.

The significant relationship between educational attainment and the interventions practiced by the triage management team members

aligns with the broader recognition of the importance of continuous professional development and education in trauma care (Chadwick & Billing, 2022). Healthcare professionals with higher educational attainment may have access to more advanced knowledge and training, enabling them to implement evidence-based and innovative interventions for trauma patient management. This finding underscores the need for ongoing educational opportunities and professional development programs for the triage management team members.

The relationship between designation and the interventions practiced by the triage management team members may be influenced by the specific roles, responsibilities, and scope of practice associated with different healthcare professions. For example, physicians and nurses may have different approaches to trauma patient management based on their respective training and expertise. This finding highlights the importance of a multidisciplinary triage management team, where diverse perspectives and expertise can contribute to a comprehensive and well-rounded approach to trauma patient care.

The significant relationship between training and seminars attended, and the interventions practiced by the triage management team members is consistent with the findings of Chadwick & Billing (2022)⁴, which demonstrated improvements in trauma care delivery and patient outcomes through educational interventions for healthcare providers. Attending relevant trainings and seminars can equip the triage management team members with the latest knowledge, skills, and best practices in trauma patient management, enabling them to implement more effective interventions. This finding underscores the importance of providing ongoing professional development opportunities and encouraging the triage management team members to participate in relevant educational programs.

Summary, Findings, Conclusions, And Recommendations

This chapter represents the summary, findings, and as well as conclusions of the conducted study, along with the researcher's recommendations for the Interventions Practiced by the Triage Management Team Members in Managing Trauma Patients among the Hospitals in the 5th District of Camarines Sur.

Summary

This study is aimed to assess the Triage Management of Trauma Patient among the Hospitals in the 5th District of Camarines Sur: Intervention for Rapid Assessment and Care. Specifically, it sought answers to the following questions: 1. What is the profile of the Trige Management Team Members in terms of age, sex, civil status, length of service, educational attainment, position, and trainings/ seminars? 2. What is the intervention practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District in Camarines Sur along with assessment, diagnosis, planning, intervention, and evaluation? 3. Is there a significant relationship between the profile and the triage management team (TMT) members in treating trauma patients? 4. What Interventions can be proposed to enhance the management of trauma patients?

This study was premised on the following assumptions: 1). The profile of the respondents varies 2). Intervention practiced by the triage management team members in managing trauma patient among the hospitals in the 5th District in Camarines Sur is average 3). There are interventions that can be proposed to enhance the management of trauma patients.

The respondents of the study were 95 comprised of the Medical Specialists, Resident Physicians, Chief Nurse, Nurses, Midwives, Nurse Assistants, Triage officers, and Emergency Medical Technicians from the hospitals in the 5th District in Camarines Sur.

The research design of the study was descriptive method which the questionnaire was used as the primary data gathering tool. The statistical tools used were the percentage technique, weighted mean, and chi-square.

Findings

The following are the findings of the study:

1. Based on age, out of 95 respondents, 28 or 29.47 percent were 25-30 years old, 23 or 24.21 were 31-35 years old. 50 years old and above with 22 or 23.16 percent, 36-40 years old with nine or 9.47 percent, 46-50 years old with seven or 7.37 percent, and 41-45 years old with six or 6.32 percent. As to sex, the majority of the respondents were females with 72 or 75.79 percent and 23 or 24.21 percent were males.

With the civil status, a good number of the respondents were single with 46 or 48.42 percent, followed by married with 41 or 43.16 percent. Five or 5.26 were widowed, two, or 2.11 were separated and one, or 1.05 percent with common-law husband. As to length of service, 28 or 29.47 percent of the respondents served 1-5 years, followed by 16 years and above with 21 or 22.11 percent. There were 20 or 21.05 percent of respondents with less than 1 year and 610 years of service. The remaining six or 6.32 percent had 11-15 years of service.

With educational attainment, the majority of the respondents were college graduates with 76 or 80.00 percent. 10 or 10.53 of the respondents had in Master's degree with units, eight or 8.42 were doctorate holders and the remaining 1.05 percent were Master's degree holders. As to position, more than half of the respondents were nurses with 66 or 69.47 percent. 13 or 13.68 were midwives, resident physicians with eight or 8.42 percent, admitting officers with three or 3.16 percent, and two or 2.11 percent triage officers. There are one or 1.05 percent Chief Nurse, EMT, and medical specialists.

Out of the 95 respondents, some attended a multiple trainings and seminars attended which resulted to a total of 124 responses. Most

of them had no pieces of training and seminars attended with 48 or 38.71 percent. 42 or 22.87 responses with Basic Life Support, Advance Cardiac Life Support with 26 or 20.97 percent, Trauma Training with two or 1.61 percent. One or 0.81 each with NCII - Caregiving, Home Care, Emergency Medical Technician - Basic Course, PALS/NALS, Fire Safety, and First Aid.

2. The interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur along with assessment, the average weighted mean 3.90 interpreted as often. The average weighted mean of managing trauma patients along with diagnosis was 3.86 which is interpreted as often. The average weighted mean of managing trauma patients along with planning was 3.87 which is interpreted as often. The average weighted mean of managing trauma patients along with intervention was 3.83, interpreted as often. The average weighted mean of managing trauma patients along with evaluation was 3.74, interpreted as often.

3. The result of statistical data showed that age, sex, civil status, length of service, educational attainment, position, and pieces of training and seminars with computed values of 10.07, 4.51, 8.35, 14.66, 9.93, 9.78, and 11.47 were higher than the tabular value of 9.49, 3.84, 7.82, 11.07, 5.99, 7.82 and 9.49 at 0.05 level of significance, therefore the null hypothesis is rejected. This implies that age, sex, civil status, length of service, educational attainment, position, and pieces of training and seminars are related to the interventions practiced by the triage management team members in managing trauma patients among the hospitals in the 5th District of Camarines Sur.

4. The output of the study of the triage management manual should provide clear guidelines for assessing the severity of trauma patients, including the use of physiological parameters, anatomical injuries, and mechanism of injury. A well-functioning triage system can reduce morbidity and mortality by ensuring timely medical interventions.

Conclusions

In light of the foregoing findings, the following conclusions were drawn:

1. The respondents were predominantly young professionals, with a significant portion aged between 25 and 35. They were mainly female and either single or married, suggesting a relatively youthful and predominantly female workforce in the studied population.

A considerable number of respondents had substantial work experience, with many having more than five years of service. The majority were well-educated, with a significant portion holding a college degree and an additional portion pursuing or completing postgraduate studies. Despite the attendance of majority of respondents in various trainings and seminars, a significant portion had not participated in any training.

2. The triage management team members often practiced the interventions in managing trauma patients among the hospitals in the 5th District of Camarines Sur, along with assessment, diagnosis, planning, intervention, and evaluation.
3. The demographic factors (age, sex, civil status, length of service, educational attainment, position, and training significantly influenced the interventions practiced by the triage management team.
4. Interventions can be undertaken to enhance hospital response in emergency situations even in the post-pandemic era or in situations where COVID 19 may recur any time.

Recommendations

In light of the findings and conclusions, the following recommendations were formulated:

1. Part of the plan of each hospital is to equip its triage personnel with the necessary knowledge and skills its triage to accurately assess and prioritize trauma patients, reducing the risk of overtriage and undertriage. Additionally, implementing a criteria-directed protocol for in-hospital triage of trauma patients potentially improves the efficiency and accuracy of trauma triage in this population.
2. A more comprehensive definition of the trauma patient requiring trauma center care needs to be developed. This definition should consider major trauma, complex care, resource availability, and regionalization of care. There is a need for a more evidence-based approach to triage training and education. This could involve developing standardized training programs and evaluating their effectiveness in improving triage performance.
3. Hospitals and healthcare systems need to be prepared to manage large numbers of patients in the event of a mass casualty incident. This may involve developing plans for patient distribution, access controls, and secondary and tertiary triage processes. The profile of hospital personnel be considered in their designations.
4. The intervention triage management guide ensures the correct prioritization of patients based on their need for immediate care. This system, similar to medical triage, helps triage management team members prioritize cases effectively following a major release. It involves steps like recording issues, categorizing them based on severity, and deploying fixes promptly to address critical problems first. By implementing a release triage plan, triage management team can efficiently handle unexpected issues post-release, boosting team confidence and ensuring end users' trust in the new system.

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