Original Article

Effectiveness of Primary Trauma Care Workshop in a Tertiary Care Hospital in Pakistan: A Comparative KAP Study of Trainee Doctors

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Abstract

Background: Trauma management training is a crucial and urgent problem in today's world. An understanding of the impact of trauma management course in a healthcare setting is crucial in preventing trauma associated mortality
Objective: The study aimed to evaluate the effectiveness of a one-day Primary Trauma Care (PTC) workshop on the knowledge, attitude, and practices of doctors in their foundation year at a tertiary care hospital.
Methods: A comparative study was conducted to assess whether participation in the PTC Workshop resulted in significant enhancement in trauma-related knowledge compared to doctors who did not receive any training in trauma management. PTC workshop was arranged on 9th May 2024 for foundation year doctors in CMH Rawalpindi. A 20-question multiple-choice questionnaire to assess trauma management knowledge was distributed one month after the workshop to all foundation year doctors with and without Primary trauma care training.
Results: A total of 82 valid responses were received that were analyzed using SPSS v25 amongst which 51 had primary trauma care training and 31 did not. The analysis showed that there was a statistically significant difference (P value <0.05) in the knowledge, attitude and practice between the two groups.
Conclusion: The results demonstrate that participation in the Primary Trauma Care workshop significantly improves the knowledge, attitude, and practice of intern doctors in their foundation year regarding trauma management. The findings underscore the importance of incorporating such training programs into medical education to enhance the preparedness and proficiency of healthcare professionals in handling trauma patients effectively.
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Introduction

Trauma is one of the major causes of death in people younger than 45 years old.[1] Ninety percent of all injury-related deaths occur in low- and middle-income countries (LMICs)[2], defined by the World Bank as those with a Gross National Income of less than $3995.[3] Road Accident deaths in Pakistan reached 28,170 or 1.93% of the total deaths, according to the latest WHO data published in early 2020. The age-adjusted death rate is calculated as 15.18 per 100,000 of population ranks Pakistan #95 in the world.[4] The leading factor contributing to preventable deaths were massive bleeding and multiple organ failure.[5] These factors can be effectively managed by simple interventions like ensuring a patent airway, administration of sufficient intravenous fluids and exerting direct pressure to the site of bleeding. Injuries from road traffic accidents, interpersonal violence and war are among the leading causes of death in lower middle class income.[6] For those who survive their injuries, there is an associated high burden of morbidity accounting for an economic cost of 6% of global years lived with disability.[7]

The interventions required to prevent death in a trauma patient are characterized as Primary Trauma Care. It requires proper education of primary care given to such patients, appropriate protocols and efficient monitoring along with efficient time management.[8] The first 60 minutes after a trauma injury is the most critical time that eventually deter-mines the outcome of patient health status. It is termed as the 'Golden Hour'.[9] Comprehensive trauma care during this time window has been publicized, taught and practiced over the world. It includes resuscitation;

ensuring and assessing airway, breathing, circulation and secondary assessment; to get comprehensive information about internal organs.[9]

Inappropriate 'golden hour' trauma care can result in increased mortality or morbidity of hemodynamically unstable patients presenting with trauma. It is crucial to understand the significance of early trauma patient management that can be achieved by training the young medical graduates and house officers. Usually the first contact most patients have in emergency room is with a young medical graduate. The knowledge of Basic Trauma Life Support is therefore, essential.[10]

Basic trauma management training equips young doctors with the skill and knowledge to assess and address life-threatening situations.[11] The undergraduate curriculum is relatively deficient in trauma management education and there seems to be no defined criteria that medical colleges of our country are expected to follow for training of trauma management. Hence it is important for our junior doctors to get proper training and education in our medical system, especially tertiary healthcare centers.[12] It will boost the confidence of the junior doctors in managing the patients effectively meanwhile decreasing the morbidity and mortality compared to the young doctors who haven't received primary trauma care education and training. A scientifically trained general practitioner can also effectively treat nearly 90% of common orthopedic and trauma conditions.[13]

Methods

This study employed a comparative research design to evaluate the effectiveness of a one-day Primary Trauma Care (PTC) workshop on the knowledge, attitude, and practices of doctors in their foundation year at Combined Military Hospital (CMH) in Rawalpindi. The participants consisted of intern doctors at CMH Rawalpindi, who were divided into two groups based on attendance:

1. PTC Workshop Attendees: Intern doctors who participated in the one-day PTC workshop organized by the General Surgery Department at CMH Rawalpindi on May 9, 2024.
2. Non-Attendees: Intern doctors who did not attend any PTC workshop.

A total of 84 doctors were assessed on their knowledge, attitude and practices regarding trauma management. Two responses were rejected due to duplicate forms and finally 82 valid responses were analyzed. Fifty had attended a primary trauma care workshop and 31 had not. Inclusion criteria include those who answered all questions and completed at least 3 months of internship training. Exclusion criteria included incomplete question forms and multiple submissions by the same person. The PTC workshop, conducted by the General Surgery Department, comprised of lectures, hands-on practice sessions, and an assessment at the end to determine pass/fail status. All intern doctors were invited to attend the workshop and data was collected from them. The 20-question survey instrument specifically designed by the General Surgery team was administered one month after the workshop to assess participants' knowledge, attitude, and practices (KAP) regarding core trauma care principles taught in the Primary Trauma Care (PTC) course. The questionnaire was structured in three parts: (1) Demographic data including participant designation, training background, and prior trauma workshop experience; (2) Knowledge-based questions (Q1–Q4) using multiple-choice format focused on clinical concepts such as the ATLS primary survey, AVPU scale, and shock assessment; (3) Attitude questions (Q5–Q8) that presented trauma scenarios to gauge the participant's initial responses and triage approach using scenario-based MCQs; and (4) Practice-related questions (Q9–Q20) to evaluate applied trauma management knowledge, including fluid resuscitation, airway handling, compression techniques, and recognition of critical interventions like chest decompression and splinting. The format included both direct clinical questions and image-based items to assess recognition of procedures and equipment. The questionnaire content was informed by the official PTC course manual and ATLS guidelines, and was reviewed for relevance and accuracy by three trauma surgery consultants. A pilot version was tested with a group of 10 interns to refine clarity and ensure comprehension before full-scale administration. The questionnaire was distributed electronically to all intern doctors, who were asked to indicate whether they attended the PTC workshop or did not. Participants were categorized into two groups based

on workshop attendance status: PTC workshop attendees and non-attendees.

Results

Eighty two individuals were included in this study amongst which 51 (62.2 %) had received the Primary trauma care workshop (Group A) and 31 (37.8 %) had not (Group B). Amongst the participants, 4 individuals had 3 months of experience, 32 had 4-6 months of experience, 46 doctors had more than 6 months of experience.

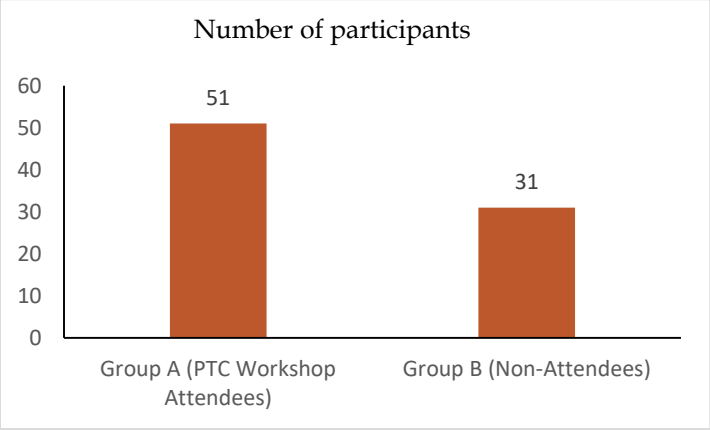

Figure 1: *Number of participants in Group A and Group B*

Analysis was done using SPSS 25. Each correct answer was given one score, and the wrong answer was scored as zero. Maximum score was 20 and minimum was 0. Total scores were added, and individual percentages were calculated for knowledge, attitude, and practice.

The average score for group A was 82.5% and the average score for group B was 63.7%. Results showed that 38 individuals (74.5%) in Group A scored 75% and above in the post workshop questionnaire and 13 individuals (25.5%) scored less than 75%. Contrarily, only 6 individuals (19.4%) in Group B who had not received PTC workshop in this group scored 75% and above percent score.

The mean score of knowledge, attitude and practice of individuals in Group A was 84.2%, 83.7% and 82% respectively whereas in Group B the mean score of knowledge was 68.9%, attitude was 65.2% and practice was 61.6%.

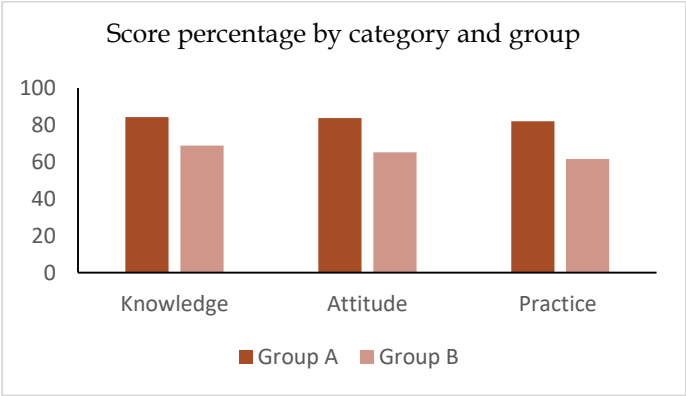

Figure 2: *Knowledge, Attitude and Practice scores of Group A and B as percentage*

An independent sample t-test was conducted to analyze the means of Group A and Group B. The difference between the two groups was significant in knowledge, attitude and practices with Group A scoring higher in each category with p value > 0.01.

Table 1: *Results of t test comparing Group A and Group B*

Category	T-Statistic	p-Value
Knowledge	3.48	>0.01
Attitude	3.98	>0.01
Practice	6.67	>0.01

Discussion:

The study assessed the impact of a locally developed Primary Trauma Care workshop on the knowledge, attitude, and practices of doctors in a tertiary care hospital, with the primary objective of determining, whether participation in the PTC Course yielded significant improvements and enhanced the knowledge related to trauma in these domains compared to doctors who did not partake in the course.

The findings of our study, which involved 82 participants, revealed a substantial enhancement in the KAP scores among doctors who completed the PTC Course, showing significantly better results with average scores of 84.2% in knowledge, 83.7% in attitude, and 82% in practice which signified a marked improvement in their theoretical knowledge regarding trauma management. In contrast, the 31 individuals who did not attend the workshop had lower average scores of 68.9%, 65.2%, and 61.6% respectively. The difference between the two groups was significant in knowledge, attitude and practices

with Group A scoring higher in each category with p value > 0.01.

Effective trauma care reduces morbidity and mortality by ensuring rapid resuscitation and appropriate interventions throughout the patient's treatment journey, from initial assessment to rehabilitation.[14] The primary goal of trauma care is to quickly stabilize patients, prevent their complications, and improve their outcomes after injuries.

In the post-course assessments, the significant improvements observed in the group that received the course suggest that the PTC curriculum was successful in equipping the house officers with the necessary skills and knowledge to provide high quality, evidence-based trauma care.[15] In developing countries like Pakistan, effective trauma care education is crucial where the burden of road traffic injuries and other morbidity and mortality related to trauma incidents remains extremely high. The successful implementation of the PTC course at CMH Rawalpindi highlights the potential for this training program to be adopted more widely across the country and institutions, thereby enhancing the overall quality of trauma management, and contributing to improved health outcomes for the population.[15]

Jameel Ali's research findings show that after finishing the Trauma Evaluation and Management module, senior medical students had better knowledge of trauma management principles, which was evident by a significant improvement in their multiple-choice question exam scores compared to those who did not take the module. This reflects the positive impact Trauma Evaluation and Management module on their education and training experience.[16]

Over two days, healthcare workers from two Vietnamese hospitals participated in a Primary Trauma Care course, which was evaluated using the Kirkpatrick and Knowledge Attitude Practice models. The findings showed that taking part in the course led to a significant boost in the knowledge levels of healthcare workers, with their scores in post-course multiple-choice question assessments showing a significant improvement from 60% to 77%. This statistical analysis establishes the effectiveness of PTC training in improving the understanding of healthcare workers towards trauma management, highlighting its practical value for these professionals.[17]

Uma Kulkarni's study reveals that trauma workshops led to a significant boost in knowledge among MBBS students, with more students scoring above average in post-workshop tests. The statistical analysis, which included paired t-tests, showed that attending the workshops enhanced the students' understanding, approach, and practical skills in trauma management, highlighting the positive impact of these educational sessions.[18]

Murtaza Kadhum's paper sheds light on how Primary Trauma Care (PTC) courses positively impact injury management knowledge and skills, particularly in low- and middle-income countries. The study advocates for providing formal PTC training to frontline staff in LMICs, emphasizing the need for thorough research to understand its real-world effects on clinical practice and patient care outcomes.[19] It is recommended to avoid unnecessary complication, effective primary care should be available at peripheral level by an appropriately trained person.[20] To enhance the ability of medical professionals to handle trauma cases effectively, we must explore the possibility of integrating similar trauma care workshops into medical education curriculum nationwide. This is especially important in a large tertiary care hospital, where the high volume and complexity of trauma cases demand that medical personnel be highly proficient in management. Introducing trauma care to new doctors and medical students by incorporating trauma care training into the curriculum can help develop essential skills and confidence early on, enabling them to handle emergencies effectively. It is therefore essential to work closely with medical institutions and teaching hospitals to integrate trauma management training as a fundamental aspect of both undergraduate and postgraduate medical education. The limitations of the study include a small sample size, hence limiting the power of the study. The study was observational and lacked a longer follow-up.

Conclusion:

The results of this study highlight the PTC Course's effectiveness in improving doctors' skills in trauma care. Combining a well-organized curriculum and practical training is crucial in linking theoretical knowledge with real-world application.

Ethical Permission: The Ethical Committee/ Institutional Review Board, Combined Military Hospital, Rawalpindi approved this study vide letter No. Ser No. 637.

Conflict of Interest / Disclosure: Nil.

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Authors' contribution:

HA, FH, RR: Conception & design, acquisition of data, analysis & interpretation, drafting of article, final approval, critical revisions

MA: Conception & design, analysis & interpretation

AS, MK, FI: Conception & design, acquisition of data, analysis & interpretation

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