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EXPLORING THE PREHOSPITAL CARE COMPETENCY OF EMERGENCY AND TRAUMA DEPARTMENT PERSONNEL AT SASMEC@IIUM

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Abstract

Trauma is a leading global cause of mortality, with road accidents alone resulting in over 1.3 million deaths annually and a significant impact in Malaysia. Emergency Medical Services (EMS) play a crucial role in providing prehospital care, reducing mortality rates by 25%, yet the competency of Emergency and Trauma Department (ETD) personnel remains underexplored. This qualitative study aimed to explore the prehospital care competency of Emergency and Trauma Department (ETD) personnel at the Sultan Ahmad Shah Medical Centre, International Islamic University Malaysia (SASMEC@IIUM). A purposive sampling method was employed to recruit ten participants, including medical officers, assistant medical officers, and staff nurses, who were directly involved in prehospital care. Semi-structured in-depth interviews were conducted to gather data on the participants' perspectives regarding their knowledge, skills, and readiness for prehospital care involvement. The findings revealed three main themes: Prehospital Care Stabilization, Challenges in Prehospital Care, and Improvement Aspects in Prehospital Care. Key recommendations include the implementation of standardized protocols, strengthening of team communication and coordination, enhancement of staff competency through continuous education and training, and advocacy for increased financial support. Addressing these recommendations can help enhance the quality and efficiency of prehospital care services at SASMEC@IIUM, ultimately improving patient outcomes and satisfaction.

Keywords: Prehospital Care, Competency, Emergency And Trauma Department, Medical Officer, Assistant Medical Officers, Nurses.

INTRODUCTION

Trauma is the leading cause of death worldwide, and it has a significant impact on both individuals and healthcare systems. According to the World Health Organisation (WHO), over 1.3 million people die and up to 50 million are injured on roads each year (WHO, 2018). In Malaysia, with an average of 3,700 deaths per day in road accidents (Ministry of Transport Malaysia, 2024). Traffic accidents were the leading cause of trauma, but have decreased by 25% in the past 25 years. Emergency medical services (EMS) provide pre-hospital care locally, regionally, or globally. They play an important role in improving the outcomes of critical care. Prehospital care reduces mortality by 25% alone, with a greater impact when combined with prompt facility-based

emergency care (Mehmood et al, 2018). Therefore, in today's rapidly changing world, the significance of accurate and reliable prehospital care cannot be overstated.

The seamless transition between prehospital and hospital care hinges on the preparedness of healthcare professionals in both settings, particularly in emergencies and trauma situations (Fiorentino, 2019). Specifically, medical officers, assistant medical officers (AMOs) and nurses in the emergency and trauma department (ETD) must be equipped with the knowledge, skills, and attitudes to effectively deliver prehospital care for critically ill and injured individuals. Studies have emphasized the critical function of prehospital care in enhancing patient outcomes, especially in cases of trauma and time-sensitive illnesses such as cardiac arrest, stroke, and emergency situations (Huang et al, 2020; Jacobson et al, 2010).

Besides, prehospital care can greatly improve patient survival and lower long-term problems by arriving at the scene quickly to assess, stabilize, and transfer patients to definitive care facilities (Stiell et al., 2017). Previous studies have described that the ability of the prehospital care personnel, specifically their knowledge, skills, and attitude to provide treatment on the scene and during transport to a definitive care centre, is crucial for the effectiveness of prehospital performance (Sanjana, Widyandari & Agustini, 2023; Nurumal et al, 2022; Waldrop et al., 2020; Nurumal et al, 2014).

Moreover, early assessment, stabilization, and transport to definitive care facilities by EMS personnel can significantly enhance patient survival and reduce long-term complications (Stiell et al., 2008). Despite its importance, several challenges hinder optimal prehospital care delivery. These include limitations in equipment, resources, and staffing (Al-Qahtani et al., 2019). Additionally, concerns exist regarding the knowledge and skill gaps of prehospital care personnel, especially in complex medical situations (Gibson, Davis & Cameron, 2020).

Medical officers, assistant medical officers (AMOs) and nurses play a vital role in supporting prehospital care through collaboration with EMS personnel. A previous study suggested that integrating AMOs and nurses with EMS teams can enhance care delivery by improving patient assessment, treatment decisions, and communication with receiving hospitals (Gibson et al., 2020). However, the literature lacks an in-depth exploration of the perceived readiness of medical officers, AMOs and nurses within the hospital setting to participate in prehospital care delivery.

Several studies have emphasized the importance of seamless coordination between prehospital and hospital care teams to ensure optimal patient outcomes. A study described that prehospital care personnel play a vital role in stabilizing patients, initiating essential interventions, and ensuring safe transportation to definitive care facilities (Sewalt et al., 2021). Another study suggested that hospital staff interaction with prehospital care providers improves patient handoff and facilitates a smooth transition to definitive care (Hodkinson, 2022). However, knowledge and skills gaps still exist among prehospital care personnel in managing patients transitioning from prehospital care (Stander, Hodkinson & Dippenaar, 2021).

Previous studies have also looked into the prehospital care competency of emergency and trauma department personnel. Dehghannezhad (2020) discovered that prehospital emergency personnel lacked knowledge and expertise in trauma care, but significant improvement was observed following training. According to Alimohammadi (2013), while pre-hospital technicians excelled in some areas, they fell short in others,

such as oxygenation support and foreign body removal. Abelsson (2018) found a disparity between ambulance nurses' perceived competence and their actual performance in trauma care. Even the study from two decades ago by Notzer (1995) emphasised the importance of conducting a comprehensive assessment of physician competence, which includes both knowledge and performance measures. These studies highlight the importance of continuous training and assessment to ensure the highest level of prehospital care competency.

A recent survey study was conducted at the Sultan Ahmad Shah Medical Center @ International Islamic University Malaysia (SASMEC @ IIUM) to the knowledge and skills of prehospital care personnel with a total of 73 participants (Jamaludin et al, 2024). Their findings revealed that the perceived level of knowledge and skills of AMOs and nurses in prehospital care at SASMEC @ IIUM is still not fully performed as a whole, based on all of the elements required in the self-evaluation questionnaire. However, they also found that there is a positive association ($p < 0.000$) between AMOs and nurses' knowledge and abilities, indicating that the more prehospital care a person knows, the better they are at providing it (Jamaludin et al, 2024). Nonetheless, limited research specifically focuses on the readiness of medical officers, AMOs and nurses within the emergency and trauma department context for prehospital care service delivery. Exploring their perspectives can provide valuable insights into their knowledge, skills, confidence, and any existing challenges hindering effective collaboration and patient care. Since ETD personnel often become the first point of contact for patients transitioning from prehospital care to definitive care within the hospital setting. Therefore, their preparedness to handle these patients is critical. Thus, this study aimed to explore the readiness of medical officers, AMOs and nurses in the ETD of SASMEC@IIUM towards prehospital care service delivery.

METHOD

This study was conducted at SASMEC @IIUM, Kuantan, Pahang, Malaysia. This hospital started operating in 2016 and providing medical care to the local community while also developing a tertiary referral centre, an undergraduate and graduate teaching hospital, and other facilities. This hospital has 300 inpatient beds and is supported by over 133 specialists. Emergency Medicine and Trauma Service (EMTS) is regarded as the SASMEC @IIUM's primary and critical service. It is a speciality domain that offers clinical care for a wide range of acute medical conditions, illnesses, and injuries. This includes providing emergency critical medical care, such as diagnostic, resuscitation, and stabilisation components, as well as life-saving procedures. Furthermore, the overall scope of EMTS encompasses both pre-hospital and hospital-based medical care. The reason for choosing this study setting was since this hospital has only been in operation for five years, there has been limited research on the impact of non-tertiary training programmes on the professional growth of prehospital care professionals developing systems.

In exploring the prehospital care competency of ETD personnel, this study employed a qualitative research design utilizing a purposive sampling method. A total of ten participants, including medical officers, AMOs and nurses working in the ETD at SASMEC@IIUM were recruited based on the inclusion criteria of this study and their willingness to participate in this study.

Data was collected by using a semi-structured in-depth interview method to explore the participants' perspectives on their knowledge, skills, and perceived readiness for prehospital care involvement.

The following are some of the interview questions that were asked to the studied participants during the in-depth interview sessions;

1) *Could you please share your experience towards the current prehospital care services?*
2) *What are the strategies in order to improve the prehospital care services?*
3) *What do you think about the competency of prehospital care personnel?*
4) *Direction for quality/performance improvement for this pre-hospital service? And how?* Interviews were audio-recorded and transcribed verbatim.

Data analysis was conducted by using an inductive content analysis method (Kyngäs, 2020). In exploring the prehospital care competency of emergency and trauma department personnel, the data were analyzed manually through a content analysis approach based on the previous study (Jamaludin et, al, 2022).

The unit of analysis was recorded interviews, which ranged in length from 45 to 65 minutes. After each recorded interview was transcribed, it was analysed and read several times to gain a comprehensive understanding of the situation.

According to the units of analysis, which were the entire body of the interviews, the texts were divided into condensed meaning units such as words, sentences, or paragraphs that contained aspects related to one another through their content.

Then, each condensed unit was abstracted and assigned a code. Various codes were then compared based on the relationship aspects of the underlying meanings, and the same meanings were grouped together to form subcategories.

The subcategories were combined to form categories and emerging themes based on the studied participants' perspectives and the qualitative content of their meaning. Furthermore, the main themes and categories were developed using the study objective. Finally, the researcher and team reached an agreement to form three themes with fourteen categories. Figure 1 depicts the process of data analysis.

In this study, the data's trustworthiness was ensured by adhering to qualitative rigour principles. Reading and rereading the dataset, as well as cross-checking among team members, helped to increase credibility. Next, the transferability was improved by including detailed descriptions of the research setting, methodology, and participant demographics and experiences.

Finally, maintaining an audit trail of all analytical decisions made during the study improved confirmability and dependability. The International Islamic University Malaysia's Research Ethics Committee provided approval, with the ethics approval number IREC 2021-122.

Furthermore, this study followed the principles of voluntary participation, right to withdraw, and confidentiality of identity.

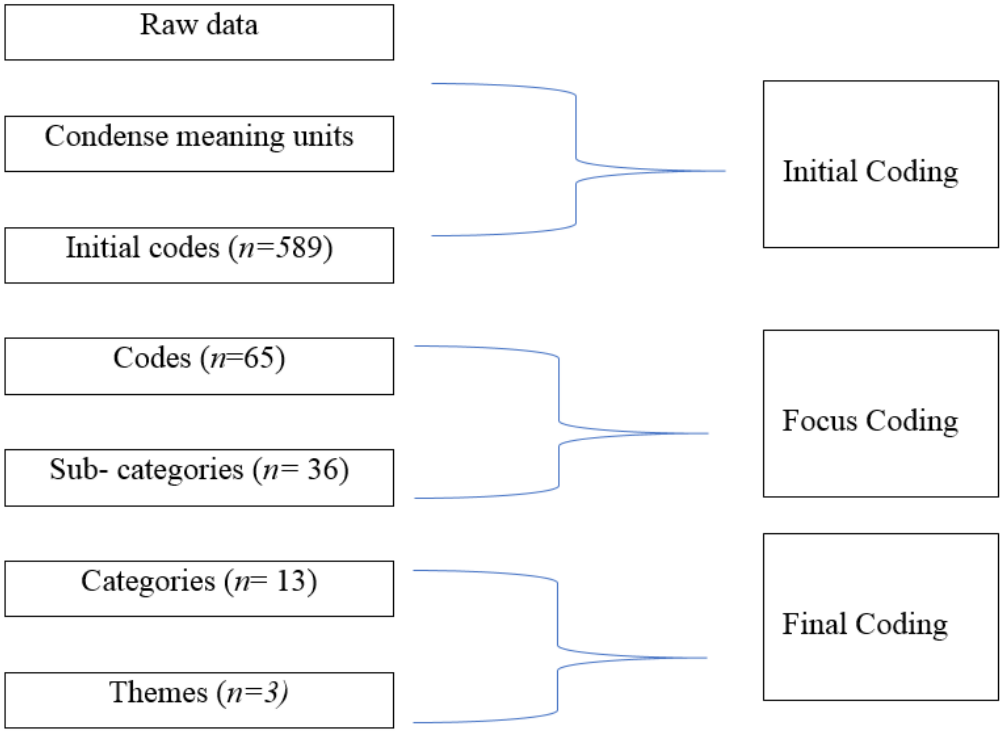

Figure 1: Data Analysis Process

FINDINGS

In this study, a total of 10 staff of the ETD of SASMEC@IIUM who are directly involved with prehospital care have participated. As shown in Table 1, the participants were 6 males and 4 females with their ages ranging from 25 years old to 35 years old.

Among the 10 participants, 2 were medical officers, 4 assistant medical officers and 4 staff nurses with their working experiences ranging from 2 years to 13 years respectively. Regards to the working experience as prehospital care personnel, it was noted that their experiences ranged from 1 year to 9 years.

Table 1: Sociodemographic Characteristics of Participants

Participant ID (PID)	Gender	Age	Designation	Working experience (in years)	Year of experience as prehospital staff
1	Female	31	Medical Officer	5	3
2	Male	34	Medical Officer	9	6
3	Male	24	Staff Nurse	2	1
4	Male	32	Assistant Medical Officer	13	9
5	Female	35	Staff Nurse	13	8
6	Male	30	Assistant Medical Officer	8	5
7	Male	33	Staff Nurse	5	3
8	Female	24	Staff Nurse	2	1
9	Female	25	Assistant Medical Officer	5	3
10	Male	32	Assistant Medical Officer	5	5

There are 3 themes with 13 categories that emerged in this study as shown in Table 2. The main themes are prehospital care stabilization, challenges in prehospital care and improvement aspects in prehospital care.

Table 2: Themes and Categories

Themes	Categories
1) Prehospital care stabilization	• Establishment process • Prehospital care team management • Staffs' training • Proper asset management
2) Challenges in prehospital care	• Competency issues • Limited number of cases • High turnover staffs • Community understanding towards prehospital care • Timeframe response
3) Improvement aspects in prehospital care	• Advance ambulance • Increase recruitment • Provision of courses (eg: ACLS, APLS, ATLS) • Financial allocation for PHC

Theme 1: Prehospital Care Stabilization

In exploring the studied participants' prehospital care competency, the first theme "prehospital care stabilization" refers to the process and actions taken by emergency and trauma department personnel to stabilize patients before they are transported to definitive care facilities. In the context of this study, encompasses the efforts made by medical officers, AMOs and nurses to provide immediate medical attention and interventions to patients in the prehospital setting.

This first theme also focuses on the foundational aspects of prehospital care that contribute to its effectiveness and efficiency by the studied participants. Four categories emerged under this first theme: establishment process, prehospital care team management, staff training, and proper asset management. The following session provides the details of each category within this theme:

1.1 Establishment Process

This category refers to the procedures and protocols involved in setting up and organizing the prehospital care services within the emergency and trauma department. It encompasses aspects such as infrastructure, staffing, and operational guidelines. In order to establish the process of prehospital care, three participants believed that benchmarking activities are important for the quality of care within this area. The following quotes from participants reflect on this category:

"SASMEC ED begin in 2020-2021, only MO and AMO attend cases during that time..in 2021, only selected cases attend by MO, for example, unconscious patient..in 2021-2023, only AMO attend PHC call"(PID 1)

"We have a tabletop discussion of the flow chart.. SASMEC will respond to which area and will see which services are covered. Previously, we only took medical surgical cases... we didn't take cardiac cases, because we didn't have a cardiologist, so we didn't respond..Many years have also involved the development of prehospital care at SASMEC, at the same time, we have also done benchmarking at HUSM, there are a few SOPs that we look at whether the book is followed or not, we are launching it officially, at the end of 2018" (PID 4)

"In 2020, we are still in the process of setting up the PHC" (PID 10)

However, another 3 participants also believed that a memorandum of understanding (MOU) with well-established organizations is important for the process. This statement was reflected by:

"We are starting a table talk exercise between 4 groups for us to make an MOU, SASMEC, JKN/KKM.. we have to follow KPI and all rules. When we start first, there is an agreement we have to improve..legality has to be improved..we start first as a project before the MOU is designed, until 2019 we have started responding to cases outside, we are open at HTAA, we have divided a 10 km radius from the hospital.. However, if there is a disaster near in the SASMEC Area, we will be the 1st responder, when the HTAA team arrives then we will be the backup team for them. We signed the MOU after covid, 2021 as I remember. The MOU we signed after that, the use of assets is the right of each individual and each institution. It's just that mutual understanding is part of the training." (PDI 4)

"Following our MOU, we can ask the patient or next of kin to go to HTAA or SASMEC.. HMC, the hospital meeting committee decided to charge PHC free only, anything we lack consumables to medicine is free, except admission to SASMEC. (PID 4)

"..our agreement with HTAA, anything happens within a 10 km radius, we are going to respond accordingly.." (PID 7)

1.2 Prehospital Care Team Management

This category addresses the coordination and management of the prehospital care team, including roles, responsibilities, communication protocols, and team dynamics. Under this category, firstly, most of the studied participants believed that human resource arrangement is important for the prehospital care. This was reflected by:

"For me, I am working at all zone..usually doctors and AMO attend the cases of the prehospital." (PID 3)

"AMO number is increasing..so manpower getting better, that's why, MO did not attend prehospital care (PHC) now..." (PID 1)

" We have to make 1 team, 1 ambulance due to several factors.. the first factor is our 2 ambulances, the second factor is the most important manpower.. so there will be 1 driver, 2 PPP people, so 3 people will go.. one shift, we allocate only one team for PHC" (PID 4)

" Previous year, doctor need to attend prehospital care but currently we send AMO only as the number increase" (PID 2)

"For the time being, prehospital care more to AMO..nurses encourage to be on the floor..we just know a little..I used to join PHC during post basic.." (PID 7)

"..usually for active cases, 5-6 people standby including airway, breathing circulation, documentation. Everyone with job scope.. on the floor while prehospital care team attend the cases" (IA)

"..for PHC call, two AMO attends; one senior and one junior..so we use the knowledge and skills we have to attend our patients " (PID 9)

"..previously, we have 4 staffs in one shift or minimum 3 due to lack of staff..now, we have 5 staff in a shift.."(PID 10)

Secondly, the studied participants believed that having a mentor-mentee system is important for prehospital care management. This was reflected by:

" Mentor-mentee system also there..so we can refer anytime" (PID 3)

"…mentoring program for MA seems helpful.." (PID 2)

"…mentor-mentee system really help me to prevent from medication error..we need to clarify with the senior before administering medication to prevent harm.." (PID 8)

Lastly, the studied participants believed that people who are involved in prehospital care to equipped with post-basic certificates to handle the cases on the scene. This was reflected by:

" Post basic in PHC already we have one person, there are a few more who have ACLS, BLS mostly they have..(PID 4)

"we want to send MA & PPP to postbasic..but the top management does not allow postbasic to go to KKM (PID 3)

1.3 Staff Training

This category highlights the importance of ongoing training and professional development for ETD personnel involved in prehospital care. It includes training programs, skill development initiatives, and continuous education to enhance competency and preparedness. Some of the participants expressed that it is important to have skills (Hands-On Sessions)-moulage for prehospital care. This was reflected in:

" For dilution of medication, we have formula book and senior who monitor the medication preparation by junior until I gained confidence in preparation..it takes 6 to 7 months for me to competence on that skill" (PID 3)

" They (AMO) have staggered training, post-basic training and weekly hands-on for practice..such as airway, breathing, etc.. " (PID 1)

" for newly recruited MA, the on-scene and hands-on session is important and also tabletop exercise necessary to familiarize the staff with a real situation" (PID 2)

However, some of the participants believed that upgrading their knowledge by attending the courses was also important when dealing with prehospital care cases. This can be seen as:

"..we being exposed regarding the disaster, we know about it..for the time being, we have knowledge but in the real situation, we need more simulation" (PID 7)

"..we have talk/CNE on Wednesday so we could learn. The most important part is familiarizing ourselves with the medication during emergency situation especially for dilution" (PID 8)

" For me, there are some courses that I have already gone to such as BLS, ACLS, PHC level 1... There are only a few more that I want to go to like ATLS, PLS that have not yet .. PHC as far as I know has 3 levels.. the first one, is more to basic.. the second one, how to advance skill.. the 3rd one is the professional one who wants to make the name of the country.. international level."(PID 6)

"I think all staff attend BLS, but not everyone has a chance to attend ACLS, ATLS etc" (PID 2)

" for me, I have attend BLS, ACLS..which helpful for my practice..we familiarize with case study related to the cases" (PID 5)

1.4 Proper Asset Management

This category focuses on the efficient utilization and maintenance of resources and equipment essential for prehospital care, such as ambulances, medical supplies, and communication devices.

It encompasses inventory management, equipment maintenance, and resource allocation strategies. These were reflected by:

"..for the time being, we have type B ambulance..so they execute scoop and run instead of stick and play..rarely they stay and play, but if they attend the case and CPR was ongoing, they settle it and stabilize patients, and send to the hospital" (PID 7)

"..currently, we have sufficient equipment in ED..but limited ultrasound machine for now" (PID 8)

"..SASMEC ambulance and equipment sufficient enough, so it was easy to work with the cases" (PID 9)

" They have kit provided for PHC according to case; AED, airway, trauma kit, pelvic binder, neck holder..this is based on patient arrival..at least we can evaluate, they bring all necessary items" (PID 2)

Theme 2: Challenges in Prehospital Care

This theme identifies the obstacles and difficulties encountered by ETD personnel in delivering effective prehospital care.

This theme has five categories: competency issues, a limited number of cases, high turnover staff, community understanding towards prehospital care, and timeframe response. Below is an explanation of the categories within this theme:

2.1 Competency Issues

This category pertains to gaps in knowledge, skills, and experience among ETD personnel that may hinder their ability to provide optimal prehospital care.

Some of the participants believed that having courses like basic life support (BLS) for all staff is important for prehospital care:

"more frequent training.. so more consistency, more practice and more hands-on..our AMO have PHC, they should have basic certificate..for example, renew BLS, ACLS, ATLS courses..for now, only a few attend courses like ATLS, ACLS because limited of training and expensive"..(PID 1)

"…I have attended BLS..but not other courses yet" (PID 8)

However, some participants also expressed that CPR skills of the prehospital care personnel is important in dealing with emergency cases:

"Earlier, I was a bit clumsy and panicked to perform CPR. But now I am better. Usually, first CPR cycle we performed manually, then continue with CPR automated machine" (PID 3)

".sometimes, family members don't know about CPR.. sometimes our equipment did not function as requires. Need to change another equipment" (PID 6)

2.2 Limited Number of Cases

This category addresses the challenge of limited exposure to prehospital care scenarios due to the relatively low volume of cases encountered, which may affect proficiency and readiness. This was reflected by:

"Sometimes, patients came with the respiratory issue and end up with cardiac cases..most cases transfer to HTAA because patients need to settle debt with SASMEC before admitted to the ward, so they prefer to admit at HTAA" (PID 1)

"We don't have much polytrauma case in SASMEC" (PID 2)

"We want many cases actually, for me it is an exposure to the staff. (PID 4)

2.3 High Turnover Staff

This category refers to the turnover rate of personnel within the prehospital care team, which can disrupt continuity of care, team cohesion, and institutional knowledge. The following statements from participants reflected on this category.

" Management needs to find a solution to retain staff. Maybe give allowance " and send them to do postbasic (PID 4)

"We have a high turnover number of MA, especially on trauma case.so we have more turnover and fast.." (PID 2)

" This manpower comes in, comes out.. when the new one comes in, we have to train again.. when they get a better offer, they left..we cannot control them" (PID 5)

2.4 Community Understanding Towards Prehospital Care

This category explores the level of awareness, understanding, and cooperation among the community regarding the role and importance of prehospital care services, including factors such as public perception, cultural beliefs, and communication barriers. Some participants described expectation vs reality and the category of cases for ambulance calls:

"Previously, doctor was scolded by patients because they waited for so long..they did not know that doctor attend PHC cases because we have one doctor cover that time" (PID 1)

"We have one case near the terminal,. Relatives blame PHC for late arrival..during that time, the team arrived around 20 minutes after the call because the call ..they expect we arrived in 5 minutes but the call goes to the MACC centre not PHC SASMEC directly " (PID 2)

"relatives expect ambulance driver know the exact location, instead they give inaccurate landmark..so we face difficulty for the wrong location" (PID 4)

2.5 Timeframe Response

This category relates to the timely and efficient response to prehospital care incidents, including challenges such as response times, transportation logistics, and coordination with external agencies.

" PHC staff attend quickly after they get information on the cases.. " (PID 3)

"TIME for cases, for example, 1 case we have to arrive on scene, within 15 minutes. From receiving calls to 15 minutes. When we leave and we arrive, we have to report

to MCC Kuantan.. there are P1 to P4... There are priority 1 to priority 4... P1 means priority 1 for urgent cases, chest pain, unconsciousness, trauma... P2 means alleged fall, stomach ache, headache... I think it's less priority. Country KPIs decide, PI, life-threatening conditions only. (PID 4)

We want to achieve KPI from the country...we want to follow KPI, for us in line with the government, especially during the response period. (PID 5)

" ..our challenges include time form call received and arrival on scene..for example, they give only guard house address, not an accurate location "(PID 9)

Theme 3: Improvement aspects in prehospital care

This last theme identifies potential areas for enhancement and development within the prehospital care system. This theme has four categories: advance ambulance, increase recruitment, provision of courses (eg: ACLS, APLS, ATLS), and financial allocation for prehospital care. Below session is an explanation of the categories within this theme:

3.1 Advance Ambulance

Some of the participants expressed upgrading and equipping ambulances with advanced medical technologies, equipment, and facilities to enhance the provision of prehospital care services in this category. These were reflected by:

"..now we have 2 ambulances only, we have to wait for the PHC team to settle first..then we could transfer our patient...In future, I hope for more ambulances..so that, patients' waiting time could improve for transfer process" (PID 3)

"My hope is, we expand our area.. we want to make it a hotspot, like HTAA now there is indeed an ambulance team in Taman Tas, which means that every ambulance shift will park at the Taman Tas Mosque, they wait there until the end of the shift.. they will speed up the response time..just standby there, especially for priority cases..so, I also plan to do the same at SASMEC..we have a hotspot and the response time is faster..I hope one day we can reach the same, if it's a trauma case it's fun, PHC will get exposure, the department will also get exposure..(PID 4)

"..currently, SASMEC in the process of purchasing ambulance type A" (PID 7)

3.2 Increase Recruitment

This category focuses on strategies to augment the workforce by recruiting additional personnel, including medical officers, assistant medical officers, and nurses, to meet the demands of prehospital care. The following quotes from the participants reflected on this.

"PHC team; doctor, senior AMO, junior AMO in future..at least we have senior..so fast treatment could start especially for medication and drip etc" (PID 5)

" Now nurses have around 80 nurses..so we not have enough ration for PHC involvement at the moment" (PID 9)

" We still have an insufficient number of AMO for the time being..but in our early development of the department, nurses were involved" (PID 7)

"..sometimes for obese patients. we need more manpower to position the patients.. sometimes difficult to insert branula because of short veins" (PID 8)

3.3 Provision of Courses (e.g., ACLS, APLS, ATLS)

This category emphasizes the importance of offering specialized training courses such as Advanced Cardiovascular Life Support (ACLS), Advanced Pediatric Life Support (APLS), and Advanced Trauma Life Support (ATLS) to enhance the skills and competencies of ETD personnel in managing prehospital emergencies. The following statements represent this.

" I hope for more training for staff if the management decide to involve nurses in PHC..especially fast decision in critical situation because sometimes we tend to panic..so we must gain more experience on the floor first for now"..(PID 3)

" more liaison officer for PHC..if we can send more AMO for ACLS, ATLS and APLS for the staff" (PID 2)

" If nurses are involved in PHC, nurses need more training like ACLS, ATLS for PHC because patients' condition might differ from earlier" (PID 5)

3.4 Financial Allocation for Prehospital Care

This category underscores the need for adequate financial resources and budget allocation to support the development, maintenance, and expansion of prehospital care services, including funding for equipment, training programs, and operational expenses. These can be seen as:

"From the point of view of top management, if you save too much and think about the staff, it will be difficult.. if the employer thinks about investing for the future, it will be the same as before.. for better quality service, you have to invest. The way we want to tie the staff is like that.. we have to sponsor the staff.." (PID 4)

"If possible, I would suggest the staff at SASMECc, arrange the course of PHC to make it easier..if there are serious cases, they can attend well (PID 6)

"..for this year, it suppose 2 staffs will attend PHC course but I am not sure whether they get the financial approval..most of postbasic PHC level 2 and 3 at Sungai Buloh hospital"(PID 10)

DISCUSSION

The findings from this study are expected to shed light on the current state of prehospital care preparedness among medical officers, AMOs and nurses in the emergency and trauma department setting at SASMEC @IIUM. By exploring their perspectives, this study aims to identify areas requiring further training and support to enhance their prehospital care capabilities.

Besides, this study's findings also provide the development of targeted training programs and support mechanisms to better equip prehospital care personnel at SASMEC @IIUM for potential involvement in prehospital care delivery. Moreover, this study's findings also contribute to the overall improvement of prehospital care service delivery and patient outcomes in the studied context.

Firstly, regarding theme 1, "prehospital care stabilization", the findings indicate that establishing robust protocols, efficient team management, continuous staff training, and proper asset management are crucial for ensuring the stability and effectiveness of prehospital care services. This finding aligns with existing literature emphasizing the critical role of prehospital care in improving patient outcomes, particularly in

emergencies and time-sensitive situations (Hung et al., 2020; Stiell et al., 2008). While studies acknowledge challenges faced by EMS personnel, limited research explores the prehospital care readiness of hospital staff, particularly medical officers, AMOs and nurses (Stander, Hodkinson, Dippenaar, 2021; Al-Qahtani et al., 2019).

This study's findings recommended to enhance prehospital care stabilization, it is recommended to implement standardized protocols and guidelines, strengthen team communication and coordination, invest in ongoing training and professional development programs, and optimize resource utilization through effective asset management strategies.

Secondly, regarding theme 2, "Challenges in prehospital care", the identified challenges, including competency issues, limited case exposure, high turnover rates, community perceptions, and response time constraints, highlight the complex nature of delivering prehospital care. These findings also align with previous findings where they described the strong collaboration between emergency medical services (EMS) and hospital care, the use of (mobile) health technologies and artificial intelligence, and the use of standardized protocols and guidelines (Cimino & Braun, 2023). Addressing these challenges requires a multifaceted approach, including improving training and competency assessment mechanisms, increasing exposure to diverse prehospital care scenarios through simulation training, implementing strategies to enhance staff retention and morale, conducting community awareness campaigns to educate the public about the importance of prehospital care, and optimizing operational procedures to minimize response times (Poornazari et al, 2023).

Lastly, regarding theme 3, "improvement aspects in prehospital care", the findings suggest several areas for improvement, such as upgrading ambulance facilities, expanding the workforce, providing specialized training courses, and allocating sufficient financial resources. This aligns with studies highlighting the importance of seamless collaboration between prehospital and hospital teams (Al-Hajjar et al., 2020; Hodgkinson et al., 2019). It complements existing research by specifically focusing on the perspectives of AMOs and nurses within the emergency and trauma department setting. This unique perspective sheds light on potential knowledge and skill gaps, corroborating findings by Smith et al. (2021). Therefore, to enhance prehospital care services, it is recommended to invest in upgrading ambulance equipment and facilities to meet advanced medical standards, increase recruitment efforts to address staffing shortages, offer specialized training courses to enhance skill levels, and advocate for increased financial support from stakeholders to sustain and expand prehospital care initiatives.

CONCLUSION

Understanding the readiness of prehospital care personnel in emergency and trauma departments towards prehospital care is crucial for optimizing the delivery of prehospital care and ultimately improving patient outcomes. This study aims to provide valuable insights into their knowledge, skills, attitudes, and perceived needs, paving the way for the development of strategies to enhance their preparedness and potentially expand their involvement in this critical domain of emergency care. Moreover, the findings of this study provide valuable insights into the prehospital care competency of ETD personnel at SASMEC@IIUM. The study identified key themes related to prehospital care stabilization, challenges, and improvement aspects. By

addressing these findings and implementing the recommended strategies, SASMEC@IIUM can enhance the quality, efficiency, and effectiveness of its prehospital care services, ultimately improving patient outcomes and satisfaction. The findings highlight the need for targeted training programs to enhance prehospital care personnel's capabilities, ultimately contributing to improved service delivery and patient outcomes in this setting. Thus, continued research and collaboration are essential to further advance prehospital care practices and ensure the delivery of high-quality emergency medical services.

A Conflict Of Interest

There are no conflicts of interest among the authors.

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