

RESEARCH REPORTS

# PARAMEDICS' ANXIETY AND CONCERNS TOWARDS ATTENDING TRAUMATIC EVENTS: A DELPHI STUDY

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## ABSTRACT

*Introduction:* Trauma is a major problem in Saudi Arabia and a leading cause of mortality and morbidity in young age groups. In 2018, road traffic injuries and trauma were the second-leading cause of death after ischaemic heart disease. There is a lack of research that explores the psychological effects on emergency medical service (EMS) professionals of providing the required pre-hospital care for trauma cases. This study aims to identify which trauma cases cause the most anxiety and concern among a group of EMS professionals.

*Methods:* A study using a two-round Delphi method was undertaken online with EMS professionals working for the Saudi Red Crescent Authority (SRCA) across the country.

*Results:* The response rate was 70% (n=14) at the end of round two. All participants were male and the majority of professionals who participated were from the capital city, representing 36%. Most of the professionals held a bachelor's degree as the highest level of education (78%). The initial round generated one item that achieved 70% of the consensus; however, the second round did not achieve any consensus. The overall top item for the trauma cases that caused the most anxiety and concern as identified by respondents was road traffic collision.

*Conclusion:* Road traffic collisions are a leading cause of death and based on the respondents' agreement they cause paramedics the most anxiety and concern of the cases they attend.

## INTRODUCTION

Globally, trauma is a major problem and an important cause of mortality and morbidity, and death with trauma injuries represents around 10% of the global disease burden (Haagsma et al., 2016). The causes of trauma mortality and morbidity differ among nations, although injuries rank as one of the top 10 leading causes of death in developed countries (Krug, Sharma, & Lozano, 2000; Nantulya & Reich, 2002). Trauma is a major problem in the United States, which reported unintentional injuries as the third-leading cause of death in 2019 (Kochanek, Murphy,

Xu, & Arias, 2019). In some high-income countries, injuries are even closer to the top of the list of injuries related to death, such as in Saudi Arabia where injuries are the second-leading cause of death (Alghnam, Alkelya, Al-Bedah, & Al-Enazi, 2014; Vos et al., 2020).

Global trauma reports, such as the Trauma Audit and Research Network and the Australia New Zealand Trauma Registry, categorize trauma based on the cause of injuries, such as road traffic accidents, falls, and shootings (Davey et al., 2006; Fitzgerald et al., 2019; Roberts et al., 2020; Tohira, Jacobs, Mountain, Gibson, & Yeo, 2012). Furthermore, the main provider for prehospital care in Saudi Arabia responds to over 280,000 cases annually, including life threatening cases. These types of traumatic events are mostly attended by emergency medical services (EMS) professionals, who provide essential care and timely transport for injured people. EMS professionals provide care around the clock, often in unpredictable environments where rapid decision-making skills are needed to provide best-practice clinical care (Gove, Tamburlini, Molyneux, Whitesell, & Campbell, 1999). EMS personnel work primarily as dual or single responders, often with limited resources. Exposure to traumatic events is common for responders (Thompson, Rehn, Lossius, & Lockey, 2014). Traumatic events may include the death of the elderly or children, violence, and multiple casualties' events. Regular exposure to certain incidents may be psychonoxious for EMS personnel.

The physical and emotional welfare of health care providers is a significant issue. In the UK, EMS personnel have a higher rate of early retirement on the basis of mental and physical illness compared with other health care providers (Rodgers, 1998). Having experienced a distressing event within the past six months produces a significantly high level of anxiety on the 28-item General Health Questionnaire (GHQ-28) and a high score for depersonalisation (Alexander & Klein, 2001; Goldberg & Hillier, 1979). Furthermore, around 69% of EMS professionals had not had enough time to recover emotionally from most of the traumatic events they had experienced (Alexander & Klein, 2001). In Saudi Arabia emergency practitioners including paramedics, physicians, and nurses are more at risk of anxiety disorder, with 52% in moderate and severe ranges (Alharthy, Alrajeh, Almutairi, & Alhajri, 2017).

In recent years, the focus of research has shifted to the mental health challenges faced by EMS professionals, including stress, depression, and anxiety. A recent review of the literature assessing suicidal ideation and behaviours among first responders, such as police officers, firefighters and EMS personnel, shows an elevated risk for suicide (Stanley, Hom, & Joiner, 2016). Working in stressful environments with exposure to frequent and multiple trauma events could lead to anxiety among EMS personnel. Providing care during trauma and critical events has been recognised as a cause of anxiety among health care providers (Melvin, 2015). Therefore, in prehospital and less controlled settings, it is reasonable for EMS personnel to experience high levels of stress, which can lead to a variety of reactions even while providing that care (Cydulka, Emerman, Shade, & Kubincanek, 1997). The frequency of traumatic case attendance could differ from one country to another, leading to differing exposures to trauma for EMS professionals. Previous research recommended further exploration of the psychological effect of providing prehospital care on anxiety in EMS professionals during traumatic events (Guise et al., 2017).

The terms 'anxiety' and 'confidence' are related (MacIntyre & Gardner, 1991). Anxiety has been defined as "the tense anticipation of a threatening but vague event; a feeling of uneasy suspense" (Genest, 2000), while Merriam-Webster (online) defines it as "an abnormal and overwhelming sense of apprehension and fear often marked by physical signs (such as tension, sweating, and increased pulse rate), by doubt concerning the reality and nature of the threat, and by self-doubt about one's capacity to cope with it" (online, 2012). Confidence, or self-efficacy, "is defined as a person's beliefs in his/her capability to succeed in a specific situation or task" (Pajares, 2006). Previous studies have reported that high levels of practitioner anxiety resulted in a low level of confidence that may negatively impact patient safety (Fowler, Beovich, & Williams, 2018; Mason, O'Keeffe, Carter, & Stride, 2016). However, no previous studies have addressed the most common types of trauma cases that are linked to high anxiety levels or identified cases of concern, particularly in Saudi Arabia. This study aims to establish consensus on the traumatic cases that create a substantial anxiety or concern among Saudi Arabian EMS personnel.

## METHODS

### DESIGN

A modified Delphi approach was used to establish consensus on paramedics' anxiety and concerns towards attending the most common types of traumatic events (Hasson, Keeney, & McKenna, 2000). A panel of EMS professionals working in the field in Saudi Arabia participated in two iterative rounds to rate traumatic cases that created substantial anxiety and concern. A quantitative survey was developed to gather expert consensus opinions from a list of common trauma cases that they believed triggered anxiety and concern. Global trauma reports were used to unifying terms such as road traffic accidents and road injuries into "road traffic collision" (Davey et al., 2006; Fitzgerald et al., 2019; Roberts et al., 2020; Tohira et al., 2012).

### SETTING AND PARTICIPANTS

A sample of paramedic professionals was recruited from the Saudi Red Crescent Authority (SRCA), Saudi Arabia. The SRCA is the primary EMS organization providing out-of-hospital care. An expression of interest was distributed throughout the SRCA and an expert panel was organized by SRCA representatives. The list of EMS personnel who expressed their interest and willingness to participate in the study was provided to the lead author. The experts had at least two years of on-road experience and were primarily working in prehospital settings either on the ground or in an 'air ambulance' type service. Also, experts had to be registered as a paramedic with paramedicine degree or equivalent. Participant demographic information was collected such as age, gender, qualifications, experience, geographical work region, and education level. This study was approved by The Human Ethics Low-Risk Review Committee at Monash University (Approval ID#: 20126) and The Saudi Red Crescent Authority Committee (Approval ID#: 1442/4 - 23/08/1442 Hijra).

### PROCEDURE

This study included two rounds using Delphi methods (Figure 1) and was distributed electronically using Qualtrics software (Qualtrics International, Seattle, United States). The online survey was developed using demographic information, including age, educa-

tion, experience, etc., and a list of common trauma case types. The primary survey question asked participants to rate cases from a list of the most common trauma types derived from the literature of different countries (Tohira et al., 2012). The participants were instructed to rate the trauma case types based on how much anxiety and concern they experienced when attending those types of events. The rating was on a scale from 1 to 10, where one is least anxious and concerned and 10 is the most anxious and concerned. Any selection from 7 to 10 indicates substantial anxiety and concern. Therefore, if more than 70% of respondents select a score within this range, it signifies a case that requires a consensus for further action. The participants' responses were anonymous to ensure that they responded according to their own thoughts and opinions based on their experience.

The first round of the Delphi study was sent to participants via email with two sections to complete. In the second section, the trauma case list, participants' responses for each case were calculated and the mode value correlated with the median value for each case. Any item (case) that reached a mode rating (e.g. 7-10 substantial anxious and concern) of 70% or more of the consensus was removed from the list and was not available for re-rating (Langlands, Jorm, Kelly, & Kitchener, 2008; McDermott, 2016). At least 70% of the participants should rate an item with the rating number 7-10 to be included as a standard trauma case regardless of the level of anxiety and concern. The first round was available and open to access for two weeks.

The second round was sent to participants via email with the developed list from the first round. In this round, participants were unable to see the items that reached a 70% consensus or above in the first round. The second round offered for re-rating the items that did not reach 70% in the first round. The second round was available and open to access for two weeks.

## **DATA ANALYSIS**

The data was collected electronically in Qualtrics software and then exported for analysis. Data is reported as descriptive data using mean (standard deviation), median (IQR), and frequency data as appropriate.

## **RESULTS**

Experienced paramedics (n=20) from the EMS field in Saudi Arabia were recruited for the study by two representatives from the SRCA. All invitees agreed to participate in the study, although only 14 (70%) completed both rounds of the survey. Responders were all male with master (n=2) and bachelor degrees (n=11) or a diploma (n=1) qualification in paramedicine. The participants were from seven provinces of Saudi Arabia, with the largest number of participants (n=5) located in Riyadh, the capital city. The mean (SD) age of participants was 32 years, having six years of experience.

For round one, the participants' agreement excluded only one item from the second round – road traffic collision. It was rated as 'substantial anxiety and concern' by 70%+ of participants.

In the second round, none of the remaining items achieved a 70%+ consensus. Table 1 shows the order of the items on the list of traumatic events with mode and median 'the most anxiety and concern' to the least.

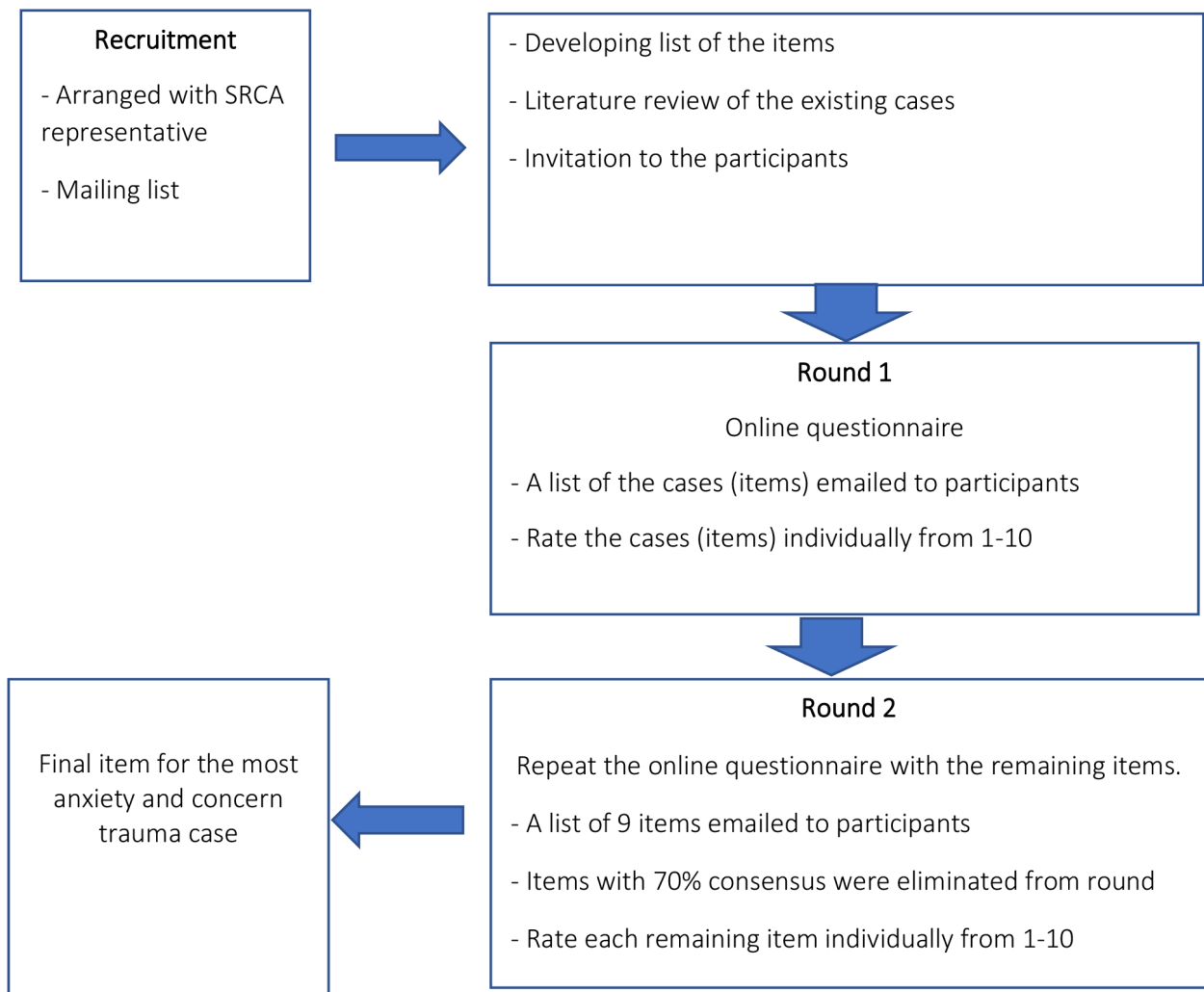


Figure 1. Two-round Delphi process.

**DISCUSSION**

In this study, an expert panel of participants was used to establish consensus on common trauma types that were perceived to trigger anxiety and concern among paramedics. The responses from 14 EMS professionals identified via consensus that road traffic collision was most likely to be a reason for a substantial anxiety and concern among paramedics compared to any other cases. To the best of our knowledge, no previous studies have reported and rated the most frequent trauma cases that are perceived by EMS personnel to cause the level of anxiety and concern.

Item	First Round			Second Round		
	Median	Mode	%	Median	Mode	%
Road traffic collision	9.5	10 (Substantial)	70	-	-	
Shootings	5.5	10 (Substantial)	60	4	2	50
Blast injuries	6.5	2	60	6	9 (Substantial)	60
Pedestrians	5	2	50	5	1	50
Crush injuries	5	1	50	4	3	50
Burns	5	5	50	6.5	2	50
Stabbings	4	4	50	4	3	50
Falls	5	5	50	4.5	1	50
Drowning	3	3	40	3.5	2	40
Assaults	4	2	40	3.5	3	30

Table 1. The median and mode of participants' ratings in each round of the study.

In 2015, a systematic review of existing evidence on road traffic accidents and road safety in Saudi Arabia identified 29 articles published in the past 25 years, demonstrating the commonality of these incidents (Al Turki, 2014; Mansuri, Al-Zalabani, Zalat, & Qabshawi, 2015). However, it is estimated that there are 30,179 road traffic collisions annually. Over 15% of these cases relied to fatalities (Health, 2022). Therefore, the higher proportion of road-related fatalities could be a reason for the level of consensus identified in this study.

Road traffic collision has been reported in previous studies conducted among different disciplines. A study investigating the anticipation, confidence, and fears of paramedic students and their course coordinator about paramedicine as a career reported that multiple casualties and road traffic accidents were among the events that paramedic students feared the most. Additionally, 37% of students were concerned about their personal mental well-being, which may be linked to their focus on road traffic collisions (Holmes, Jones, Brightwell, & Cohen, 2017). However, there are more than 6 million cars that actively use the roads of Saudi Arabia with more than 4 million road collisions in the last two decades (Mansuri et al., 2015; Touahmia, 2018).

Furthermore, other first responders, such as police, consider road traffic collisions to be traumatic events that stick in the memory for a long time. Police officers interviewed on their experience of exposure to traumatic events identified traffic accidents as the second most stressful event after armed threat events (Karlsson & Christianson, 2003).

There are a number of potential factors that may contribute to why road trauma is rated as the case type most likely to trigger anxiety and concern for Saudi paramedics. First, paramedics respond to road traffic collisions more often than any other type of pre-hospital callouts (Aljerian et al., 2018). Road trauma exposures include complex interactions with bystanders, police, and firefighters. These groups may also be seeking medical intervention from paramedics, which means Saudi paramedics could be more exposed to road trauma than in other trauma cases such as falls or shootings (Aljerian et al., 2018). This phenomenon has also been reported in a study of South African paramedic trainees. In this cohort, the most common exposure event was transport accidents (53%), although this proportion was higher (65%) among participants with post-traumatic stress disorder. Therefore, frequent exposure to road traffic collisions could lead to mental health illness.

Second, paramedics are considered front line emergency responders dealing with trauma cases in unpredictable situations. Anecdotally, the transportation of patients by a bystander or private car is common in Saudi Arabia. This could lead to paramedics only being exposed to the most critical and distressing cases. This has been reported in the U.S., where the characteristics and outcomes of injured patients transported by private, non-commercial means have been compared with EMS attendances. The result showed that responding to injured patients with ISS>15 was higher for EMS personnel compared with those transported by private vehicles. Moreover, EMS patients were more likely to die than patients who were transferred by private transportation, indicating the severity or criticality of their injuries (Johnson et al., 2013).

In this study, falls was a category of the trauma cases that did not achieve the level of consensus by participants. However, a recent systematic review and meta-analysis ex-

amining the prevalence and risk factors of falls in older adults living in the Gulf Cooperation Council countries reported only six studies, and just four of them in Saudi. In addition, the falls rate was significantly increasing and half of older people experienced falling with the majority being female (Alqahtani, Alshehri, Hoover, & Alenazi, 2019). Fall injuries have been considered a leading cause of trauma-related death in developed countries such as the UK and the U.S. Studies showed a high rate of calls and responses to falls by elderly people with a high risk of mortality (Tinetti, Speechley, & Ginter, 1988). Studies from the UK have reported that falls in elderly patients are one of the most common traumatic injuries that lead to death in the prehospital setting (Lawrence et al., 2016; Roberts et al., 2020). Similarly, in the U.S., falls are one of the four major trauma causes related to death in 16.6% of all injury deaths (Murphy, Xu, & Kochanek, 2013). In Saudi Arabia, around 49% of elderly people experience falls resulting in injuries each year. However, it is common for injured patients to arrive at hospital in private transportation (Aljerian et al., 2018; Almegbel et al., 2018). Therefore, Saudi EMS could be less exposed to falls, which could lead to less experience in the circumstances of this event. Furthermore, the lack of research on the response rate for Saudi EMS for falls could be evidence of a lack of exposure and experience of falls.

#### LIMITATIONS

The study had several limitations, including a small sample size with only male participants. The participation rate fell to 70% in the second round. The study was terminated at two rounds to minimise decreasing the rate of response, regardless of the number of times consensus was achieved. Lastly, the results of this study could be enriched with a qualitative study to learn more about the decisions that have been made and the differences in the selection.

#### CONCLUSION AND RECOMMENDATION

This paper aimed to establish consensus on traumatic cases that would cause a substantial anxiety and concern for paramedics in Saudi Arabia. Road traffic collisions were considered by consensus as a trigger for anxiety and concern. While this finding sheds light on a critical aspect of the paramedic profession, it also underscores the need for further research to delve deeper into the implications of such exposure to traumatic incidents. Future studies should aim to comprehensively investigate the long-term psychological and emotional effects on EMS personnel who regularly encounter road traffic collisions, as well as explore potential interventions and strategies to mitigate the associated stress and trauma. By expanding our understanding of the challenges paramedics face, we can develop more effective support systems and training programs to ensure their well-being while they continue to provide life-saving services to the community. This research can ultimately contribute to the enhancement of emergency medical services in Saudi Arabia and globally, thereby improving the overall healthcare system.

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