



Original research

Mass violence paramedicine — a cross-sectional quantitative survey of paramedic attitudes for a sub-specialty

Steven RobertsonEmail srobertson51@bigpond.com**Abstract**

Background The increasing threat of intentional mass violence incidents in Australia necessitates an examination of paramedic preparedness and attitudes towards specialised response.

Aim To explore paramedic perspectives on the development of Mass Violence Paramedicine (MVP) as a sub-specialty and the readiness of ambulance services for mass violence incidents.

Method A 20 question, cross-sectional quantitative online survey was used. It was available from 1 September 2023 to 31 December 2023. Results were reported using the CROSS method. Data was analysed using thematic analysis.

Results Four main themes emerged: (1) Perceived threat and preparedness, (2) Support for specialised training, (3) Challenges in current practice, and (4) Ethical considerations of role expansion.

Conclusion Paramedics generally support the development of MVP as a sub-specialty but express concerns about organisational readiness and the ethical implications of expanded roles in high-risk scenarios.

Keywords mass violence paramedicine, mass violence, high-risk area paramedics.

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Introduction

The landscape of emergency medical services in Australia is evolving in response to the persistent threat of intentional mass violence incidents. With the current Australian terrorism threat level assessed as “probable,”¹ there is a growing need to understand how paramedics perceive their roles, preparedness and challenges in responding to such high-stakes scenarios. This qualitative study aims to delve into the rich, nuanced experiences and attitudes of paramedics across Australia and New Zealand concerning mass violence paramedicine (MVP). By exploring their narratives, we seek to uncover the complex interplay of factors that shape their readiness, concerns and professional identities in the face of potential mass violence events. Our research is guided by the following questions:

1. How do paramedics understand and conceptualise their role in mass violence incidents?
2. What are the lived experiences of paramedics who have been involved in or trained for such events?
3. How do paramedics perceive the current state of preparedness within their organisations for mass violence response?

4. What meaning do paramedics ascribe to the concept of specialised training for mass violence incidents?

Through cross-sectional observational survey, we aim to capture the voices of paramedics from various backgrounds, experience levels and jurisdictions. This approach will allow us to construct a comprehensive picture of the current landscape of MVP from the perspective of those on the front lines. By adopting a qualitative lens, we hope to uncover not just what paramedics think about MVP, but why they hold these views and how their experiences have shaped their perspectives. This understanding is crucial for informing policy, training programs and organisational strategies that resonate with the realities faced by paramedics in their daily practice.² Ultimately, this research seeks to contribute to the emerging field of Counter-Terrorism Medicine⁴ by grounding it in the lived experiences of paramedics, potentially reshaping how we approach mass violence response in the prehospital setting.

Methodology

- Research design: A qualitative descriptive approach
- Participants: Purposive sampling of paramedics from different jurisdictions, experience levels, and roles
- Data collection: A 20 question, cross-sectional qualitative

online survey. Available from 1 September to 31 December 2023. Results reported using the CROSS method. 92 respondents logged into the survey, 87 completed, two did not consent and two did not finish.

- Data analysis: Thematic analysis following Braun and Clarke's³ six-step process
- Ethical considerations: QUT's Office of Research Ethics and Integrity, approval number 4237

Analysis

Data were collated using Qualtrics logarithms.

The null hypothesis (H0) was that participants would recommend maintaining the status quo of staging, non-dedicated paramedics and involving physicians in the prehospital tactical responses.

The alternative hypothesis (Ha) was that participants would recommend focused trained and dedicated high risk paramedics embedded in the police tactical response groups.

The significance level was set at 0.05 and a Z-test was undertaken.

The null hypothesis was rejected.

Limitations

The respondent number was disappointing for the researcher, who estimated a sample size on $n \geq 100$. Lack of respondents from some jurisdictions could be seen as a limitation towards a generalised snapshot of paramedic perceptions.

Online surveys, while convenient and cost-effective, have several potential limitations:⁴

- Limited reach: Online surveys may not reach people in remote areas or those without internet access, potentially excluding older demographics and rural populations.
- Survey fraud: The anonymity of online surveys can lead to dishonest responses or multiple submissions for incentives, skewing results and reducing data reliability.
- Sampling bias: Self-selection and over-representation of certain internet-based populations can lead to sampling errors, affecting the representativeness of the data.
- Technical issues: Problems such as slow internet, device compatibility issues, or website crashes can hinder survey completion and affect participation rates.
- Lack of personal interaction: Without an interviewer present, respondents cannot get immediate clarification on questions, potentially leading to misinterpretations and inaccurate responses.
- Survey fatigue: Frequent exposure to online surveys may cause respondents to lose interest, resulting in incomplete or rushed responses.
- Data quality concerns: Intentional provision of incorrect responses or rushing through the survey can lead to low-quality data.

- Non-response bias: Some participants may leave surveys incomplete or ignore certain sections, disrupting data consistency.
- Limited question types: Web-based surveys often rely on structured formats, which may not capture complex or qualitative insights effectively.
- Security and privacy issues: Online survey data may be vulnerable to hacking or unauthorised access, raising concerns about data protection and participant confidentiality.

These limitations highlight the importance of careful survey design, implementation, and the use of reliable online survey tools to optimise data quality and overcome inherent challenges in conducting surveys online.

Increasing participation in online surveys can be challenging, but several effective strategies can be used to improve response rates.^{6,7} In this survey, all the techniques listed below were applied except the second point: offering incentives.

- Personalise the approach: Attend conferences or training days to promote the survey. This makes the survey feel more relevant and engaging.
- Offer incentives: Providing incentives such as gift cards, discounts, or entry into a prize draw can motivate people to participate.
- Keep it short and simple: Ensure your survey is concise and easy to understand. Long surveys can deter respondents.
- Use clear and concise questions: Avoid jargon and complex language. Make sure your questions are straightforward and easy to answer.
- Promote your survey: Share your survey on social media, email newsletters, and other platforms to reach a wider audience.
- Send reminders: Gentle reminders can help nudge participants who might have forgotten to complete the survey.
- Make it mobile-friendly: Many people use their phones to access surveys, so ensure your survey is optimised for mobile devices.
- Express appreciation: Thank respondents for their time and let them know how their feedback will be used.

Results

Thematic analysis following Braun and Clarke's six-step process

Thematic analysis is a qualitative research method used to identify, analyse and report patterns (themes) within data. Braun and Clarke's six-step process provides a structured approach to conducting thematic analysis.⁷ Below is the application of this process to the provided dataset on paramedics' attitudes and perceptions regarding MVP.

Step 1: Familiarisation with the data

Key Observations:

- The survey results highlight paramedics' concerns about the likelihood of intentional mass violence incidents (MVI) and their organisations' lack of preparedness.
- There was strong support for the development of MVP as a sub-specialty, with a focus on embedding specially trained paramedics within police tactical groups (PTGs).⁹⁻¹²
- Paramedics believe the public expects them to enter active threat zones to provide care, despite the risks.¹³
- There is a notable shift away from the need for physicians in prehospital settings, reflecting growing confidence in paramedics' clinical abilities.¹⁴⁻¹⁷
- The data suggests a need for standardised selection, training and protocols for high-risk area (HRA) paramedics.^{11, 18}

Step 2: Generating initial codes

Initial Codes:

- **Preparedness concerns:** Lack of organisational readiness for MVI, insufficient training, and resources.^{11,18}
- **Public expectations:** Belief that the public expects paramedics to enter active threat zones.
- **Specialist training:** Support for dedicated MVP training and embedding paramedics in PTGs.
- **Role of physicians:** Shift away from physician involvement in prehospital settings.
- **Operational challenges:** Risks to paramedics in high-threat environments, need for situational awareness.
- **Professionalisation of paramedicine:** Growing confidence in paramedics' clinical skills and autonomy.
- **Standardisation:** Calls for standardised protocols, selection processes and training for HRA paramedics.^{11,18}

Step 3: Searching for themes

Potential Themes:

1. Perceived lack of preparedness:

- Concerns about organisational readiness for MVI.
- Insufficient training and resources for high-threat environments.^{19,20}

2. Public expectations and duty of care:

- Belief that the public expects paramedics to enter active threat zones.¹³
- Alignment of paramedics' sense of duty with public expectations.¹³

3. Support for MVP as a sub-specialty:

- Strong endorsement for dedicated MVP training and protocols.^{11,18}
- Advocacy for embedding paramedics in PTGs.^{11 12}

4. Shift away from physician involvement:

- Growing confidence in paramedics' clinical abilities.
- Perception that physicians are not essential in prehospital settings.¹⁷

5. Operational and safety challenges:

- Risks to paramedics in high-threat environments.²¹⁻²³
- Need for situational awareness and tactical training.

6. Standardisation and professionalisation:

- Calls for standardised selection, training and protocols.
- Emphasis on deliberate practice and functional fitness for HRA paramedics.²⁴

Step 4: Reviewing themes

Refined Themes:

1. Organisational preparedness and training:

- Concerns about lack of readiness for MVI.
- Need for specialised training and resources.

2. Public expectations and professional duty:

- Alignment of paramedics' duty with public expectations.
- Willingness to enter high-threat zones despite risks.

3. Development of MVP as a sub-specialty:

- Support for embedding paramedics in PTGs.
- Advocacy for dedicated MVP training and protocols.

4. Operational challenges and safety:

- Risks in high-threat environments.
- Importance of situational awareness and tactical training.

5. Standardisation and professional growth:

- Calls for standardised selection and training processes.^{16,25,26}
- Emphasis on deliberate practice and functional fitness.²⁷

Step 5: Defining and naming themes

Defined themes:

1. Bridging the preparedness gap: Addressing the lack of organisational readiness and training for MVI.

2. Duty in the face of danger: Paramedics' alignment with public expectations and willingness to enter high-threat zones.

3. MVP: A new frontier in paramedicine: Advocacy for MVP as a sub-specialty and integration with PTGs.

4. Navigating high-risk environments: Challenges and safety concerns in high-threat zones.

5. Standardisation and professional excellence: Calls for standardised processes and emphasis on continuous professional development.

Step 6: Producing the report

Report summary:

The thematic analysis reveals that paramedics perceive a significant gap in organisational preparedness for intentional MVI. Despite this, they feel a strong sense of duty to respond to such events, aligning with public expectations. There is widespread support for the development of MVP as a sub-specialty, including the embedding of specially trained paramedics within PTGs. However, operational challenges and safety concerns in high-threat environments highlight the need for standardised training, selection processes and protocols. The data also reflects a shift away from physician involvement in prehospital settings, underscoring the growing confidence in paramedics' clinical abilities. Overall, the findings advocate for a paradigm shift in paramedicine, emphasising the importance of preparedness, professionalisation and collaboration in addressing the evolving threat landscape.

Discussion

The thematic analysis of the survey data on paramedics' attitudes and perceptions regarding MVP reveals several key themes that align with and expand upon existing literature.^{26,28-31} These themes also have significant implications for practice, particularly in the context of emergency response to intentional MVIs. Below is an interpretation of the themes in relation to existing literature and their practical implications.

1. Bridging the preparedness gap

Interpretation:

Theme 1^{14-16, 32-34} highlights paramedics' concerns about the lack of organisational readiness and insufficient training for responding to MVI. This aligns with existing literature that emphasises the importance of preparedness in disaster and mass casualty response.^{19,20} Studies have shown that inadequate training and resources can lead to suboptimal outcomes in high-threat environments.² The findings suggest that current training programs may not adequately prepare paramedics for the unique challenges posed by MVI.

Implications for practice:

- **Enhanced training programs:** Develop specialised training modules for MVP, focusing on high-threat environments, tactical medicine and situational awareness.^{11,12,16,18,25,26,35,36}
- **Resource allocation:** Ensure that ambulance services are equipped with the necessary resources, such as protective gear and medical supplies, to respond effectively to MVI.
- **Regular drills and simulations:** Conduct regular drills and simulations to reinforce training and improve coordination between paramedics and other emergency responders.

2. Duty in the face of danger

Interpretation:

Theme 2 reflects paramedics' strong sense of duty and alignment with public expectations to enter active threat zones. This is consistent with literature that discusses the ethical and professional obligations of healthcare providers in disaster situations.^{37,38} However, it also raises concerns about the safety and well-being of paramedics, as entering high-threat zones without adequate protection and training can lead to increased risks.

Implications for practice:

- **Safety protocols:** Establish clear safety protocols for paramedics entering high-threat zones, including risk assessment and mitigation strategies.
- **Psychological support:** Provide psychological support and counselling services to paramedics who may experience trauma or stress from responding to MVI.
- **Public awareness campaigns:** Educate the public about the risks and challenges faced by paramedics in high-threat environments to foster realistic expectations.

3. MVP: A new frontier in paramedicine

Interpretation:

Theme 3 underscores the strong support for developing MVP as a sub-specialty and embedding paramedics within PTGs. This aligns with emerging literature on the benefits of integrating medical personnel into tactical teams to improve casualty care in high-threat environments.^{26,28-31} The findings suggest that such integration can enhance the effectiveness of emergency response to MVI.

Implications for practice:

- **Specialised training for PTG paramedics:** Develop specialised training programs for paramedics embedded in PTGs, focusing on tactical medicine, casualty evacuation and coordination with law enforcement.
- **Interagency collaboration:** Foster collaboration between ambulance services and law enforcement agencies to ensure seamless integration of paramedics into PTGs.^{11,12}
- **Standardised protocols:** Establish standardised protocols for MVP, including guidelines for casualty care, communication, and operational procedures in high-threat environments.

4. Navigating high-risk environments

Interpretation:

Theme 4 highlights the operational challenges and safety concerns faced by paramedics in high-threat zones. This is

consistent with literature that identifies situational awareness, risk assessment and tactical training as critical components of effective response in high-threat environments.^{11,12,16,18,25,26,35,36} The findings suggest that current practices may not adequately address these challenges.

Implications for practice:

- **Tactical training:** Incorporate tactical training into MVP programs to enhance paramedics' situational awareness and ability to operate in high-threat environments.¹²
- **Risk assessment tools:** Develop and implement risk assessment tools to help paramedics evaluate and mitigate risks in real-time during MVI.
- **Protective equipment:** Ensure that paramedics have access to advanced protective equipment, such as ballistic vests and helmets, to enhance their safety in high-threat zones.

5. Standardisation and professional excellence

Interpretation:

Theme 5 emphasises the need for standardised selection, training, and protocols for HRA paramedics. This aligns with literature that advocates for the professionalisation of paramedicine and the establishment of standardised practices to improve outcomes in emergency response. The findings suggest that current practices may lack consistency and rigor, particularly in the selection and training of HRA paramedics.

Implications for practice:

- **Standardised selection processes:** Develop standardised selection criteria for HRA paramedics, focusing on personal traits, experience and functional fitness.^{20,21,36,39,40}
- **Continuous professional development:** Implement continuous professional development programs for HRA paramedics, emphasising deliberate practice and skill refinement.
- **Evidence-based protocols:** Establish evidence-based protocols for MVP, informed by the latest research and best practices in tactical medicine and emergency response.

Conclusion

The thematic analysis of the survey data reveals significant gaps in organisational preparedness, training and standardisation for responding to intentional mass violence incidents (MVI). However, it also highlights strong support for the development of mass violence paramedicine (MVP) as a sub-specialty and the integration of paramedics into police tactical groups (PTGs). The findings underscore the need for enhanced training, standardised protocols, and interagency collaboration to improve the effectiveness and safety of emergency response in high-threat environments.

By addressing these themes and implementing the recommended practices, ambulance services can better prepare for and respond to MVI, ultimately improving outcomes for both paramedics and victims. The findings also advocate for a paradigm shift in paramedicine, emphasising the importance of preparedness, professionalisation and collaboration in addressing the evolving threat landscape.

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Disclaimer

The opinions or assertions contained herein are the private ones of the author and are not to be construed as official or reflecting the views of any other person, organisation, service or institute.

Conflict of interest

The author declares no conflicts of interest.

Ethical approval

Ethical approval obtained from QUT's Office of Research Ethics and Integrity - approval number 4237, granted 1 September 2023.

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Appendix

[Click here](#) to download Appendix 1

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