Paramedics' perceptions of risk and willingness to work during disasters

Smith, Morgans, Qureshi, Archer, and Burkle Jr argue that ambulance services may not have an adequate supply of paramedics during disasters.

Abstract

Paramedics, as emergency healthcare workers and 'frontline' responders, are expected to be both willing and able to respond when disaster strikes. In reality, paramedics may be reluctant to work when the situation poses a possible threat to their own safety, their co-workers, or that of their families. Consequently, can ambulance services expect to have an adequate supply of paramedics that will be willing to work during disasters? Through the use of paramedic focus groups, this study demonstrates that ambulance services should not assume that all paramedics will be willing to report to work during disasters. This willingness to work is directly influenced by paramedics' perceptions of risk, as well as the type, duration, location, and visibility of the disaster. The impact of this should be considered in emergency preparedness and planning.

Introduction

When major emergencies and disasters occur, employers, emergency planners, and even the public may assume that paramedics will be willing to work. In reality however, paramedics may be reluctant to work when the situation poses a possible threat to their own health and safety, or that of their co-workers and families. Such reluctance could be detrimental to the ability of the health care system to cope with the surge of demand on resources that is synonymous with major emergencies and disasters (Chua 2004, Verma 2004, Koh 2005), placing further stress on an already overcrowded and stretched emergency health care system. This issue is of particular concern in highly populated urban areas, particularly during health-related and non-conventional disasters, as the density of the population may encourage the rapid spread of infection or contamination in the event of health disasters and chemical, biological, radiological, and nuclear (CBRN) events . A ready and willing prehospital workforce will be a vital component of any strategy designed to protect the health and well-being, and ultimate survivability, of the community following a disaster. Given the importance of having a willing prehospital workforce during disasters, coupled with our current lack of understanding regarding this willingness to work, this study was designed to investigate how paramedic's perceive the risks involved with working during a disaster, and ultimately, whether this risk perception impacts on their subsequent willingness to work during these events. The findings of this research will provide emergency planners with a key insight into what concerns paramedics have in regards to responding to disasters, and how these concerns can be addressed prior to a disaster occurring on our soil.

Background

Reports from the US, Canada, Asia, Israel, Germany, and Australia highlight that during conventional and non-conventional disasters (such as hurricanes, outbreaks of infectious disease, warfare and terrorism) emergency health care workers will not always be willing to report to work. A study of Israeli health care workers reported that 58% of respondents were not willing to report to work during a non-conventional missile attack (Shapira 1991). A Hawaiian study which examined the willingness of doctors and nurses to work in field hospitals during mass casualty events identified that respondents were more likely to be willing to work during natural disasters, with willingness influenced by perception of risk, perceived knowledge, and self-perceived ability to provide the type of care required (Lanzilotti 2002).

A number of studies have been conducted in New York following the September 11th terrorist attacks and the subsequent anthrax outbreak. These studies investigated the ability and willingness of emergency health care workers to respond to work during catastrophic disasters and terrorist related events. Barriers to being willing and able to work during these events included childcare, eldercare, transportation, personal and family health concerns, and compensation (Qureshi 2002, Qureshi 2005), fears for personal and family

safety (DiMaggio 2005), perception of inadequate or too little training and education, and the lack of necessary equipment to respond to large scale events (Reilly 2007). Furthermore, emergency health care providers report a decreased willingness to work during a prolonged disaster situation, and at no time will 100% of all personnel rostered to work actually report for duty (Syrett 2007).

During the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, infectiousness of SARS was substantially higher among health care workers than the general population, especially those working in hospitals and prehospital care (Maunder 2004). Indeed, during the outbreak, Toronto suffered significant personnel and logistical problems in providing prehospital services to patients during the outbreak (Maguire 2007). Approximately half of Toronto's prehospital personnel were exposed to the disease, and many workers needed to be quarantined (Silverman 2004). Emergency health care workers believed that they were at high risk of becoming infected, with some refusing to care for the ill, and imposing self-quarantine on themselves to protect family members from potential exposure (Chua 2003, Koh 2005, Stein 2004).

A German study (Ehrenstein 2006) investigated ethical issues involved with the management of patients during an influenza pandemic. Of the 644 respondents in this study, 182 (28%) reported that it would be professionally acceptable for health care workers to abandon their workplace during a pandemic in order to protect themselves and their families. However, 52% did not find this ideology acceptable. Of interest, only a minority (32%) of hospital administration staff reported a willingness to work during an influenza pandemic while a greater number of health care providers (65% of doctors and 54% of nurses) reported an self perceived obligation to treat patients during a health disaster.

Most recently, two studies presented at the 2007 Society for Academic Emergency Medicine Annual Meeting in the United States examined the psychological barriers that may keep emergency health care workers from reporting to work during a disaster (Irvin 2007, Kruss 2007). These studies identified that healthcare workers would be more likely to report to work if they felt their role was important and that they could be effective in doing their job. 'Workers want to know that the role they play will be meaningful, and, if they put themselves out there for the benefit of others, their institution will in turn be taking care of them and their families' (Kruss 2007). Other factors that were found to impact on willingness to work included; a belief that the workplace was safe, that travelling to work will be safe, the perceived likelihood of contracting illness and exposing family members would be low, and confidence in the protective personal equipment (PPE) provided (Irvin 2007, Kruss 2007).

Nationally, a 2007 study investigated Australian paramedic's perception of risk in relation to pandemic influenza (Watt 2007, Tippett 2007). The findings of this study indicate that higher levels of perceived risk were directly associated with decreased confidence in both PPE, and strategies for protection from exposure. Of interest, 94% of the 725 respondents reported that they would want to know if a work colleague had been exposed to a known case of pandemic influenza illness, with 70% reporting that they would be concerned about working with them, and 40% reporting that the would refuse to work with them (Watt 2007, Tippett 2007). When discussing issues surrounding voluntary and enforced quarantine during a pandemic, 74% of respondents reported that their family would not be happy with the concept of 'home quarantine'. Study respondents reported that suitable support systems during a pandemic would include; subsidised vaccinations, frequent communications, financial support, quarantine away from the home, and counselling support for family members (Watt 2007, Tippett 2007).

With risk of injury, infection, illness, and contamination being inherent in the provision of emergency health care, paramedics need to find a balance between concerns for their own safety and the safety of their colleagues and family, and their duty to respond to work during a disaster situation (Singer 2003). Finding this 'balance' will depend largely on the way that paramedics perceive the risks involved with responding during disasters, and how these perceptions shape the subsequent risk assessments they make when deciding if they are willing to work or not. This research moves towards identifying how paramedics find this balance, by way of investigating how they perceive the risks involved with disaster response, and their willingness to work during such events.

Methods

A total of 58 Victorian paramedics participated in this study (55 attended focus groups and 3 were interviewed individually). A total of twelve focus groups were conducted throughout the state of Victoria during 2006 and 2007. Ethics and Research Approval were sought and obtained from the relevant committees, and no identifying information was recorded for any participant. A plain language statement explaining the project was made available and informed consent was given by each study participant. Two facilitators were present at each focus group. One facilitator conducted the interviews. Each focus group was attended by 3-8 paramedics and was 90 minutes in duration. The format, use of semi-structured questions, and the use of scenarios, were developed according to qualitative research guidelines (Bender 1994).

The focus groups and interviews were facilitated by the use of three scenarios:

Scenario One

A high speed passenger train had derailed in a major urban region. The derailment had associated traffic, structural, fuel, and fire hazards. An estimated 20-100 people will need treatment and transport.

Scenario Two

An explosion, with suspected chemical, biological, and radiological (CBR) involvement, and fire hazards, at the second largest building in the Central Business District (CBD). Initial reports indicate that this may be a series of bombings, and is potentially a terrorist attack. An estimated 15,000-20,000 people were in the building at the time of the explosion.

Scenario Three

A two part, escalating scenario that required participants to indicate their perceived risks and willingness to work at critical time points. This scenario involved cases of human-human transmitted Avian Influenza in Victoria, Australia, and escalated through suspected cased to confirmed cases.
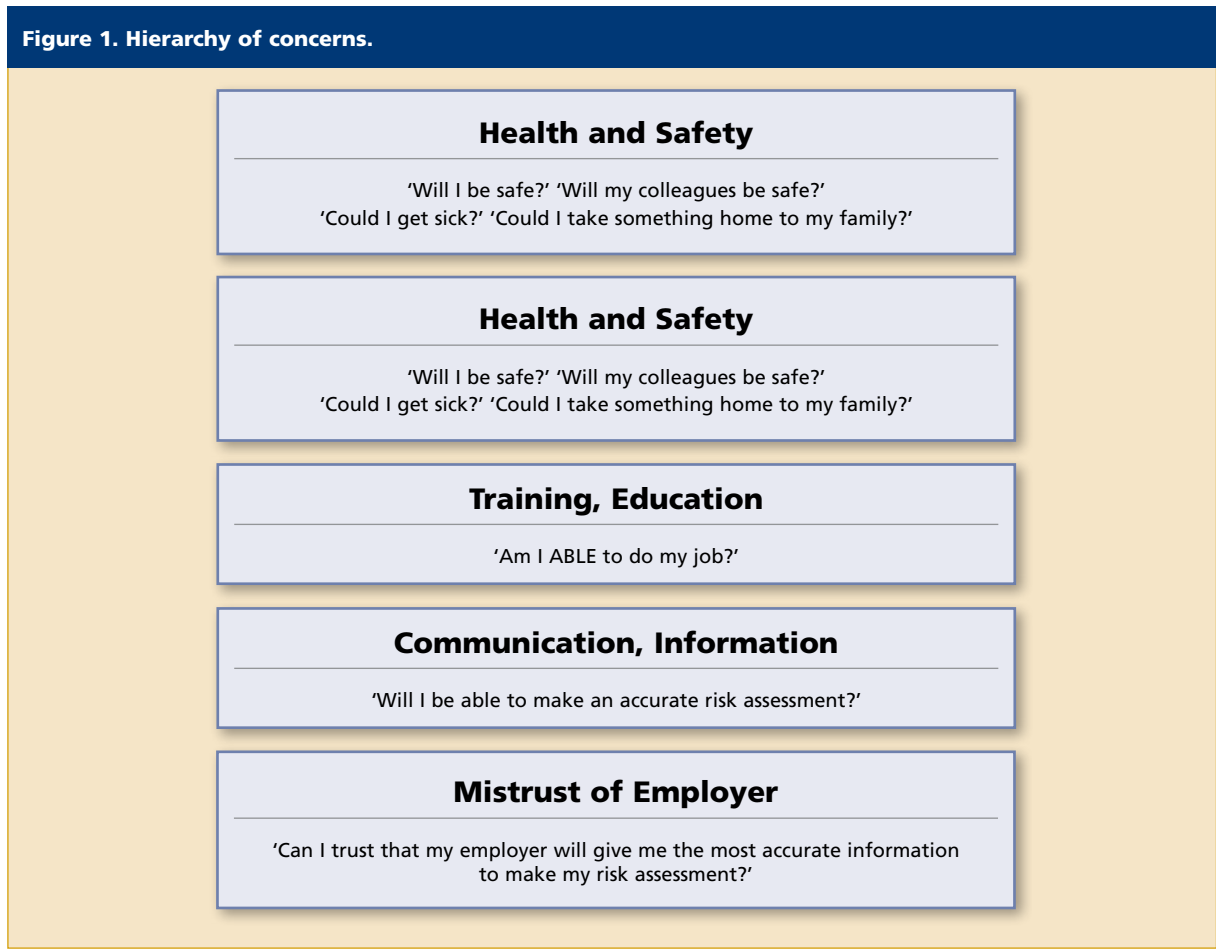
The focus groups and interviews were audio-taped and transcribed, with each transcription reviewed by the principal investigator and members of the research team for accuracy. Each focus group and interview transcript was examined for emergent themes. Thematic analysis was conducted manually by members of the research team. Individual themes were identified by reviewing the text of each transcript. The individual themes highlighted were then compared to identify recurring and salient issues across the focus groups and interviews.

Results and discussion

Analysis of the transcripts of these focus groups and interviews identified two primary streams of discussion, one exploring the key **risks** perceived with disaster response, and the second exploring the primary **concerns** paramedics have in being asked to respond to disaster situations.

Perceived risk

Analysis of the discussions relevant to each disaster scenario highlighted a number of key perceived risks associated with the **type** of disaster situation involved. Essentially, the way that paramedics perceived risk was directly influenced by the type of disaster, and the potential for that disaster to impact on their family.

Figure 1. Hierarchy of concerns.

Health and Safety

'Will I be safe?' 'Will my colleagues be safe?'
'Could I get sick?' 'Could I take something home to my family?'

Health and Safety

'Will I be safe?' 'Will my colleagues be safe?'
'Could I get sick?' 'Could I take something home to my family?'

Training, Education

'Am I ABLE to do my job?'

Communication, Information

'Will I be able to make an accurate risk assessment?'

Mistrust of Employer

'Can I trust that my employer will give me the most accurate information to make my risk assessment?'

Threats to the health, wellbeing, and safety of self, colleagues, and family were often expressed as risk of **injury, death, exposure, infection**, and **illness**. Risk of injury was primarily related to conventional disaster scenarios (that did not involve health related or CBRN issues) **'I could get hurt'**, **'My partner could get hurt'**, **'This scene may not be safe'**. In contrast, discussion of non-conventional disasters identified perceived risk of exposure, infection, illness, and death **'I could get sick'**, **'I could take this home with me'**, **'My family could get sick'**. Of note, none of the study participants reported death as a risk associated with responding to conventional disasters . However, death was a risk associated with responding to non-conventional disasters (health related disasters or disasters involving some aspect of CBRN) **'We do not know what we are dealing with… I could die'**.

Primary concerns

Throughout the discussions of paramedics' risk perception during disasters, a 'hierarchy of concerns' emerged, highlighting a recurring set of themes (Figure 1.)

The first theme or 'concern' raised in all scenarios was the issue of personal health and safety. Threats to health and wellbeing of self, colleagues, and family (in terms of potential injury, exposure, infection, illness, and death) were the most frequently reported perceived risks of disaster response.

'…I mean, you have to look after number one, so yeah, I am definitely going to be worried about how safe the scene is…'

'Paramedic safety is constantly threatened by inadequate training for these kinds of events, and inadequate equipment to deal with them…makes you wonder what the point is when you think about the futility of the task …'

Discussion of health and safety concerns was often followed with a discussion of 'responsibility' and 'duty of care'. While many paramedic's perceived their health and safety to be primary concerns when responding to a disaster or mass casualty event, these concerns were often reported to be negated by their desire to fulfil their professional responsibilities.

'It's my job…'

'Yeah I would go, I mean, that's why I wear this uniform…'

'This uniform and this job comes with a responsibility to turn up…'

'That is what we are trained for, why put on the uniform if you are not prepared to take the good jobs with the bad..'

Paramedic's often reported the need for improved disaster-focused education and training. A reoccurring theme was the reported feeling of inadequate and infrequent training in Personal Protective Equipment (PPE) in mass casualty response, specifically, for potential Chemical, Biological, Radiological, and Nuclear (CBRN) events.

'If we had better, and more frequent training for the CBRN and unknown stuff, then I would be happier to turn up to work if something happened…'

'I just don't think we have enough training, or PPE, for this stuff, I would definitely feel better about going in if we were better resourced…'

'What's the point of only training a small core group of paramedics to deal with this stuff, I mean, if something like that actually happened, we would all be expected to turn up, not just the boys with the proper suits and training…'

Improved communication strategies were of paramount concern to paramedics.

'Without decent communications and information, we are flying blind…'

'I would feel more willing to work during a disaster if the service was up front about what they know and what they don't know…'

'Let's face it, most of your risk assessment is going to happen before you get to the job, and that is where you need sufficient communication… to help us make decisions…'

'Communication during a disaster will be vital, we will need the most accurate information available, and we will need it as soon as it comes to hand…'

Another common theme expressed across all disaster scenarios was the need for current and reliable information.

'I want enough information, and it needs to come from the services quickly, so that I can look after number one…'

'I would expect information coming from the services to be wrong, I would expect it to be slow coming…but in the end, I will rely on that information until I get to the scene and can see for myself…'

'I think it's always safe to assume that nearly everything that you're told is likely to be wrong…and let's face it, in the early stages of something like this, no one will have a clear picture of what is going on…'

'There will be a lot of speculation, and the more that information is transmitted, and re-transmitted, the more incorrect it becomes…the services need to provide us with reliable information so we know what we are getting ourselves into…'

Paramedics also reported several other 'barriers' to being willing to work during disasters. These included access to childcare and eldercare, and the ability to communicate with family members whilst responding to the disasters.

'I would want to be there and I would want to help, but my wife is a nurse, and we have two little kids at home, so which one of us has to stay home and not turn up to work? If the service has pre-set childcare structures in place, it would make it easier for my wife and I to say, ok, we will drop the kids off at such and such a place, and we will know they will be safe, and we can both go to work. I don't think the services have thought about that'

'It's not only childcare that is the problem, I have my mother living at home with us, I would need to know that she was safe and cared for before I could respond to a disaster scene, especially one that could potentially be ongoing, like 9/11'

The need to be able to communicate with family members during a disaster was a strong theme. Paramedics consistently reported the need for pre-designated communication channels and strategies for them to be able to contact their loved ones, and also for their loved ones to be able to get current information as the disaster or event unfolds.

'I need to know that I can contact my family if I need to, and that they can find out what is going on...'

'Look at 9/11 and London, the families were watching everything on tv and knew how bad things were, but when they rang the stations, no one was answering, and comms couldn't tell them anything, and with the phone systems down, you didn't know what was going on…'

Paramedics frequently reported that they would not trust the ambulance services to provide them with current and accurate information during a disaster, and that the information provided to them when responding to large-scale events would be incorrect or misleading. The issue of mistrust was particularly dominant in the discussions of avian influenza and potential emerging infectious diseases, with paramedics reporting they would seek information from outside of the ambulance services before making their personal risk assessments.

'How can we do our jobs safely when we cant even rely on the services giving us correct, up to date information… you basically get no information, in fact, it is more likely to be misleading…'

'I think most ambo's are quite cynical about the services, we don't feel like they will be looking after our welfare, there will definitely be a lack of information… I mean, we know they have information now on bird flu, but it isn't filtering through to the troops on the ground…'

There were differences in perception of risk and willingness to work for conventional and non-conventional disasters. Perception of risk for conventional disasters focused largely on safety, whereas threats to health and wellbeing of self and family (exposure, infection, and illness) were the most frequently reported perceived risks of responding to non-conventional disasters. Paramedics were more willing to work during conventional disasters (**'It's my job'**, **'It's my responsibility'**) than during non-conventional disasters (**'I could get sick'**, **'My family could get sick'**, **'I could take something home with me'**).

Paramedics reported that conventional disasters tend to be more localised (in time and place) and visible (being able to see what is happening), making it easier for paramedics to conduct a personal risk assessment about responding to the disaster. When a disaster is not visible or localised the perception of risk increases, due in part to the difficulty in accurately assessing the risks involved with responding to the event. This increased perception of risk then corresponds with paramedics reporting a decreased willingness to work.

The duration of a disaster also impacted on perception of risk and willingness to work. Perception of risk increased the longer that a disaster situation lasted for, resulting in fewer paramedics reporting willingness to work as disasters develop. This theme was particularly evident during discussions of non-conventional disasters, where paramedics reported that they would become less willing to work as the disaster developed, especially if the agent or illness had not been identified, along with appropriate treatment and vaccination options being made available.

While the majority of study participants indicated that they would be willing to work during conventional disasters, this willingness decreased when the situation became non-conventional and less visible. The primary reason reported for this decreased willingness to work was the "unknown" aspect of non-conventional disasters. You can **see** a derailed train. You can **see** a building on fire. You can't **see** a biological agent. You cannot **see** infection. Non-conventional disasters were also perceived to be less localised (in both time and space). The longer an event lasts for, the fewer staff that will be willing to work.

Non-conventional disasters also have a larger impact on the family of the paramedic, with some paramedics reporting they would self-impose quarantine if they were required to work during a health related or non-conventional disaster. Once the issues of exposure, illness, and infection enter into the personal risk assessment paramedics make each time they enter a scene, the more difficult that risk assessment will be. In addition, paramedics with families have to expand their personal risk assessment to think of the impact on their families, and the possibility that they may '**bring something home with them**'.

These issues need to be addressed at the training and education level, and also at the emergency service management level. Many of the barriers to being willing to work raised by study participants are amenable to intervention. Specifically, issues such as childcare, eldercare, transport, risk communication strategies, and communication with family members are issues that emergency services can address today.

Conclusion

This study demonstrates that ambulance services should not assume that all paramedics will be willing to report to work during disasters. The primary risks highlighted were **injury, exposure, infection, illness, and death**. The key concerns paramedics had related to **health and safety, communication issues**, the need for **accurate and timely information**, and the need for suitable **training and education**. Paramedic's often reported a difficulty in finding a balance between **safety** and **duty of care**, and a **mistrust** of ambulance services management. Study participants were more willing to work during conventional disasters '**It's my job**', '**It's my responsibility**' than during non-conventional disasters '**I could get sick**', '**My family could get sick**', '**I could take something home with me**', with factors such as **visibility, localisation** and **duration** influencing willingness to work.

Of importance to emergency planners, a large majority of study participants reported that their willingness to work during bio-events and non-conventional disasters would increase if they were provided with adequate '**safety measures**', and '**protective equipment**' and '**training**'. Emergency planners should also take note of another recurring theme in the results from these studies – the impact of **childcare**, and **eldercare** obligations. The need for emergency health care workers to provide care and reassurance to family members needs to be recognised and addressed in emergency preparedness plans.

The inability to fulfil these obligations may have a profound influence on willingness to report to work. These findings are important as they provide emergency planners with an insight into the key risks and concerns that need to be targeted in future disaster preparedness plans, and specifically, for targeted education and training programs in the future.

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