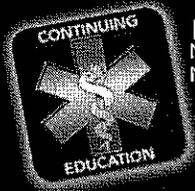


HB 5912

Good afternoon my name is Shawn A. McKay and I am a paramedic and educator. I would like to quickly talk about the proposed bill 8. H.B. No. 5912 AN ACT CONCERNING TRAINING IN MENTAL HEALTH FIRST AID FOR EMERGENCY MEDICAL SERVICES PERSONNEL. The need for education of EMS personnel in the mental health of themselves and their patients is very important. EMS is a profession where you can see people at their worst and in the worst conditions. The repeated views of the sick and dying not to mention those that abuse the system is very taxing on a mind. In a study ( which I have attached here in) on EMS personnel in Hawaii it was determined that of the respondents 4% of respondents met clinical diagnostic criteria for PTSD, 1% met subclinical criteria for PTSD, This is a large issue in EMS. Recently in Canada over 20 first responder personnel have committed suicide in the past year. Mental issues are growing and the need to educate EMS personnel on what to look for and how to seek treatment is a priority that must be dealt with right away. I have seen to many of my fellow workers suffer from stress from the job. I too in my 33 years of service have also suffered. I can remember 30 years later the hand of a 15 year old I pulled out of car who later died, not to mention many other ghosts that haunt the shadows of my mind. The need for education and enlightenment is real and we must do all that we can to help the EMS personnel of this state. I have been studying PTSD in EMS for some time know and if there is anything I can help with issue please contact me. I will also attach several articles for you to review on stress in EMS. I thank you for your time.

Shawn A. McKay MA



| By Kevin T. Collopy, BA, FP-C, CCEMT-P,  
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# Are YOU UNDER STRESS IN EMS?

## Understanding the slippery slope of burnout and PTSD

**M**any people, particularly those in the emergency and medical fields, go through emotional turmoil. In our careers in EMS we've had coworkers commit suicide and several partners with depression and alcohol abuse problems. In Melbourne, Australia over 36% of paramedics suffer some form of depression.<sup>1</sup> In the United States, the Chicago Fire Department experienced seven suicides in an 18-month period between 2007 and 2008.<sup>2</sup>

EMS workers are subject to the high use of 9-1-1 systems and relatively frequent exposure to stressful situations, such as abuse cases,

assaults, motor vehicle crashes, deaths, etc. All of this places providers, who otherwise have no training on how to personally deal with emotional stress, at high risk for emotional unrest and exhaustion. Without intervention, mental and emotional fatigue can rapidly lead to burnout in a provider.

### What Is Burnout?

Burnout is typically described as an individual's pattern of negative affective responses that further reduces his or her own job satisfaction, productivity and job performance and is known to increase absenteeism and turnover.<sup>3</sup> It may also be an indicator of a more serious problem: post-traumatic stress disorder (PTSD).

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#### OBJECTIVES

- Introduce and describe burnout.
- Define and explore the clinical symptoms and diagnostic criteria for post-traumatic stress disorder.
- Discuss strategies for improving mental health and improving individual coping mechanisms.

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Burnout, which is essentially the presence of a constant negative attitude toward any aspect of an individual's work, goes through three phases: emotional exhaustion, depersonalization and losing one's sense of personal accomplishment.<sup>3</sup>

There are many symptoms of emotional exhaustion, including a negative attitude, physical exhaustion, feeling "drained" and lacking the desire to interact with others. However, it can be best described as the provider who seems to have lost his or her sympathy and empathy for their patients.

When someone is depersonalizing in EMS, they speak negatively about their patients and belittle their own work. These attitudes are a coping mechanism intended to justify feelings that the affected patients are "less human" or "more deserving" of negative experiences, so no empathy for them is needed. A very dark example of this is thinking that someone, "got what they deserved."

The last phase of burnout, loss of personal accomplishment, occurs when the provider with burnout gets only a reduced satisfaction, or no satisfaction out of their job.<sup>3</sup>

Burnout occurs for many reasons. In EMS burnout is attributed to: high call

volumes—particularly with low-acuity patients; organizational limitations; limited medical scope of practice; and lack of rewards. Additionally, poor support and poor communication from leadership is known to further exacerbate burnout.<sup>3</sup> One study found the top causes of emergency services burnout are:

- Abuse of the 9-1-1 system.
- Extensive time shift length.
- Extended length of services.
- High call volume.
- Sleep deprivation.
- Lack of administrative support.<sup>3</sup>

### Post-Traumatic Stress Disorder (PTSD)

One of the most stressful and emotionally draining experiences for anyone, regardless of their education or training, is an event which puts them at risk for serious injury and or death. Recent studies have put the current annual fatality rate for paramedics at 12.7 per 100,000 paramedics, compared to 5.0 per 100,000 for the general American population.<sup>3</sup> Paramedics have more than double the annual fatality rate of the general U.S. population. Why? Well, because the very nature of EMS—driving with lights and

sirens at high speeds, or working in a helicopter above the ground—puts all EMS workers at increased risk for injury, and with it, heightening the potential for PTSD.

PTSD is an anxiety-type disorder occurring after a traumatic experience involving the threat of, or actual, injury or death.<sup>4</sup> PTSD was first listed and identified as a psychological disease in 1980 in the third edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-III)*,<sup>5</sup> and is considered a disease whose victims strive to prevent thoughts, feelings, situations and activities that remind them of some shocking or painful experience that occurred in their past.<sup>6</sup>

A PTSD triggering event is described as severe enough to be distressing to the majority of the population and also must cause outward psychological symptoms outside the range of normal human experiences.<sup>7</sup> This stressor could be a variety of events such as the death of a young child, loss of a home due to disaster or witnessing a murder; the specific type of stressor is not nearly as important as its length and the longer an individual suffers from the stressor the more severe PTSD tends to become.<sup>7</sup>

For EMS providers, this can also include

### The Connection Between Warfare and PTSD

One of the largest influences for the identification of PTSD was the overwhelming number of Vietnam War veterans who found enormous difficulty returning to civilian life following the war. Psychiatrists estimate several hundred thousand of the 3.5 million U.S. Vietnam veterans suffer from PTSD.<sup>6</sup>

With the advent of diagnoses for PTSD, many previously overlooked war-related mental disorders suddenly became clearer. Shell shock, the World War I disorder named for the supposed effect of bombs passing over entrenched soldiers that caused roughly 40% of soldiers "to go mad," had strikingly similar characteristics to PTSD: anxiety, depression, increased startle reaction, memory loss, insomnia and heightened fears.<sup>5</sup> Chronic fatigue syndrome, also known as battle fatigue (WWI), characterized by debilitating tiredness and exhaustion,<sup>6</sup> as well as neurosis (war neurosis), the most antiquated version of the summation

of war-related mental disorders caused by wartime experiences (used as a general term among military physicians throughout the 1900s),<sup>6</sup> both had symptoms identical to PTSD. A trend can clearly be seen in the wars, and general military engagements, prior to the Vietnam War; and this trend has been reinforced by the identification, and listing, of all these terms—shell shock, battle fatigue, chronic fatigue, war neurosis—as synonyms with PTSD.<sup>6</sup>

Retrospective analyses of 20th century wars demonstrate strong evidence that the veterans of these conflicts suffered from PTSD; yet at the same time, it is also evident not all war veterans, not even a majority, have suffered from the disease. Many psychologists who study the disease argue this is because the stressors that cause PTSD are usually unexpected (such as a rape or a family

member's murder); however, soldiers are trained to expect and cause violence.<sup>6</sup> This is where EMS comes back into the picture. While most EMS providers never have been or will be on the front lines of a war, every single EMS provider has the potential to be exposed to unexpected and unexplainable terrible accidents and events. Worse, there is no warning for when these events might occur, and scant training on how to manage the emotional stress of responding to such an event.



Photo by Sgt. Will Hill

a violent vehicle accident, an assault with a deadly weapon, an attack on a provider or an ambulance accident. In recent years, PTSD has developed in individuals experiencing short-term major events, such as a severe flood, fire, earthquake or tornado, and also events such as assault, abuse, rape and major personal injury.<sup>4</sup>

The *DSM-IV* lists a wide variety of symptoms. Symptoms can appear immediately following the event, but also may not surface for years. The potential for a delay in presentation makes sense when the variety of events that can cause PTSD to occur are considered. After a stressor has occurred, four broad categories of symptoms may develop reflecting the disease: diminished responsiveness, dissociative states, aggression changes and persistent increased arousal. An individual with diminished responsiveness, or psychic numbing, may begin to demonstrate this shortly after the event has occurred, and will appear detached socially. Overly subdued compared to their normal behavior, they may become disinterested in activities normally well enjoyed, or may demonstrate a lost ability to be intimate or close to loved ones. While rare, dissociative states occur when a patient behaves as if the event is occurring once again and can last from seconds to days. In comparison to burnout, these symptoms may appear quite similar to emotional exhaustion.

On the other side of the spectrum for these more depressed states are those patients who become aggressive or appear persistently aroused. These patients may develop insomnia, become hypervigilant, have an increased startle response

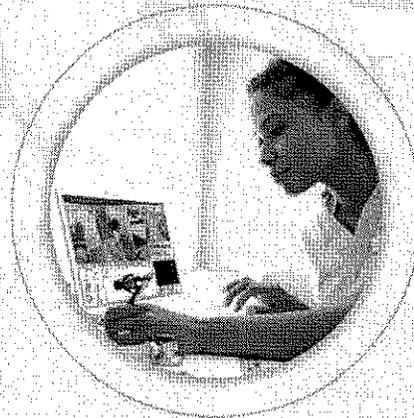
(e.g., to anything sounding like a gunshot, such as a popping paper bag), and typically have difficulty concentrating and completing even simple tasks. Commonly, victims of PTSD have some sort of aggression change. These aggressive changes range from mild (e.g., increased irritability) to severe (acts of violence). The latter is

especially common among war veterans, where their fear becomes pervasive and often leads to unpredictable explosions of anger.<sup>7</sup>

A multitude of associated signs and symptoms, and related diseases, can coexist with PTSD, and according to the *DSM-IV* should be considered additional

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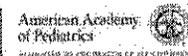
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diagnoses.<sup>7</sup> These other disorders range from anxiety and depression to substance abuse, as well as becoming completely impaired by, or afraid of, nearly every aspect of one's life.<sup>7</sup> Patients may also have very mild experiences and only complain of a decreased sensation of emotions and loss of the ability to express themselves.<sup>6</sup> These quite dramatic differences in symptoms may appear extremely vague and broad;

however, understanding them is necessary before beginning to evaluate someone.

Patients are diagnosed with PTSD when they:

- 1) have experienced an extreme stressor;
- 2) reexperience the event in some way;
- 3) demonstrate an avoidance of stimuli or have a decreased general responsiveness;

4) have some sort of persistent arousal; and

5) these symptoms persist for at least 6 months.<sup>7</sup>

## Relating PTSD to EMS

We've known for years that EMS providers are at high risk for developing PTSD. Unfortunately, next to nothing has been done about it.

A 1997 study of New York City EMS providers discovered 9.3% had all of the clinical *DSM-III* criteria for PTSD, while another 10% met the criteria, though symptoms had not yet persisted for 30 days.<sup>8</sup> That means nearly 20% of the EMS workforce experienced PTSD.

"Work-Related Stress and Posttraumatic Stress in Emergency Medical Services" was released in spring 2012 and looked for evidence of post-traumatic stress in EMS workers, while also trying to identify specific stressors. By surveying more than 1,600 EMTs and paramedics, the author sought to identify organizational and operational stress, critical incident stress, and excessive alcohol use. This survey discovered 100% of respondents reported exposure to traumatic events and there was a strong link between high levels of chronic and critical incident stress and PTSD and alcohol use.<sup>9</sup>

For EMS providers, chronic stress is considered the "relatively enduring problems, conflicts and threats that many people face in their daily lives."<sup>9</sup> Chronic EMS stress is associated with:

- Conflict with supervisors.
- Lack of support.
- A competitive environment.
- Low pay.<sup>9</sup>

Chronic stress is exacerbated by long work hours and lack of sleep. Studies demonstrated many providers work in excess of 50 hours per week and 72% of EMS providers are poor sleepers.<sup>1</sup> In contrast to chronic stress, critical incident stress is associated with patient care and is defined as "any situation faced by emergency services personnel that causes them to experience unusually strong emotional reactions, which have the potential to interfere with their ability to function

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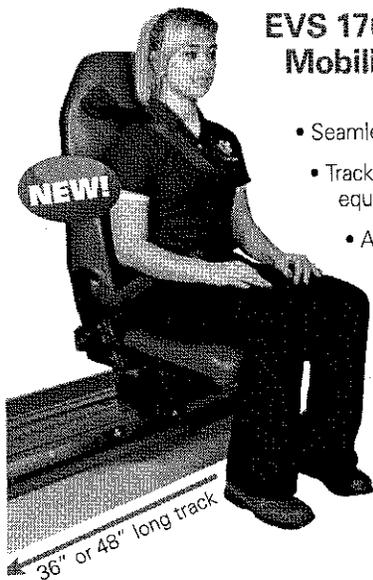
either at the scene or later.<sup>9</sup>

EMS workers are also prone to exposure to personally disturbing incidents (PDIs). PDIs are events sufficiently disturbing that they overwhelm and/or threaten an individual's normal coping methods and are known to trigger PTSD.<sup>10</sup> Research by Mark Holland, PhD, found 29% of

surveyed EMS providers had symptoms of traumatic stress disorders. Other research has demonstrated EMTs underreport symptoms of distress, suggesting PTSD may be more prevalent than studies have shown.<sup>9</sup> This is supported by research done on the Chicago Fire Department, which found while the national average for suicides

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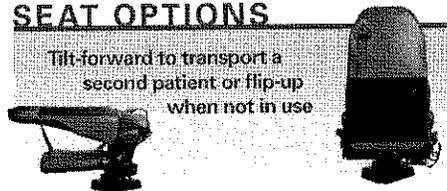
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### Symptoms of PTSD<sup>4</sup>

#### Reliving the Event

- Flashbacks
- Upsetting memories
- Nightmares
- Uncomfortable reactions to similar situations
- Remembering key aspects of the event

#### Avoidance

- Emotional numbing
- Detached feelings
- Loss of interest in normal activities
- Failure to show moods
- Avoiding locations similar to the event
- Hopelessness

#### Arousal

- Difficulty concentrating
- Easily startled
- Exaggerated response to being startled
- Hypervigilance
- Irritability
- Difficulty sleeping

was 11 per 100,000, the CFD suicide rate was 250 per 100,000.<sup>2</sup>

While there are many risk factors for PTSD in the general population, five risk factors specific to EMS workers have been identified by researchers:

- 1) separation or divorce;
- 2) graduation from a rural high school (especially young presenters—those who develop symptoms at age 24 or younger);
- 3) previous EMS experience;
- 4) previous emergency work leading them into EMS; or
- 5) previous war experience.

War experience alone increased the risk for developing PTSD by 40%; this jumps to 70% if the EMT or paramedic served in the Vietnam War. The more risk factors an individual has, the greater the risk of developing PTSD.<sup>8</sup>

Sadly, the evidence continues. A study on EMS workplace stress found 92% of EMS providers suffer emotional exhaustion, while 99% admit to having some form of depersonalization.<sup>11</sup> Recall that depersonalization is a symptom of both burnout as well as PTSD. Finally, yet another study researching why providers leave EMS found 25% of the survey respondents planned to leave within 5 years.

Few other industries have such a high

turnover rate. When asked why providers were planning to leave, the most common answers were:

- The hours (11%).
- Too much job stress (13%).
- Low pay (13%).
- Negative impact on family life (16%).<sup>12</sup>

Interestingly, current research has found a lack of consistency in the evidence that increased shift length is associated with increased fatigue and worsened patient outcomes. There is also an associated decrease in fatigue and increased performance when individuals are allowed a 40 minute–2 hour nap period within shifts of or exceeding 12 hours.<sup>13</sup>

### Coping

Finding coping strategies that work is essential for all EMS providers. The very nature of EMS places providers on the front line of personally disturbing experiences on a daily basis. When a partner says a particular call “doesn’t bother me,” red flags should start waving. We’re all human and have emotions. Work together to identify coping mechanisms that work. One of the most beneficial coping strategies is simply discussing the call with coworkers; unfortunately, male providers are less likely to do this than female providers.<sup>11</sup>

When selecting a strategy to deal with stress keep in mind there are both constructive and destructive coping mechanisms. Constructive coping mechanisms improve emotional health while destructive mechanisms can actually worsen a mental health condition. Further, some coping strategies produce negative behaviors and can be suggestive of more long-term mental health issues, including PTSD. For example, alcohol consumption is well known as a destructive coping mechanism, yet over 50% of providers have reported using alcohol to cope with stress.<sup>11</sup> *Table 1* identifies several coping strategies EMS providers have found helpful, as well as some that may seem helpful in the moment but are ultimately destructive.

*Table 1* provides two insights. First, it identifies some very helpful coping strategies, including talking with colleagues, having adequate time off duty with family and friends, and use of available mental

health services. Second, it’s slightly disturbing to see many providers feel black humor (e.g., jokes about otherwise unfunny situations) is beneficial for coping, and more concerning that over half of providers utilize destructive coping skills, such as consuming alcohol. It’s not known why some individuals feel black humor is

constructive, but it is apparent most of us do it during times of stress.

One effective strategy for helping providers is for agencies to collaborate with mental health workers on developing a stressor and coping survey. Requiring all providers within an agency to complete the survey periodically, and supplying each

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provider with a confidential written report, presents providers with an individualized explanation of the types of events that cause the provider stress, while also identifying the most effective coping strategies for the provider.

Consider working with your department's leadership to contact a mental health program to design such a survey for you. Individual results do not need to be shared with department leadership but they may help someone struggling with emotional stress to recognize their own situation and seek out coping strategies that may prove beneficial.

Other EMS services encourage mental health days. For example, a program may schedule a mandatory paid day off for providers once every three or four months. This day off is often tied to the beginning or end of an off period to provide the provider extra rest. Alternatively, this mental health day may be provided in the middle of a

**Table 1: Coping Strategies as Reported by EMS Providers™**

Constructive Coping Strategies	% Providers Using Strategy
• Talking with colleagues	100
• Thinking about positive benefits of work	94.9
• Focusing on outside interests	92.0
• Thinking about own family	92.0
• Looking forward to off-duty time	85.5
• "Black," or dark humor	77.7
• Using available mental health services	55.3
• Talking with spouse/significant other	37.9
Destructive Coping Strategies	% Providers Using Strategy
• Keeping thoughts/feelings to oneself	88.1
• Avoiding conversation about calls	81.2
• Picking and choosing calls	58.0
• Reducing workload to bare minimum required	52.6
• Consuming alcohol	50.7
• Engaging in risky behaviors	37.9

long stretch of work in order to give a provider a break.

Other excellent coping mechanisms that work well for people are exercise, diet changes and meditation. Exercising regularly, be it rigorous training for an

Ironman triathlon, walking a mile every day or anything in between, provides a break, allowing both the body and mind to relax and decompress. Working in EMS can often be detrimental to healthy diets. Taking time to cook a healthy meal each

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day helps ensure the body and brain receive the energy and nutrients needed to rest and recover from long days. Finally, many people report mental health benefits from meditation.

Be wary of destructive coping methods, such as escape/avoidance, distancing, confrontation, taking responsibility when it's not appropriate, and forcing self-control when what's needed is an emotional release. Coping via avoidance does not address the problem at hand and may use wishful thinking to convince oneself the problem does not exist. When coping by distancing, the significance of the stressful event is diminished and downplayed. Direct confrontation is rarely effective, as it employs aggression toward others and may include risky behaviors. Taking responsibility can be considered a poor coping strategy if it is misplaced. For example, imagine a new paramedic treats a child with status asthmaticus,

“EMS workers are at the greatest risk for developing PTSD when they have between 7 and 10 years of experience.”

who goes into respiratory arrest and dies despite aggressive care. This paramedic may accept responsibility by saying it was his fault the child died. He is accepting responsibility for the death when in reality it was unavoidable. Finally, self-control coping strategies attempt to normalize the emotions an individual is feeling, rather than accepting and addressing them.<sup>10</sup>

The use of detrimental coping strategies leads to an increase of traumatic stress symptoms. Unfortunately, these detrimental strategies are woven deep into the EMS culture. EMTs and paramedics are supposed to be tough, letting emotions “roll off their back.” Exposing young and developing providers to this mentality only puts them at heightened risk for developing mental health problems such as PTSD, and doesn't set anyone up for success. Help prevent this

by encouraging classroom instructors to set aside time for dealing with provider mental health and encouraging departmental and system training officers to front-load mental health resources to newly hired staff. Remember, it's OK to ask for, or offer, help in dealing with stressful and traumatizing events.

### Summary

Burnout and PTSD are closely linked and often underreported in EMS. EMS classrooms do little or nothing to prepare providers for the inherent emotional stresses of emergency response and the “thick skin” culture of EMS may make many providers apprehensive about sharing their

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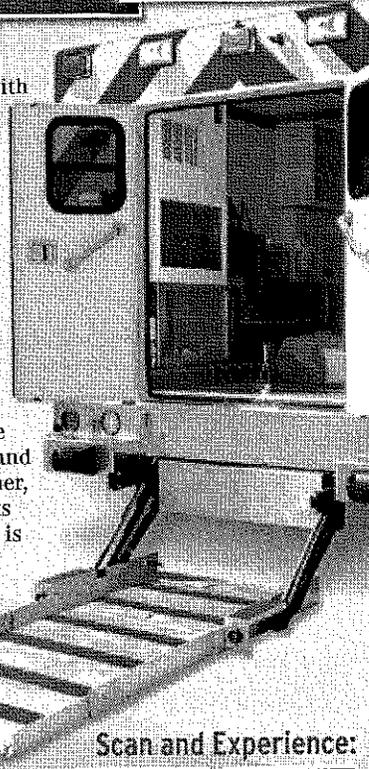
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true feelings. Burnout is triggered by many of the same stresses that lead to the symptoms of PTSD and providers experiencing burnout that doesn't resolve within a few weeks may actually be experiencing PTSD.

Be mindful of yourself and your fellow coworkers, particularly after a very traumatic response. And remember traumatic

responses don't need to be as dramatic as Sept. 11, New Orleans after Hurricane Katrina or the Aurora, CO shootings to bother an EMS worker. In contrast, these are the calls where providers often receive the most attention. Instead, watch for the new father who just performed CPR on an infant the same age as his own, or the provider who

just watched his or her friend die following a motor vehicle collision. Pay attention to yourself and colleagues, and be responsible and honest with yourself and others about when coping strategies are enough, and when they aren't. Finally, don't ever be afraid to seek help. ☘

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**EFFECT OF WORK RELATED STRESS ON FIREFIGHTER/PARAMEDIC**

**EASTERN MICHIGAN UNIVERSITY  
SCHOOL OF FIRE STAFF AND COMMAND**

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as part of the School of Fire Staff and Command Program. William Dangler

August, 2002

### ABSTRACT

This research attempted to identify the aspects of psychological on the job stress, its causation, its effect on job performance, and any effects stress might have on wellness and general well being. Also this research will explore stress reduction techniques and their effectiveness. Unmanaged firefighter stress is the problem, or more specifically recognizing the signs and symptoms and taking appropriate action. “ Wellness in the fire service will, in great measure, involve the control, defusing, and management of firefighter stress reactions. Stress management technology is based upon an understanding of the stress response.” ( Lawrence N. Blum, PhD., Stress and survival in the fire service, pg3)

The purpose of this research was to investigate how stress affects psychological fitness and physical well-being of firefighters/ paramedics and to make recommendations for a positive stress reduction program. Psychological stress a complex phenomenon. Therefore to identify all the potential sources was problematic. Information regarding firefighter/paramedic on the job stress was found to be very scarce. Similar trade journals were utilized where it was germane to the fire service.

The research method used for this project relied exclusively on trade journals, professional papers, articles from magazines and newspapers, books and other applied research projects. Research questions asked were; (1) Does on the job stressors affect firefighter performance and off duty activities and behavior? (2) Are there effective techniques to reduce or eliminate on the job stressors and detrimental effects of stress?

The procedures involved taking the most current data available from books, magazine and newspaper articles, professional trade journals, and related applied projects. This research included literature that was germane to the fire service. Studies and data pertaining to firefighter/paramedic on the job stress were scarce. Information on job related stress in related fields was also used.

Some research results were surprising. Firefighter are stressed by their own station living environment, their protective gear, their officers and leaders, current management styles, coworkers, and the stress of leaving their families and loved ones during natural and man made disasters. Research also provided results that were not surprising. Certain personality types did not cope well with psychological stress. However they did cope better with proper indoctrination, education and training. From this we concluded that education and support must come early because fire personnel will be called upon to meet many challenges. The better understood the symptoms created by traumatic scenes they will be exposed to, the better they will be able to perform at work with a greater degree of proficiency and enjoy a higher level of well being.

Recommendations; This research indicated when firefighters/paramedics were educated to recognize the effects of stress, how traumatic events can effect personnel, and management of traumatic stress through stress reduction techniques, individuals were more likely to enjoy a higher level of physical and psychology wellness. Which also translates into less absenteeism and higher morale.

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## INTRODUCTION

Does work related stress affect the job performance and wellness of the firefighter/paramedic? The purpose of this research was to help identify work related stress symptoms both to the individual and the supervisor.

“ They see the good, the bad, and the very ugly. They watch children die and families grieve. They’re called to the aftermath of gun battles, car accidents and domestic rage. They’re cursed at, vomited and bled on, yet patients seldom ask their names. To say the least the professional life of a paramedic can be harsh and demanding. Their workday can last 24 to 48 hours. Some survive the stress, some don’t. The national average for a paramedic to stay on the job is just eight years.” (Deborah Belgium, Los Angeles Business Journal, issue Nov. 8, 1999, Stress, horror of job mean a high level of burn outs.)

“According to a survey conducted by the National Labor Organization, stress and its accompanying depression in the workplace is now the second most disabling illness hitting workers after heart disease. Recognizing that you’re reacting to this stress, and learning how to cope with it, will help you feel better, make your body healthier, and enable you to work more effectively.” (Peter Athol, Electronic Design, Dec 18, 2000).

“ A survey conducted by T.R. Cutler Inc. and reported in purchasing last year found that 23% of purchasing people indicated that they would like to leave the profession. The overwhelming reason, given by 62% of those people, was job stress. Tied for second were poor benefits and being underpaid.” ( William Atkinson, Purchasing, Issue Oct 18, 2001)

“Besides making a person feel bad, stress can actually kill, albeit slowly. A recent study conducted by Ohio State University found that even mild stress can increase the risk of developing cardiovascular disease by leading to above normal levels of homocysteine, an amino acid that damages arterial walls.” In the book, *Your Miracle Brain* ( Harper Collins, 2000 ) author Jean Collins reports on studies showing that long term chronic stress can alter the structure and functioning of brain cells, leading to gradual brain damage and atrophy via creation of free radicals. In a another study chronic stress was found to cause death to nerve cells that are responsible for memory, with the loss looking like the death of neurons after strokes or seizures. ( William Atkinson, *Purchasing*, Issue 18, 2001 )

The research method used was a comprehensive literature search. Relevant information came from Abstracts, newspaper and magazine articles, medical journals, trade journals, and personal conversations.

### **BACKGROUND AND SIGNIFICANCE**

Olin L.Green, U.S. Fire Administrator, expressed this in his forward to *Stress Management, Model Program for maintaining firefighter well-being*, ( United States Fire Administration { USFA } 1991 ). “Stress is one of the most serious occupational hazards facing the modern fire service. It is important to recognize exactly how stress can adversely affect our health, job performance, career decision making, morale, and family life.” It has been long known that stress can cause a variety of conditions and symptoms, most of which are detrimental to health and well-being. “ Job stress, whether in the corporate world or on an assembly line, can damage employee performance,” warns John Herman, Associate Professor of Psychiatry, University of Texas Southwestern Medical

Center at Dallas. "Moderate stress in many cases increases productivity and can be pleasant for some people. But higher levels of stress can interfere with your ability to do your job, is rarely pleasurable, and lead to emotional and physical problems. Some of these may be decreased job satisfaction, abrasiveness, making constant excuses, unpredictable behavior, moodiness, decreases communication, tardiness, or an increase in sick time." (John Herman, USA Today Magazine, Issue August 2000).

"Stress related absenteeism is a serious and growing problem. According to the 1999 CCH Unscheduled Absence Survey of 800,000 workers in more than 300 companies, the number of employee's who called in sick due to stress had tripled over the previous four years. More than half of the 550 million working days lost each year in the United States due to absenteeism are stress related. Stress currently accounts for one out of five of all last minute no shows. And that's just the tip of the iceberg. Job stress is estimated to cost American industry in excess of 300 billion a year." (Donald T. DeCarlo, Risk and Insurance, More on Workplace Stress, Issue oct.1, 2001 )

"Time Magazine referred to stress as 'America's number 1 health problem,' and there is little doubt that things have gone steadily downhill. Numerous surveys show that job stress is far and away the leading source of stress in American adults. They also confirm that workplace pressures have progressively increased over the past few decades." (Donald T. DeCarlo, Risk Management, More on Workplace Stress, Issue Oct. 1, 2001 )

“Over the years, one of our firefighters, killed his wife and then himself. Another firefighter transferred from a larger department, worked several years, resigned and committed suicide. Others have been involved in a variety of altercations, domestic problems, and stress related episodes and illnesses. One employee who appears to have become a recluse, retired and left the country. His problems followed him overseas.”  
( Clifford F. Carlisle, MPA, Mountain Brook Fire Department, ARP submitted for Executive Fire Officer Program, Sept. 1999 )

### **LITERATURE REVIEW**

A review of fire service and psychological literature, relating to firefighter/paramedic and similar emergency responders, reveals the critical importance of psychological wellness for combating the occupational stress inherent in this career. No time in the history of the American fire service has this been more apparent. Incidents such as the Nimitz Freeway Collapse, the World Trade Center Bombing, Oklahoma City Bombing, Kansas City Skywalk Collapse, the Olympic Park Bombing in Atlanta Georgia, and recently the New York Trade Towers, are requiring our people to endure more than ever before. Fire Personnel are being asked to withstand horrendous physical and psychological assaults as they perform their duty.

“Stress was first studied in 1896 by Walter B Cannon (1871-1945). Cannon used an x-ray instrument called a fluoroscope to study the digestive system of dogs. He noticed that the digestive process stopped when the dogs were under stress. Stress triggers adrenal hormones in the body and the hormones become unbalanced. Based on these findings Cannon continued his experimentation and came up with the term

homeostatic, a state of equilibrium in the body.” ( Paula Ford Martin, Stress, Gale encyclopedia of Alternative Medicine )

The earliest research on stress disorders that increased the psychological burden of those involved comes not from the civilian arena, but rather from the military. While the role of stressful events was identified much earlier than World War 1, it was during that war that they were first studied in reasonably scientific and comprehensive fashion. “During World War 1 traumatic reactions to combat conditions were called “shell shock,” a term coined by a British pathologist, Colonel Frederick Mott, who regarded such reactions as organic conditions produced by minute hemorrhages of the brain.” (Coleman and Broen, 1972) Only later, during WW11, did this error in understanding of combat stress psychology begin to be more clearly and accurately understood. When physical fatigue and psychological factors, (such as long periods without rest, danger, noise, and deprivation) began to be examined, only then did the theories of organic brain damage and the accusations of weak or flawed character dissipate. World War 11, the Korean War, and the Vietnam War were important to this research because they were the first situations where significant data related to psychological stress was compiled and examined. This information has been of great importance in studying the occupational stress found in firefighting, law enforcement, and EMS. This is not totally surprising, since these organizations are paramilitary in nature.

Contemporary scientific studies of stress were initiated by Hans Selye, who, as a young medical student in 1926, noted that individuals suffering from a wide range of physical ailments all seemed to a common constellation of symptoms. These involve the loss of appetite, decreases in muscular strength, elevated blood pressure, and a loss of

ambition. Selye referred to stress as a response to stimuli in which an organism developed wear and tear. He more recently defined the concept of stress as the nonspecific response of the body to any demand. (Hans Selye, 1974 pg. 14)

“ The effects of occupational stress, critical incident stress, and post traumatic stress disorder can be clearly illustrated in the case of firefighter Robert O’Donnell. After he rescued baby Jessica McClure in Midland Texas, his life was never the same again. Over a seven and a half year period, Robert O’Donnell went from a high profile hero, to an emotionally troubled firefighter, to a prescription drug user, without a job or family, and finally to a suicide victim. Robert was a psychological trauma victim. He paid the ultimate price after the Murrah Building Bombing in Oklahoma City.” (Munk, 1998).

This was lamented by Ray Sprague, EMT-P, “We go out and bust our butts on a daily basis to save lives. [Then] to see people who have so much to live for [commit suicide], it confuses you...It’s a sad thing to see happen. There had to be a better way. Robert and another firefighter who took his own life last year left families, lots of friends and lots of people wondering why.” (Becknell and Ostrow, 1995)

Steve Delsohn, in his book *Dealing with Darkness*, examined the psychological stress of firefighting. The author examines the behavior of fire fighters during and after fires, stabbings, shootings, acts of domestic violence, terrorist acts, automobile accidents, airplane crashes, hurricanes, tornadoes and earthquakes. He examines the public’s expectation of toughness, the firefighter’s toughness, and also the feigned toughness. As

Delsohn points out, "Firefighters can feel." This may not always be evident. The stress can be contained and hidden, but it is still there.

"everybody's a tough guy when they're at work." (Delsohn, 1996)

This hiding and containing of stress are part of the firefighter's problem.

"Dissociation at the time of trauma may protect the victim from a full conscience appreciation of terror, helplessness, and grief, but at the cost of long term difficulties in integration and mastery of the event. The concept of trauma related dissociation was first developed by Pierre Janet in the 1880's. (Marmar et al., 1996)

A relevant question to this research was 'How much stress is out there?'

According to author Les Krantz, in Jobs Related Almanac, he rates the job, firefighter, as the second most stressful job in the United States with a score of 249. Only the President of the United States of America, at 250, received a higher score. Under physically demanding, Krantz rated firefighting as 249 on a scale of 250. NFL football players were rated slightly higher at 250.

"The impact of fire service work upon the human organism must be understood both as an organizational and as a biopsychosocial phenomenon—and not solely viewed as a physical phenomenon. Concern is expressed that local government entities may view physical fitness programs as a "quick fix" for problems associated with firefighter-paramedic work; when, in fact, comprehensive wellness technologies are required to enhance the viability of firefighter personnel at all ranks and levels of experience. Petrie and Rotherham (1982) found that stress in firefighters did not vary with length of time on the job, age, rank, or

factors in the personal lives of subjects, such as marital status, marital satisfaction, income, or number of children. Wellness technologies must be developed to include those components of the firefighting organization that are known to create, maintain, or reduce problematic work performance circumstances and/or stress reactions in firefighters.” (Blum, Stress and Survival in the Fire Service)

### PROCEDURES

Research for this project primarily involved a review of literature from current periodicals, newspapers, related applied research projects, and conversations relating to job stressors. Sources were obtained from Eastern Michigan University Hale library, Dearborn Henry Ford Centennial Library, and the World Wide Web. Search engines included Google, Infotract, Proquest, and First Search.

The primary objective was to identify firefighter/paramedic job stressors and search out any effective techniques that might be helpful in reducing detrimental effects of this unavoidable stress. Another objective of this research was to outline important aspects of a comprehensive wellness plan. Since 15-20% of our personal are at risk, according to the data I could find, (I think it is much higher) an investment of time and/or money would pay off in less sick time and higher morale.

NFPA Standard 1582, Medical Requirements for Firefighters, was used as a guideline to formulate this rough outline for a complete wellness plan. This research was not extensive enough to recommend a complete wellness plan that was both feasible and implementable. The following are a few ideas that this research uncovered;

FIRST, All new recruits need to be examined by a licensed physician to determine their physical fitness as a firefighter.

SECOND, New recruits be given a comprehensive drug screen to determine the possibility of substance abuse problems prior to their employment.

THIRD, The new recruits be required to complete the Minnesota Multi-phasic Personality Inventory and the Hilson Safety and Security Risk Inventory to assess their psychiatric suitability for the position of firefighter.

FOURTH, Implementation of an ongoing wellness plan that was extensive in education and awareness of this professions unavoidable stress and symptoms of stress reactions.

A limitation was the scarcity of scientific data on the daily stress exerted by firefighters and emergency responders by their environment. Raymond J. Navarre, Human Resources Officer of the Toledo Fire Department describes these below. (Navarre 1987).

1. Need for private space- the need to be away from the public and other firefighters
2. Need for privacy- the need to have an area that is personal.
3. Need for a balance between the institutional quality of the firehouse verses the family atmosphere and the firefighters' relationships as members of the firehouse
4. Need to control the noise and media pollution- the need for quiet relaxation, study, and sleep.

5. Need for relaxing and comfort producing accoutements- need for furnishings and surroundings that are physically, mentally, and psychologically stress reducing, or at least not stress promoting. (Navarre 1987)

Another limitation was that most of the studies examined stress as it related to mass casualty incidents. Finding data on daily stressors of Firefighter/Paramedic was quite hard. However, Boudreaux, Mandry, and Brantley (1995) successfully examine the cumulative stressors using the Social Readjustment Rating Scale (SRRS).

**Table 1.**

**The 15 Most Common Major Life Events Experienced by EMT's using the SRRS as a measure.**

**HIGH END STRESS**

Change in financial status

Vacation

Change in living conditions

Personal injury or illness

Change in sleeping habits

Change in work responsibilities

Mortgage greater than 10,000

Begin or end school

Change in residence

Change in work hours/conditions

Outstanding personal achievement

Change in eating habits

Change in social activities

Change in number of arguments with spouse

Mortgage less than 10,000

**LOW END STRESS**

**Table 2****The 15 Most Common Daily Stressors Experienced by EMT's.**

<u>Daily Hassles Non-Work Days</u>	<u>Daily Hassles Work Days</u>
Thought about unfinished work	had sleep disturbed
Thought about the future	thought about the future
Unable to complete all plans for today	thought about unfinished work
Hurried to meet a deadline	interrupted during task/activity
Money problems	interrupted while thinking/relaxing
Did something you did not want to do	concerned about personal appearance
Had sleep disturbed	hurried to meet a deadline
Concerned about personal appearance	did something you did not want to do
Interrupted during task/activity	had difficulty in traffic
Interrupted while thinking/relaxing	money problems
Worried about another's problems	unable to complete a task
Unable to complete a task	interrupted while talking
Waited longer than wanted to	worried about another's problems
Experienced illness/physical discomfort	unable to complete all plans for today
Interrupted while talking	experienced illness/physical discomfort

## RESULTS

The first question this research tried to answer was; Does on the job stress affect the job performance and off duty activities of the firefighter/paramedic? Some of the results of this research were surprising. Learning that firefighters were stressed by their own living conditions was quite surprising. This research also provided some insight into just how detrimental stress can be.

Dr L.N. Blum has done some of the most insightful research on firefighter work related stress. This passage from his paper, "Stress and Survival in the Fire Service; How They Live and Die", seems to address my research question quite well.

“ Those who serve in firefighting and emergency medical services have been asked to pay a great price for assignment to this most prestigious duty. In the past 15 years of service to firefighters, paramedics, and police officers, this writer has consistently encountered excellent firefighters who possess strikingly high levels of divorces and damage to relationships, physical symptoms of distress and continuing pain, episodes of emotional instability and distress, work performance difficulties in the aftermath of certain types of fires and medical assistance runs, and, under certain circumstances, lapses in firefighter safety during high risk activity.

This is not to say that these fine individuals could not do their jobs. The reality is that firefighters will perform their duties even while parts of their bodies or life might be harmed right in front of them.

The responsibilities, tasks, work demands, and activities performed in firefighting are referred to in the term psychosocial stressors. They

achieve a physical and psychological impact upon the individual performing those tasks. The response that the individual makes to psychosocial stressors encountered in firefighting are referred to in the term, stress response. In the stress response, the brain undergoes activities and changes in its adaptation (for the purpose of survival and equilibrium) to encountered events or circumstance. The neuroendocrine response, or the “fight of flight” response, is “fueled” by excretion of the hormones, adrenaline and noradrenaline. Of critical importance in the human emergency response is the hormone adrenocorticotropic hormone, or ACTH.

The effects of ACTH in the brain involve a shifting of neurological “fuel” or brain activity away from the cerebral cortex (where information obtained by the senses is categorized and processed) to the limbic region of the brain where the emergency response processes occur. As such, ACTH results in the cerebral cortex losing approximately two-thirds of its functioning, to permit the limbic system (the part of the brain which the emergency response) to activate the “fight of flight” response.

The impact of ACTH’s effect upon the cerebral cortex for a firefighter can be observed in their experience of slow motion, “tunnel vision,” muffled sounds, gaps in memory of the incident, detail errors, and episodes where the firefighter’s report of the incident is not corroborated by the physical evidence.” (Lawrence N. Blum, *Stress and Survival in the Fire Service: How They Live and Die*)

Pitman (1986) has demonstrated that the brain becomes conditioned by either repeated encounter with stressful circumstances—or by a single traumatic event—so that it will, with repeated encounter with psychosocial stressors, begin to react under emergency conditions, even when no actual emergency occurs. “Therefore, repeated encounter with psychosocial stressors which initiate stress responses in individuals, will develop a condition in which the body is chronically and continuously in a state of psychophysiological arousal. Examples of the effect of such a condition would be seen in chronic elevation of blood pressure with no evidence of congenital circulatory defect ( see, for example, Guidotti,1992; Kristensen 1996; Schawrtz et al, 1996) chronic gastrointestinal distress, multiple awakenings, abrupt change in mood patterns, work habits, withdrawal from normal activities, emotional reactions inappropriate to circumstance, inability to defuse after call is cleared, high risk behavior, psychophysiological distress.”

“Research data has documented that a strikingly high proportion of public safety personnel frequently—and on a continuing basis—take some form of antacid medication—i.e.zantac, tagament, maalox, digel, prilosec, or generic brands with similar purpose. The range of gastrointestinal (GI) symptoms experienced by firefighters—e.g., burning of sour feeling in the stomach; watery, runny bowel movements; spastic bowel; gastroesophageal reflux—can be simply observed in one of the effects adrenergic innervation—a slowing or suppression of the digestive process, resulting in acids not being sufficiently removed from the GI system.

Firefighters have also acknowledged the continuing experience of musculoskeletal pain, stiffness, or discomfort in the absence of physical injury or trauma. One of the effects of adrenaline upon the body is to increase skeletal muscle tension—a critical necessity for readiness for combat or flight. In addition, the increased muscular activity observed in response to adrenaline results in lactic acid and ammonia—the wastes of muscular activity—further increasing the experience of soreness and physical fatigue observed with substantial or prolonged stress.

Still other firefighters have reported the experience of repeated colds, influenza and a lowering of previous levels of resistance to illness. Again, a not surprising result of the effect of adrenaline upon immunosuppression during periods of heightened psychophysiological arousal.”(Blum1994)

“While it can be credibly stated that firefighting duties contain high levels of job demands, the existence of high job demand will not, in and of themselves, result in adverse health consequences to the individual performing them. It is only when high job demands are not prepared for, managed, or acknowledged, that adverse health problems will be observed.” (Karasek 1979)

The second research question; Are there effective techniques to reduce or eliminate the detrimental effects of stress?

You have experienced a traumatic event or critical incident (any event that causes unusually strong emotional reactions that have the potential to interfere with the ability to function normally). Even though the event may be over, you may now be experiencing or

may experience later, some strong emotional or physical reactions. It is very common, in fact quite normal, for people to experience emotional aftershocks when they have passed through a horrible event.

Sometimes the emotional aftershocks (or stress reactions) appear immediately after the traumatic event. Sometimes they may appear a few hours or a few days later. And, in some cases, weeks or months may pass before the stress reactions appear.

The signs and symptoms of a stress reaction may last a few days, a few weeks, a few months, or longer, depending on the severity of the traumatic event. The understanding and the support of loved ones usually cause the stress reactions to pass more quickly. Occasionally, the traumatic is so painful that professional assistance may be necessary. This does not imply craziness or weakness. It simply indicates that the particular event was just too powerful for the person to manage by himself. It's imperative that the signs and symptoms of a stress reaction be able to be recognized by the individuals involved and by their supervisors.

The following table identifies some signs and symptoms of a stress reaction.

**Table 3. Signs and Symptoms of Stress Reactions**

<b>Physical</b>	<b>Cognitive</b>	<b>Emotional</b>	<b>Behavioral</b>
Chills	Confusion	Fear	Withdrawal
thirst	nightmares	guilt	antisocial acts
fatigue	uncertainty	grief	inability to rest
nausea	hypervigilance	panic	intensified pacing
fainting	suspiciousness	denial	erratic movements

twitches	intrusive images	anxiety	change in social activity
vomiting	blaming someone	agitation	change in speech patterns
dizziness	poor problem solving	irritability	loss or increase in appetite
weakness	poor abstract thinking	depression	hyperalert to environment
chest pain	poor attention/decisions	intense anger	increased alcohol consumption
headaches	poor concentration/memory	apprehension	change in usual communications
elevated BP	disorientation of time, place, or person	emotional shock	
rapid heart rate	difficulty identifying objects or people	feeling overwhelmed	
muscle tremors	heightened or lowered alertness		
shock symptoms	increased or decreased awareness of surroundings		
grinding of teeth			
visual difficulties			
profuse sweating			

difficulty			
breathing			

The International Critical Incident Stress Foundation Inc. (ICISF) has compiled a list of things that may be helpful to the individual in mitigating the effects of critical incident stress.

**Table 4. ICISF Recommendations**

- Within the first 24-48 hours, periods of appropriate physical exercise, alternated with relaxation will alleviate some of the physical reactions
- Structure your time; keep busy
- You're normal and having normal reactions; don't label yourself crazy
- Talk to people; talk is the most healing medicine
- Be aware of numbing the pain with overuse of drugs or alcohol, you don't need to complicate this with a substance abuse problem
- Reach out; people do care
- Maintain as normal a schedule as possible
- Spend time with others
- Help your coworkers as much as possible by sharing feelings and checking out how they are doing
- Give yourself permission to feel rotten and share your feeling with others
- Keep a journal; write your way through those sleepless hours
- Do things that feel good to you

- Realize that those around you are under stress
- Don't make any big life changes
- Do make as many daily decisions as possible that will give you a feeling of control over your life, i.e., if someone asks you what you want to eat, answer him even if your not sure.
- Get plenty of rest
- Don't try to fight reoccurring thoughts, dreams or flashbacks-they are normal and will decrease over time and become less painful
- Eat well balanced and regular meals (even if you don't feel like it)

The International Critical Incident Stress Foundation also has some things that family members and friends can do to help the stress reaction.

**Table 5. Tips for Family Members**

- Listen carefully
- Spend time with the traumatized person
- Offer your assistance and a listening ear if they have not asked for help
- Reassure him that he is safe
- Help him with everyday tasks like cleaning, cooking, caring for the family, minding children
- Give him some private time
- Don't take his anger or other feelings personally

- Don't tell him that he is "lucky it wasn't worse," a traumatized person is not consoled by those statements. Instead, tell him you are sorry such an event has occurred and you want to understand and assist him.

For many people in today's world, stress is a fact of life. Although it is impossible to eliminate all stress from daily life, it is possible to control the effect stress has on the body and the mind. The first step in managing stress is to become aware of events in your life that cause you stress. The causes of stress vary from person to person, so that what causes you stress may not cause stress for another person. Once you are aware of what causes you stress, the goal is to find ways to avoid or control these things.

Relaxation techniques, when used consistently, can prove effective in controlling stress by helping you reach a state of mental calm, even when in the middle of a stressful situation.

There are several relaxation techniques provided by Access Health Inc. which can be done almost anywhere at any time to help control stress. These techniques include:

**Table 6. Stress Reduction Techniques**

- deep breathing
- active relaxation
- visualization
- passive relaxation
- yoga, and
- biofeedback
- deep breathing is a simple technique that can relax tense muscles,

- focus energy and help one be more productive. To use the technique,
- simply breath in deeply through the nose, letting your stomach
- expand as much as possible. It may be helpful to place your hands firmly and comfortably on your stomach during the exercise. Once you've breathed in as much as possible, hold your breath for a
- few seconds and then exhale slowly through your mouth. Repeat this for three or four breaths several times a day
- active relaxation is a process that can help you actually feel the difference between tension and relaxation. It is accomplished by first tensing and then relaxing each muscle in the body. Start with the muscles in the head and move down to the muscles in the feet. This is also called progressive or systemic relaxation.
- stretching exercises are a simple, easy way to loosen up tight
- muscles and combat stress. Muscle tension is an automatic physical response to stress, and the benefit of simple stretching exercises
- is often overlooked as a relaxation technique.
- another relaxation technique that can help reduce stress is clearing the mind or visualization. Visualization a type of directed meditation which involves using the minds eye to clear away mental clutter or to actually visualize how a stressful situation can be handled successfully. This is done by picturing the stressful situation in your mind such as a business presentation or an athletic performance and then visually rehearsing the outcome. Visualization techniques also may be

used to imagine a peaceful scene such as ocean waves lapping up on the beach to create relaxation.

- meditation and self-hypnosis are passive relaxation techniques that can be used to create relaxation. Four elements are used in meditation: a quiet environment,
- a point of focus like a neutral word that can help with concentration,
- a passive accepting attitude, and
- a comfortable position
- meditation once or twice a day for ten to twenty minutes each time can bring rapid relief from chronic stress and also increase a person's ability to tolerate stress.
- Yoga is the use of deep meditation and concentration to free oneself and unite with a supreme spirit. It uses certain postures and carefully controlled breathing to turn off behaviors that cause stress. For specific information on how to practice yoga, you may consult various books available on the subject, take a
- class at your local college, adult program or health club.
- and finally, if a person has difficulty zeroing in on a stress
- reaction or the ability to relax, the practice of biofeedback
- can be helpful. Biofeedback is a technique in which a person can learn to modify the body's physical reactions to forms of stress. Biofeedback involves sending direct messages to various parts of the body to get a desired response. For example, people
- have actually been able to prevent frostbite from developing in conditions of extreme cold by sending a message to their hands to stay warm. Biofeedback has

also been used for control of chronic pain problems, such as back pain or migraine headaches.

To begin with, it may be helpful to work with a certified biofeedback practitioner and specialized equipment to learn the technique. However, once learned, biofeedback can be used in any environment to help control blood pressure, heart rate, pain or physical or emotional stress. It is not important which relaxation techniques are used. What is important is the attitude with which relaxation is pursued and what is comfortable for the person.

## DISCUSSION

The importance of psychological wellness and stress reduction for firefighters was clearly underlined by The United States Fire Administration's Stress Management Model Program for Firefighter Well-Being, FA 100, as early as February 1991. Other leading agencies such as The International Association of Firefighters in cooperation with The International Association of Fire Chiefs have picked up on this lead. The Fire Service Joint Labor Management Wellness/Fitness Initiative has incorporated psychological wellness into their overall plan. "Firefighters must continue to respond to emergency incidents that require extreme physical output and often result in physiological and psychological outcomes. Such situations, over time, can and do affect the overall wellness of the firefighting and emergency response system" (Fire Service Joint Labor Management Wellness/Fitness Initiative, 1999) One of the key points identified by the

task force to investigate is: “ Develop a holistic wellness approach that includes; medical, fitness, injury/fitness/medical rehabilitation and behavioral health.” This is being investigated directly to protect the wellness of the firefighter. “ The project seeks to prove the value of investing wellness resources over time to maintain a fit, healthy, and capable firefighter throughout his/her 25-30+ year career and beyond.”

“A study by the Medstat group in Washington D.C., found that people with high stress levels at work sustain healthcare costs that are 46% higher than those incurred by people with less stress. The American Institute of Stress reports that between 75% and 90% of physician visits have stress as a major contributing factor to the patients reason for the visit.” (William Atkinson, *Purchasing*, Supply Chain Stress: Coping with professional Pressures, Issue 18, 2001)

“The literature indicates that several large private corporations have realized cost benefits through initiating or expanding wellness programs. AT&T, Union Pacific Railroad, Du Pont Chemical Corporation, and the Travelers Corporation of \$1.50 to \$3.40 for every dollar invested in wellness programs.” (Ken Riddle, Deputy Fire Chief, Las Vegas Fire Department, ARP submitted to the National Fire Academy, April 1999)

Chief Riddle initiated his departments health and wellness program in late 1993, with very impressive results. There were a significant decrease in number of injuries, sick time usage, and improved morale. The following table illustrates the results he achieved in the first four years of implementing his health and wellness plan.

**Table 7. Results from Las Vegas Fire Department's Health and Wellness Plan**

<b>YEAR</b>	<b>Days Missed</b>	<b>Light Duty Days</b>	<b>Injuries with work days lost</b>	<b>Injuries With No Work Days Lost</b>
1994	628	154	30	35
1995	278	427	32	24
1996	227	321	16	22
1997	20	70	5	6

The dramatic results Chief Riddle achieved is proof that comprehensive health and wellness plans are needed in the fire service to help maintain viable and productive personnel.

### **RECOMMENDATIONS**

“Concern is expressed that local government entities may view physical fitness programs as a ‘quick fix’ for problems associated with firefighter-paramedic work; when, in fact, comprehensive wellness technologies are required to enhance the viability of firefighter personnel at all ranks and levels of experience. Petrie and Rotherham (1982) found that stress in firefighters did not vary with length of time on the job, age, rank, or factors in the personal lives of subjects, such as marital status, marital satisfaction, income, or number of children. Wellness technologies must be developed to include those components of the firefighting organization that are known to create, maintain or reduce problematic work performance circumstances and/or stress reactions in firefighters.”(L.N. Blum)

If it is true that our people are our number one resource, then the cost of a comprehensive wellness program is negligible compared to the long term benefits and cost savings it will provide.

Initiating a health and wellness program will most likely depend on available resources of the organization. Education and an awareness of potential health problems is essential if most individuals are to enjoy a 25-30 year career.

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# Work-Related Psychosocial Hazards Among Emergency Medical Responders (EMRs) in Mansoura City

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## ABSTRACT

**Purpose:** This research was done to assess levels of psychosocial stress and related hazards [(burnout, depression, and posttraumatic stress disorder (PTSD))] among emergency medical responders (EMRs). **Materials and Methods:** A comparative cross-sectional study was conducted upon (140) EMRs and a comparative group composed of (140) nonemergency workers. The groups studied were subjected to semistructured questionnaire including demographic data, survey for job stressors, Maslach burn out inventory (MBI), Beck depression inventory (BDI), and Davidson Trauma scale for PTSD. **Results:** The most severe acute stressors among EMRs were dealing with traumatic events (88.57%), followed by dealing with serious accidents (87.8%) and young victims (87.14%). Chronic stressors were more commonly reported among EMRs with statistically significant differences ( $P < 0.05$ ) except for social support with colleagues and supervisors. EMRs had statistically significant higher levels of emotional exhaustion (EE) (20%) and depersonalization (DP) (9.3%) compared with comparative group (4.3%, 1.4% respectively). Also, there was no statistically significant difference between two groups as regards lower personal achievement or depression symptoms ( $P > 0.05$ ). There was increased risk of PTSD for those who had higher stress levels from death of colleagues [odds ratio (OR) [95% confidence interval (CI)] = 2.2 (0.7-7.6), exposure to verbal or physical assault OR (95% CI) = 1.6 (0.5-4.4) and dealing with psychiatric OR (95% CI) 1.4 (0.53.7) ( $P > 0.05$ ). **Conclusion:** EMRs group had more frequent exposure to both acute and chronic work-related stressors than comparative group. Also, EMRs had higher levels of EE, DP, and PTSD compared with comparative group. EMRs are in need for stress management program for prevention these of stress related hazards on health and work performance.

**Keywords:** Burnout, depression, emergency medical responders, post-traumatic stress disorders, psychosocial stress among emergency medical responders, work-related stress among ambulance workers

## Introduction

Until recently, occupational health within the ambulance services has received relatively little attention from researchers. In the past few years, researchers have become increasingly aware that ambulance personnel

may be at risk of developing work-related health problems.<sup>(1,2)</sup>

No study has systematically compared the level of symptoms and prevalence of cases between ambulance workers and the normative sample of a relevant working population. Previous research comparing the health status in ambulance personnel with that of general populations has not considered the healthy worker effect.<sup>(3)</sup>

In the field of occupational health psychology, researchers have mostly focused their attention on negative effects of long-term work characteristics, in particular chronic work-related stressors, such as job overload, shift work,

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role conflict, and lack of social support. Implications of these sources of work-related stress include the effects on worker satisfaction and productivity, mental as well as physical health, absenteeism, and the potential for employer liability. However, the role of acute and intense stressors is often neglected.<sup>(4)</sup>

Exposure to traumatic stressors is potentially integral part of the job for emergency service personnel. Traumatic stressors, or critical incidents, are those in which personnel are exposed to death or life-threatening injury. In addition to the risk of mortality,<sup>(5)</sup> serious mental health and behavioural problems are associated with such traumatic exposure. These include posttraumatic stress disorder (PTSD), anxiety, and depression.<sup>(1)</sup>

Burnout and stress are common-related problems in health service workers.<sup>(6)</sup> Maslach and Jackson<sup>(7)</sup> defined burnout as a physical, emotional, and intellectual exhaustion syndrome manifested by adverse attitude to professional life and other people with the development of a negative self-esteem in the individual experiencing chronic fatigue and feelings of helplessness and hopelessness.

This research was done to assess the possibility for higher levels of psychosocial stressors and related hazards (burnout, depression, and PTSD) among emergency medical responders (EMRs) compared with comparative group.

## Materials and Methods

### Study design

A comparative cross-sectional study was conducted over a period from June 1, 2011 to August 31, 2012 upon EMR and a matched comparative group at Mansoura city.

### Study population

- The study population comprised (280) subjects employed in main ambulance service at Mansoura city. They were divided into two groups: EMR group which consisted of 140 responders and comparative group which consisted of 140 nonemergency workers.

### EMRs group

#### Inclusion criteria

Permanent and temporary male EMRs employed for more than 1 year working either in main center in Mansoura city, urban and rural units. One hundred and forty EMR were randomly selected after approval to participate in the present study. They were all males. Their ages ranged from 22-58 years with a mean age of  $37 \pm 9.35$  years. The mean duration of employment was  $11.2 \pm 9.9$  years. This group consisted of 80 EMTs and 60 emergency drivers.

### Job description of EMRs

Emergency medical technicians (EMTs) are emergency responders trained to provide immediate care for sick or injured people and transport them to medical facilities. They usually work as team of two responders (EMT and driver) and may request additional assistance from the police or fire departments. The emergency driver drives an ambulance to transport sick, injured, or convalescent persons to/from a hospital or other health facility and performs various duties related to this main job such as carrying; cleaning; communicating; handling; and lifting.<sup>(8)</sup>

Most of EMTs and drivers are required to work 24 h a day every other day. There are two types of shifts in Mansoura ambulance service either 24 h day after day shift or daily 8 h shift rotating between day, evening, and night shifts.

### Comparative group

The group comprised 140 male workers at Mansoura's main ambulance center, technical institute of health, and faculty of Commerce and faculty of Medicine at Mansoura University, who matched EMRs in most of the variables except for the risk of exposure to stressful job situation due to emergency work. They were all males. Their ages ranged from 22 to 59 years with a mean age of  $39.5 \pm 11$  years. The mean duration of employment was  $13.5 \pm 9.9$  years.

### Job description of comparative group

They are service and office workers in Mansoura ambulance center who never worked in providing emergency medical service. Service workers ensure that building and offices are maintained in a clean and orderly manner. Office workers from ambulance center carry out technical and maintenance jobs, accountant service, and financial affairs. Service workers included laboratory and maintenance technicians in Mansoura faculty of medicine, Mansoura faculty of commerce, and technical institute of health.

### Methods

An interview with each study subject was carried out to help filling in the questionnaire and direct observation of psychosocial-work environment.

### Questionnaire

A semistructured questionnaire was designed to obtain sociodemographic data including age, sex, residence, lifestyle (such as smoking and illicit drug abuse), occupational history [job description, duration of employment, shift work hours, job stress survey (frequency and types)] for acute stressors in the form of dealing with psychiatric patients, dying patients, young victims.<sup>(4)</sup> The responders were asked to rate how stressful

was these stressors on a scale from 1 (not stressful) to 4 (extremely stressful). Questions about chronic work-related stressors according to questionnaire on the experience and assessment of work were included in the form of lack of job autonomy; lack of social support from colleagues and supervisors.<sup>(9)</sup>

#### Psychosocial health hazards assessment tools

##### *Maslach Burnout Inventory (MBI)*

Burnout was assessed according to the MBI. This instrument contains 22 items that measure the cumulative effects of work-related pressure on three states: "Emotional exhaustion (EE), DP," and "personal accomplishment (PA)." Each question is assessed on a scale ranging from 0 (not at all) to 5 (yes, absolutely). High scores for the first two scales and low scores for the last scale are associated with burnout.<sup>(10)</sup>

##### *Beck depression inventory "Arabic version"*

Depression was assessed according to Beck depression inventory (BDI) "Arabic version." This instrument contains 21 questions each item is rated on a FOUR-point scale ranging from 0 to 3. The maximum total score is 63.<sup>(11)</sup>

##### *Davidson trauma scale (DTS) (DSM-IV) (Arabic form)*

All study subjects completed the DTS, a 17-item scale measuring each Diagnostic and statistical manual-IV symptom of PTSD on five-point frequency and severity scales. The subjects were diagnosed with PTSD symptoms when having one of the re experience or recall symptoms, three avoidance symptoms, and one of the arousal symptoms (Arab corporation for psychological test 2010).<sup>(12)</sup>

#### Statistical analysis

Data were analyzed with SPSS version 16 for Windows. The normality data were first tested with one-sample Kolmogorov-Smirnov test. Descriptive statistics, mean, median were calculated to describe central tendencies in each group. The groups were compared with Student's t test for continuous parametric variables and Man-Whitney test (z) for nonparametric continuous variables. Chi-square ( $\chi^2$ ) test was used for categorical variables. Fisher's exact test was used when 50% of cells or more were less than 5;  $P < 0.05$  was considered as statistically significant.

#### Ethical consideration

Approval of related authorities including the regional ambulance head manager, faculty of Medicine, faculty of commerce, and technical school of health was obtained. Also, an informed verbal consent from each study subject to participate in the study was obtained before the start of work with assurance of confidentiality and anonymity of the data. Subjects were requested personally by

the investigator and they were asked to participate voluntarily with a full right to withdraw from the study.

## Results

#### Sociodemographic characteristics of studied groups

The EMRs group-matched comparative group as regards all sociodemographic variables. The mean age of EMRs group and comparative group was  $38 \pm 9.4$  and  $39.5 \pm 11.5$  respectively. Both groups were males. The majority of EMR and comparative group were from rural area respectively (60%, 54.3%) and married (81.4%, 82.9%). Also, most of studied EMRs and comparative group had received technical education (61.4%, 48.6%). (Data are not tabulated).

#### Job characteristics of studied groups

The EMRs group composed of eighty EMT (57.1%) and 60 drivers (42.9%), while the comparative group composed of 61 administration staff members (43.6%) and 79 service workers (56.4%). About half of EMR group (52.9%) were hired with short contracts, while most of comparative group subjects (72.1%) were permanent workers with statistically significant difference ( $P < 0.05$ ). The mean duration of employment was  $11 \pm 9.9$  for EMR, while the mean duration of employment for comparative group was  $13.3 \pm 9.8$  with no statistically significant difference ( $P > 0.05$ ). Also, it was observed that most of EMR (68.6%) were 24 h shift workers and most of comparative subjects (47.1%) were day workers ( $\leq 8$  h) with statistically significant difference ( $P < 0.05$ ) (Data are not tabulated).

#### Acute stressors

EMR suffered from different acute job stressors. The most severe acute stressors was dealing with traumatic events (88.57%), followed by dealing with serious accidents (87.8%) and young victims (87.14%). Dealing with psychological patient was the least frequently encountered acute stressor (45.7%) (Data are not tabulated).

#### Chronic organizational stressors

EMR group experienced exposure to overall job stressors with different degrees more frequently (100%) than comparative group (56.4%) with statistically significant difference ( $P < 0.05$ ). Also, lack of decision control at work and lack of organizational decision control were more commonly reported (30.7%, 72.1%) among EMR compared with comparative group (10.7%, 50%) with statistically significant difference ( $P < 0.05$ ). EMRs group reported poorer communication with their organization (27.1%) than comparative group with statistically significant difference ( $P < 0.05$ ). Also, social support with supervisors among EMRs (85%) was less than that reported by comparative group (92%) with no

statistically significant difference ( $P > 0.05$ ). In addition, social support with co-workers was (95.6%) among EMRs compared with 95.9% among the comparative group with no statistically significant difference ( $P > 0.05$ ). EMRs had higher levels of group moral and cohesion (98.6%) compared with comparative group (93.6%) with statistically significant difference ( $P < 0.05$ ) [Table 1].

EMRs had significantly higher percentage of physically strenuous activities, rapid pace of work, overtime work, work overload, never receiving compensatory financial rewards, and lower percentage for reporting enough resources than comparative group with statistically significant difference ( $P < 0.05$ ) (Data are not tabulated).

### Burnout

EMR had higher levels of EE (20%) compared with comparative group (4.3%) with statistically significant difference ( $P < 0.05$ ). Also, DP levels were higher among EMR (9.3%) compared with comparative group (1.4%) with statistically significant difference ( $P < 0.05$ ). However, high personal achievement was more frequently found in EMRs group (80.7%) than that found in comparative group (74.3%) with no statistically significant difference between the two groups ( $P > 0.05$ ) [Table 2].

### Depression and PTSDs

Total BDI score and depression grade was not significantly different among EMR when compared with comparative group ( $P > 0.05$ ). Median total score of Davidson scale for PTSD was higher among EMR (5) compared with comparative group (0) with statistically significant difference ( $P < 0.05$ ). Also, 13.6% of EMRs had PTSD compared with (2.9%) of comparative group with statistically significant difference ( $P < 0.05$ ) [Table 3].

### Risk factors for PTSDs

There was no statistically significant difference between EMR with PTSD and EMR without PTSD as regard exposure to acute stressors ( $P > 0.05$ ). In the mean, while there was increased risk of PTSD for those who had higher stress levels from death of colleagues (OR (95% CI) = 2.2 (0.7-7.6), exposure to verbal or physical assault OR (95% CI) = 1.6 (0.5-4.4), and dealing with psychiatric OR (95% CI) = 1.4 (0.5-3.7) (Data are not tabulated).

### Impact of burnout on PTSD among EMRs

EE levels among EMR with PTSD were significantly higher (42.1%) than those without PTSD (16.5%) ( $P < 0.05$ ) OR (3.6) (95% CI: 1.3-10.28). Moreover, higher personal achievement was more common among responders with PTSD (36.8%) compared with those without PTSD (16.5%) with OR (2.9) (95% CI: 1.03-8.4) ( $P < 0.05$ ). However, DP was more frequent (9.9%) among

responders with no PTSD compared with (5.3%) of EMR with PTSD with no statistically significant difference ( $P > 0.05$ ) [Table 4]. Logistic regression analysis showed

**Table 1: Frequency of chronic organizational psychosocial stressors among studied groups**

Psychosocial-stressors	Emergency medical responders (n = 140)	Comparative group (n = 140)	Test of significance
	No (%)	No (%)	
Decision control at work			
Never	43 (30.7)	15 (10.7)	$\chi^2=17$ $P=0.001^*$
Ever	97 (69.3)	125 (89.3)	
Organizational decision control			
Never	101 (72.1)	70 (50)	$\chi^2 = 14.4$ $P=0.001^*$
Yes	39 (27.9)	70 (50)	
Communication with the organization			
Never	38 (27.15)	17 (12.15)	$\chi^2=13.25$ $P=0.004^*$
Sometimes	45 (32.14)	50 (35.71)	
Regularly	33 (23.57)	31 (22.14)	
Always	24 (17.14)	42 (30)	
Social support with supervisors			
Never	21 (15)	10 (7.1)	$\chi^2=6.9$ $P=0.07$
Sometimes	49 (35)	61 (43.6)	
Regularly	49 (35)	41 (29.3)	
Always	21 (15)	28 (20)	
Social support with co-workers			
Never	6 (4.4)	6 (4.3)	$\chi^2=2.7$ $P=0.4$
Sometimes	13 (9.3)	21 (15)	
Regularly	52 (37)	54 (38.6)	
Always	69 (49.3)	59 (42.1)	

\*P value less than 0.05 is considered statistically significant

**Table 2: Levels of burnout subscales among study groups according to Maslach burnout inventory**

Burnout subscales	EMRs (n = 140)	Comparative group (n = 140)	Test of significance
	No (%)	No (%)	
Emotional exhaustion			
Low and moderate burn out ( $\leq 30$ )	112 (80)	134 (95.7)	$\chi^2=16$ $P<0.001^*$
High burn out ( $>30$ )	28 (20)	16 (4.3)	
Depersonalization			
Low and moderate burn out $\leq 12$	127 (90.7)	138 (98.6)	$\chi^2=8.5$ $P=0.004^*$
High burn out $>12$	13 (9.3)	2 (1.4)	
Personal achievement			
Low moderate burn out $\geq 33$	113 (80.7)	104 (74.3)	$\chi^2=1.6$ $P=0.2$
High burn out $<33$	27 (19.3)	36 (25.7)	
Total score			
Mean $\pm$ SD	56.62 $\pm$ 15.14	40.85 $\pm$ 16.84	$t=8.2$ $P<0.001^*$

EMRs: Emergency medical responders, SD: Standard deviation

**Table 3: Posttraumatic stress and depression symptoms among studied groups**

Psychosocial disorders	EMRs (n = 140)	Comparative group (n = 140)	Test of significance
	No (%)	No (%)	
Posttraumatic stress			
Present	19 (13.6)	4 (2.9)	$\chi^2=10.5$
Absent	121 (86.4)	136 (97.1)	$P=0.001^*$
Severity of depression			
Less than 15 (mild)	101 (72.1)	114 (81.4)	$\chi^2=3.46$
15-30 (moderate)	34 (24.3)	22 (15.7)	$P=0.17$
>30 (severe)	5 (3.6)	4 (2.9)	

EMR: Emergency medical responders

**Table 4: Impact of burnout on posttraumatic stress disorder among emergency medical responders**

Burnout subscales	Emergency medical responders		Test of significance
	With PTSD (n = 19)	Without PTSD (n = 121)	
	No (%)	No (%)	
Emotional exhaustion			
(low or moderate burnout) $\leq 30$ (r)	11 (57.9)	101 (83.5)	$\chi^2=6.7$
High burnout (>30)	8 (42.1)	20 (16.5)	$P=0.01^*$ OR 3.6 (1.3-10.28)
Depersonalization			
Low or moderate burnout ( $\leq 12$ ) (r)	18 (94.7)	109 (90.1)	$\chi^2=0.4$
High burnout (>12)	1 (5.3)	12 (9.9)	$P=0.5$ OR 0.5 (0.06-4)
Personal achievement			
low or moderate burnout ( $\geq 33$ ) (r)	7 (36.8)	20 (16.5)	$\chi^2=4.3$
High burnout (<33)	12 (63.2)	101 (83.5)	$P=0.03^*$ OR 2.9 (1.03-8.4)

OR: Odds ratio, PTSD: Post traumatic stress disorder

that EE was independently associated with the likelihood of having posttraumatic stress symptoms (OR = 4.6) (Data are not tabulated).

## Discussion

Emergency responders, including EMS personnel, fire fighters, and law enforcement officers, risk their health, and safety to assist in medical emergencies; motor vehicle incidents; building and wild-land fires; hazardous material spills; crimes and public disturbances; search and rescue; and natural and human-caused disasters.<sup>(13)</sup>

Current study results demonstrated that EMR group experienced exposure to acute and chronic job stressors with different degrees more frequently (100%) than comparative group (56.4%) with statistically significant difference ( $P < 0.05$ ).

Ambulance specific stressors were reported as significantly more severe than the general organizational stressors. Serious operational demands were reported as the most severe stressor<sup>(14,15)</sup> and physical demands were the second most severe stressor.<sup>(14,16)</sup>

In current research, severity of acute ambulance specific stressors and frequency of general chronic stressors were assessed. It was found that EMRs suffered from different acute job stressors. The most severely encountered acute stressors was dealing with traumatic events (88.57%), followed by dealing with serious accidents (87.8%) and young victims (87.14%). Dealing with psychological patient was the least frequently encountered acute stressor (45.7%).

In accordance with our hypotheses, ambulance-specific stressors were identified as the most severe stressors. Serious operational tasks, and the items 'dealing with seriously injured friends and people you know' and 'dealing with seriously injured children' in particular, were rated as the most severe stressor (a higher mean score than the two general stressors time pressure and challenging job tasks).<sup>(17)</sup>

In current study, the frequency of chronic organizational stressors was assessed, rapid pace of work was the most frequently reported organizational stressor among EMR group (96.3%), followed by physical strain (95.3%), work-overload (83.6%), and overtime work (62.1%) compared with comparison group (45%, 68.7%, 57.9%, and 8.6%), respectively with statistically significant difference ( $P < 0.05$ ).

These results were in accordance with Stured *et al.*,<sup>(17)</sup> who reported that physical demands were the most frequent stressors and second most severe compared to all other stressors. The authors explained their finding by much heavy lifting and carrying under difficult conditions. In addition, this concurs with other studies, which have found that ambulance personnel report higher levels of musculoskeletal strain than employees in other health services,<sup>(4)</sup> and that ambulance personnel self-report more musculoskeletal and physical health problems than the general population.<sup>(18,19)</sup>

These results were consistent with Ploeg and Kleber<sup>(4)</sup> who reported that ambulance workers scored higher than reference group, which meant that they reported more chronic work related stressors.

Moreover, EMRs at Mansoura reported poorer communication with their organization (27.1%) than comparison group (12.1%) with statistically significant difference ( $P < 0.05$ ). These results came in agreement with similar study in Netherland that reported significantly

higher mean levels of poor communication among ambulance workers compared to reference group.<sup>(4)</sup>

Also, social support with supervisors among EMR (85%) was less than that reported by comparative group (92%) with no statistically significant difference ( $P > 0.05$ ). In addition, social support with co-workers was (95.6%) among EMR compared 95.9% among the comparison group with no statistically significant difference ( $P > 0.05$ ). EMR had higher levels of group moral and cohesion (98.6%) compared with comparative group (93.6%) with statistically significant difference ( $P < 0.05$ ).

It was noticed that the levels of social support with supervisors and co-workers in current study were satisfactory in comparison to Stured *et al.*,<sup>(17)</sup> who reported that lack of social support from co-worker and leaders was the second most frequent stressor after physical demand and most severe general stressors. Moreover, Ploeg and Kleber<sup>(4)</sup> reported higher mean levels for lack of social support from colleagues and supervisors among ambulance workers compared with reference group with statistically significant difference ( $P < 0.001$ ).

Frank and Ovens<sup>(20)</sup> have pointed to the fact that emergency work is both rewarding and demanding in that little control over patient-mix exists, compounded by the fact that life and death decisions have to be made quickly.

The current research revealed that lack of decision control at work and lack of organizational decision control were more commonly reported (30.7%, 72.1%) among EMRs compared with comparative group (10.7%, 50%) with statistically significant difference ( $P < 0.05$ ).

Ploeg and Kleber<sup>(4)</sup> reported higher mean levels for lack of job autonomy among ambulance workers than reference group with statistically significant difference ( $P < 0.001$ ).

Alexander and Klein<sup>(21)</sup> reported indeed high levels of job satisfaction among ambulance workers. However, a distinction between satisfaction with regard to the job and satisfaction with regard to the organization can be made. Expressed job satisfaction does not mean that the organization does not have to concern about the well-being of its employees. Dissatisfaction with organizational aspects has a price: A price to be measured in terms of the levels of general psychopathology, burnout, and posttraumatic symptoms. Current study results revealed that lack of organizational decision control among EMRs can be important source for organizational dissatisfaction and psychopathological diseases among studied population.

The levels of burnout subscales in the form of EE and DP were higher among EMR compared with comparison group with statistically significant difference ( $P > 0.001$ ). The percentage of the workers with high score on separate subscales were (20%) for EE, 9.3% for DP, and 19.3% for low PA.

A study from the Netherlands Ploeg and Kleber<sup>(4)</sup> used the MBI to investigate the prevalence of burnout in workers from 10 regions and found a higher risk for burnout in ambulance workers (8.6%) than in the general working population (5.3%). The percentages of workers with high scores on the separate dimensions were reported as 12% for EE, 18% for DP, and 16% for low PA.

However, a study from a single service in the USA reported an opposite result and concluded that the average burnout scores in ambulance workers were slightly but not significantly lower than the national average.<sup>(22)</sup> However, this conclusion was based on a small and non-representative sample. A study from a Scottish regional ambulance service reported the percentages of workers with high scores on the MBI for the separate scales as 26% for EE, 36% for low PA, and 22% for DP, but did not report confidence intervals.<sup>(21)</sup>

Our research results have reported comparable levels of depression symptoms according to BDI among EMR and comparative group. The prevalence of depression was 3.6% among EMRs compared with 2.9% among comparative group with no statistically significant difference ( $P > 0.05$ ). A lower prevalence (2.1%) of severe symptoms, as measured with BDI, was reported in a study from a single ambulance service in Canada.<sup>(23)</sup> Three other studies reported a similarly high prevalence of psychological distress (>20%), as measured by the General Health Questionnaire [GHQ-12].<sup>(21,24,25)</sup>

Median total score of Davidson scale for PTSD was higher among EMR (5) compared with comparative group (0) with statistically significant difference ( $P < 0.05$ ). Also, 13.6% of EMRs had PTSD compared with (2.9%) of comparative group with statistically significant difference ( $P < 0.05$ ).

The prevalence of posttraumatic stress symptoms was also high in some studies<sup>(1,26,27)</sup> although these studies used different scale for evaluation of PTSD. However, these findings should be interpreted with caution, particularly because the high PTSD symptom scores in the ambulance services might reflect that, when asked to report on a traumatic incident, ambulance workers may have a larger reservoir of potentially traumatic memories to choose from than the general population. Hence, ambulance personnel may score much higher on the PTSD scales than the general

population without necessarily having more actual problems. Therefore, more research should focus on sleeping problems, intrusion, and hyperarousal among ambulance personnel.<sup>(15)</sup>

### Strengths and limitations

The strengths of this study are first, the ability to compare the frequency of psychosocial hazards with a sample of working population as control group. Most of previous studies focused on emergency workers only or compared with general population which is different from working healthy population. Second, there is little public awareness that EMTs' job is the host of many occupational hazards especially in developing countries. Third, burnout and depression among EMRs are still an open question due to conflicting results reported by previous studies. Limitations of current study included convenient sample of EMRs which can be attributed to limited time for data collection on work day for all responders who work day after day. Another aspect that can be investigated in further research is drug abuse as a consequence of job stress especially among emergency drivers. Moreover, no clear delineation was reported in current research as regards cause-effect relationship between burnout and PTSD whether emotional exhaustion caused PTSD or not.

### Conclusion

The EMRs had perceived dealing with traumatic events and serious accidents as the most severe acute stressors. There were statistically significant differences between EMRs group and comparative groups as regards most of chronic work-related stressors except for lack of social support with colleagues and supervisors. The EMRs groups had higher levels of physical strain, rapid pace of work, lack of decision control, and organizational decision control. EMRs had higher mean levels of emotional exhaustion and depersonalization compared with comparative group. In addition, EMRs had more than 10<sup>th</sup> with clinical levels of PTSD compared with 3% in comparative group. Emotional exhaustion was significantly found among EMRs with PTSD compared with healthy ones. However, there was no evident difference between the two groups as regard depression score. Based on the above results, those emergency responders are in urgent need for stress management and debriefing programs for prevention and alleviating these psychosocial health hazards with particular stress on organizational role in enhancing levels of satisfaction among emergency responders.

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# Paramedics' Experiences and Coping Strategies When Encountering Critical Incidents

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## Abstract

Paramedics frequently encounter critical incidents (CIs). Their emotional, cognitive, and behavioral responses to these encounters present them with a variety of difficulties on the way to, during, and after events. The aim of our study was to examine how paramedics working in a large emergency service organization in Israel experienced CIs and the coping strategies they used to deal with these experiences. We interviewed 15 paramedics from this organization. Through data analysis, we revealed two main themes: (1) between connection and detachment and (2) between control and lack of control of the situation. Paramedics, who connected with their feelings regarding the patient and/or the family in different CIs, as well as those who sensed a lack of control, experienced difficult and negative emotions. To achieve detachment, they used a variety of coping strategies. Those who experienced cognitive and functional control of the situation reported a positive and empowering experience.

## Keywords

emergency care; illness and disease, life-threatening / terminal; interviews, semistructured; research, qualitative; posttraumatic stress disorder (PTSD); power / empowerment

Paramedics are frequently exposed to critical incidents (CIs) involving human suffering and life-threatening situations. Their reactions to these encounters are potentially harmful to their mental health and emotional well-being (Alexander & Klein, 2001; Bennett, Williams, Page, Hood, & Woollard, 2004; Clohessy & Ehlers, 1999; Regehr, Goldberg, & Hughes, 2002). One possible effect is the development of posttraumatic stress symptoms (Bennett et al., 2005; Regehr, Goldberg, & Hughes, 2002).

Mitchell (1983) coined the “critical incident” concept. He was referring to any situation that causes exceptionally strong emotional reactions in emergency service personnel, potentially hampering their ability to function, either at the scene of or after an event. A large part of paramedics’ work includes exposure to and dealing with CIs (Nirel, Goldwag, Feigenberg, Abadi, & Halpern, 2008; Regehr, Goldberg, & Hughes, 2002). CIs include patients in life-threatening situations—defined as an illness or injury that threatens the patient’s survival (Sanders, 2007). In these situations, the paramedic’s role includes administering immediate treatment and performing advanced, medical, life-saving procedures in an out-of-hospital setting (Sanders).

Most studies dealing with exposure of ambulance personnel to CIs have addressed the negative implications

for their mental and physical health (e.g., Alexander & Klein, 2001; Bennett et al., 2004; Bennett et al., 2005; Clohessy & Ehlers, 1999; Gallagher & McGilloway, 2008; Halpern, Gurevich, Schwartz, & Brazeau, 2009a, 2009b; Sterud, Ekeberg, & Hem, 2006). Nevertheless, little attention has been given to the distinction between the different events in terms of their characteristics, and to the emotional experiences of the workers involved. These studies were focused mainly on the ambulance personnel as one entity, giving scarce attention to paramedics as a separate group. Therefore, a study of how paramedics experience these events is needed.

Research on ambulance personnel’s experience and coping with encounters with CIs is scarce. One study (Halpern et al., 2009b) emphasized the importance of identifying ambulance personnel’s emotions following exposure to CIs, to make them aware of the need to seek

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assistance and support and to legitimize expressing these emotions. Halpern et al. described primarily vulnerability, discomfort, and overwhelming compassion evoked by events that ended with a patient's death. The study participants had difficulty describing this sense of compassion and even admitting its presence. Instead, they reported frustration, anger, sadness, and emotional numbness. Halpern et al. suggested that these negative emotions might have been generated by the threat posed by the compassionate emotions to the ambulance personnel's professional identity as emotionally strong individuals and to their ability to remain calm during the event. In addition, when unable to help the patients, they doubted their professional competence and capabilities, and described experiencing guilt. Some blamed the emergency organization for giving incorrect information about the event at the dispatch stage, or for not providing support in the aftermath.

Intervention in serious crisis situations or witnessing human tragedy might carry a cost for relief workers (Eriksson, Vande Kemp, Gorsuch, Hoke, & Foy, 2001). Their treatment of trauma victims might affect their personal and professional lives (Canfield, 2005; Somer, Buchbinder, Peled-Avram, & Ben-Yizhack, 2004). In a study on paramedics' reactions to human tragedy, Regehr, Goldberg, and Hughes (2002) found that exposure to difficult events, such as the death of a lonely older person, the abuse of an innocent child, the loss of a family member, and the suicide of a despairing victim had caused paramedics to develop an emotional connection to patients or to their bereaved families. This sometimes led to the development of vicarious trauma.

Vicarious traumatization (McCann & Pearlman, 1990) is defined as a process that might occur in people treating trauma, in which their inner experiences undergo a negative transformation as a result of committed and empathic engagement with the patient's traumatic experience (McCann & Pearlman; Pearlman & Maclan, 1995). Vicarious traumatization might cause people to experience symptoms similar to posttraumatic stress disorder (PTSD) and emotional reactions that include negative imagery, a change in worldview (McCann & Pearlman; Regehr, Goldberg, & Hughes, 2002), and intrusive thoughts, as well as a disruption of five cognitive schemata needs areas: trust, safety, control, esteem, and intimacy (McCann & Pearlman).

In contrast, several researchers have recently addressed positive psychological effects and posttraumatic growth (PTG) among different emergency and rescue service personnel, who treat trauma (Halpern et al., 2009b; Paton, 2005; Regehr, Goldberg & Hughes, 2002; Shakespeare-Finch, Gow, & Smith, 2005; Shakespeare-Finch, Smith, Gow, Embelton, & Baird, 2003), and among workers in disaster areas, who were exposed to distressing scenes of death and destruction (Linley & Joseph, 2006; Shiri, Wexler, Alkalay, Meiner, & Kreitler, 2008). Tedeschi and

Calhoun (1996) coined the term *posttraumatic growth* to describe positive psychological changes in individuals following traumatic events (Calhoun & Tedeschi, 1999). These included positive changes in self-perception, interpersonal relationships, and philosophy of life (Arnold, Calhoun, Tedeschi, & Cann, 2005; Calhoun & Tedeschi, 2006).

Several qualitative studies have revealed positive emotions among ambulance personnel exposed to CIs. The positive impacts they described were on interpersonal relationships and personal growth (Halpern et al., 2009b), as well as placing a higher value on their own relationships and perceiving them in a more positive light (Regehr, Goldberg, & Hughes, 2002).

### Coping Strategies

Various researchers have explored ambulance personnel's strategies for coping with the implications of treating CIs, and explained several strategies used in their encounters with these events. First, on the way to the event, ambulance personnel prepared themselves for the unknown situation by holding an "inner dialogue." While imagining the type of coping that awaited them, this dialogue helped them to remain alert and to deal with anticipatory stress (Jonsson & Segesten, 2004). Second, during the event the ambulance personnel made a conscious effort to block their emotional reactions toward patients through a cognitive empathy strategy, facilitating their cognitive and technical means for coping with the event. They understood the patients' situation and suffering, but maintained emotional distance to preserve their ability to provide treatment (Regehr, Goldberg, & Hughes, 2002). Third, conversing with someone who would serve as a container for emotions that might flood the ambulance personnel after the event assisted in internalizing the traumatic experience and in coping with difficult memories (Jonsson & Segesten).

Compensatory acts were also a way of dealing with the implications of treating CIs. Comforting the bereaved family, attending a funeral, or visiting patients in hospital contributed to positive feelings among the ambulance personnel (Halpern et al., 2009b). Some researchers mentioned other strategies used, including the use of "black humor" (Alexander & Klein, 2001; Halpern et al., 2009b), anticipating the end of the shift, and thinking about their families and about interesting things unrelated to work (Alexander & Klein), while avoiding thoughts about the current situation and keeping their thoughts to themselves (Halpern et al., 2009b).

### Factors That Help Efficient Coping

In accordance with the aforementioned coping strategies, we identified several effective strategies in the literature, which included training for ambulance personnel, and

giving them time to recover and to receive support from family, friends, or the organization following exposure to CIs. Halpern et al. (2009b) attempted to develop effective interventions tailored to the emergency services' organizational culture. Study findings indicated the importance of training the ambulance personnel, their instructors, and families to identify signs of stress following exposure to CIs. Instruction and briefing prior to the event enhanced their sense of control and the development of effective coping strategies (Alexander & Klein, 2001). Alexander and Klein underlined the importance of providing recovery time between events to prevent the cumulative effect of emotional burden. This point was reinforced by interviews with ambulance personnel in the study by Halpern et al. (2009a), who found that a break of half an hour to an hour among colleagues following exposure to a CI helped them calm down and release tension.

Researchers found that receiving support from family, friends, and intimate partners had a significant negative correlation with the degree of posttraumatic distress and depression among diverse emergency service personnel following a traumatic event (Regehr, Hemsworth, & Hill, 2001; Weiss, Marmar, Metzler, & Ronfeldt, 1995). Paramedics who received social support following a traumatic event had fewer absences from work because of subsequent mental stress (Regehr, Goldberg, Glancy, & Knott, 2002). In studies about the familial and organizational support following CIs, most of the ambulance personnel mentioned support from their partners or colleagues, but not from the organization. The results emphasized the need for available support from the staff and the organization to modify the sense of distress among ambulance personnel in general and paramedics in particular (Alexander & Klein, 2001; Halpern et al., 2009a; Regehr, Goldberg, & Hughes, 2002).

In sum, the existing knowledge regarding the impact of the encounter with CIs on the experiences of ambulance personnel stresses mainly the negative implications for their mental and physical health, and devotes less attention to positive implications. In addition, the literature includes various reviews of strategies used by ambulance personnel for coping with the implications of their encounter with CIs, emphasizing mainly cognitive and behavioral strategies.

Most of the studies presented here were conducted using quantitative methods. Fewer qualitative studies have been performed addressing the experiences of the entire contingent of ambulance personnel (drivers, emergency medical technicians, paramedics, and supervisors) when encountering CIs. The individuals fulfilling these roles differ in their professional training, authority, and frequency of exposure to CIs, and hence the impacts of the encounter on them are diverse. Nevertheless, no picture is provided in the literature of how paramedics'

experiences are shaped in their encounter with CIs and of the different implications involved.

The number of paramedics in Israel is steadily increasing because of population aging and growth, the expansion of morbidity, and the need to train paramedics for military purposes. As ambulance personnel, they are considered highly skilled paraprofessionals, who frequently provide life-saving intervention in serious medical crisis situations, especially during periods of violent conflict and terrorist attacks (Nirel et al., 2008). Nevertheless, Israeli paramedics' experiences of encounters with CIs have been scarcely studied to date.

Therefore, the aim of this qualitative study was to examine the experience of encountering CIs and the coping strategies used among paramedics working in a large emergency service in Israel. The main research question was as follows: How do paramedics experience their encounters with CIs? This question led to two secondary questions: What is the impact of such encounters on the work and personal lives of paramedics? How do paramedics cope with the feelings and thoughts resulting from such encounters?

## Method

In this study, we used a qualitative-phenomenological perspective, focusing on participants' lived experiences, seeking in-depth understanding of what people experience and how they interpret the life-world (Moustakas, 1994).

## Participants

We recruited the participants using purposeful sampling (Curtis, Gesler, Smith, & Washburn, 2000). This was to ensure that participants represented a wide range of experiences in terms of professional seniority in service, types of events encountered, and variation in gender, age, and educational background. We contacted paramedics who worked for a large emergency service organization in Israel and introduced them to the topic of this study. Those who met the aforementioned sampling criteria and who expressed interest in participating in the study were included. Consequently, the study sample consisted of 15 paramedics (5 women, 10 men) aged 23 to 51 years whose seniority in a paramedical profession ranged from 1 to 26 years. They worked in mobile intensive care units and intensive care ambulances without a physician, and were based at the organization's stations in different parts of Israel. Their rate of exposure to CIs in the previous 6 months ranged from 20 to 150 events.

Qualitative research is based on small purposive samples of informants who are considered to be "information rich," consisting of participants who are familiar with or

typify the research topic (Morse, Barrett, Mayan, Olson, & Spiers, 2002). Thus, the depth provided by the sample compensates for its lack of representativeness of the general population (Patton, 2002). In the present study, 15 paramedics provided suitably rich information, and saturation was attained.

### *Data Collection*

We collected the data through in-depth semistructured interviews to allow the participants to tell their stories about the phenomenon under study in their own words, and to provide rich, comprehensive information regarding their experiences (DiCicco-Bloom & Crabtree, 2006; Patton, 1999). The interview was based on an interview guide covering several content areas: the therapeutic encounter with CIs; its implications for the personal and professional domains, emotions and thoughts that arose in the encounter; and the paramedics' coping strategies. The interviews lasted between 1 and 3 hours. To create a quiet, calm environment, the interviews were conducted outside of the participants' workplace and work hours. The interviews were tape recorded and transcribed verbatim (McLellan, MacQueen, & Neidig, 2003).

### *Ethical Considerations*

After receiving approval for the study from the organization's review board, we contacted paramedics who corresponded to the aforementioned sampling criteria. We provided them with a detailed explanation of the research procedure. On receiving their consent, we arranged a time and place for the interview at the participants' convenience. We asked them to sign an informed consent form and promised to maintain privacy and confidentiality regarding any disclosed information. To prevent the close environment from identifying the participants, we changed their names and removed other identifying details from the interview transcriptions and the participants' quotes in this article.

### *Data Analysis*

We used thematic content analysis for analyzing the data. This device is considered suitable when existing theory or research literature on the phenomenon under study is scarce, enabling attainment of information from study participants without imposing preconceived theoretical perspectives or categories on the data (Hsieh & Shannon, 2005). We performed the analysis in two main stages. First, we identified initial themes that emerged inductively and flowed from the data from each separate interview. This stage included reading the interview transcripts repetitively, while listening to the recordings, to become

familiar with the participants' stories and to identify central issues in each of the separate interviews (Patton, 2002). We documented our first impressions, thoughts, and initial analysis. In the second stage, we examined themes that had arisen in the initial analysis of each separate interview, seeking connections, similarities, and differences between them. Consequently, we identified central themes that emerged from all of the interviews, which characterized the phenomenon under study and represented its meaning (Smith, Flowers, & Larkin, 2009; Thorne, 2008).

### *Rigor*

To ensure the quality and trustworthiness of the study and its findings (Lincoln & Guba, 1985), we made a conscious effort to be aware of and bracket out our assumptions and attitudes in the context of the phenomenon under study. For example, while collecting the data we wrote a reflective journal in which we documented our feelings, thoughts, and internal conflicts before and after each interview (Finlay, 2002). Thus, our interpretations represented the study participants' stories as far as possible, ensuring credibility. We documented all the stages of the study and its procedures to preserve an audit trail for transparency and coherence regarding the relationship between the study data and the findings and conclusions (Morse et al., 2002; Polit & Beck, 2010).

The application of systematic data analysis, grounded in participants' narratives, maintained the study's dependability (Lincoln & Guba, 1985). To achieve intercoder reliability (Schwandt, 2007), each author performed the thematic content analysis separately, both by theme content and interpretation of their meaning across participants. We then examined comparatively our individual analyses, discussing differences and searching for joint agreement, thus enhancing trustworthiness.

### *Findings*

Data analysis revealed two main themes. The first theme, "between connection and detachment," described the participants' experiences during three time periods: on the way to the event, during the event itself (while treating and conveying the patient to the hospital), and after the event (at work and at home). During these periods, the participants moved experientially back and forth on a connection-detachment continuum—between emotional detachment (from patients and their families), cognitive detachment (from the situation, the patient, and the family), and physical detachment (from the patient's family) at one end, and connection to all these factors at the other. This theme is divided into two subthemes, one relating to the experience of connection and the other to the

experience of detachment. To achieve detachment, the participants used diverse coping strategies to disconnect themselves from emotions and thoughts resulting from their encounter with CIs.

The second theme, "between control and lack of control of the situation," is divided into two subthemes of control and lack of control: one relating to the participants' sense of control and the other to the experience of lack of control over the CI, its impact on their feelings, and the resultant coping strategies used during the event.

### *Theme 1: Between Connection and Detachment*

Traveling to events during the working day involves a journey to the unexpected and the unknown. Although most of the participants in this study described deliberate detachment from reflecting on their emotions during this journey, a few participants described conscious emotions regarding the event, toward either themselves or the patients. In the following paragraphs, we present examples of these two situations.

#### *On the Way to the Event*

*Emotional connection to the event and to the patients.* Daphna (3 years' seniority as a paramedic) described her feelings on the way to resuscitate a baby:

Seeing it is frightening. I do not know, it is frightening if we get there too late, frightening that we will be late by a critical few minutes . . . because sometimes, it is a matter of life and death.

In the event described, the speed of the arrival of the ambulance personnel meant saving the patient's life, which apparently intensified the participant's sense of responsibility. Daphna was tuned to the event and to the baby's dangerous condition. Before her arrival at the incident, she was already alert and experiencing fear of encountering difficult, emotionally stirring scenes as well as of the danger that a delay in providing assistance could cost the baby his life.

*Emotional detachment from the situation: Experience and coping strategies.* Tali (5 years' seniority as a paramedic) described how she prepared herself for emergency events involving children:

Tali (T): I read the children's handbook. What are the medicinal dosages? . . . If it's asthma, I will do this, if it's stridor [an upper respiratory symptom] or whatever else, I train myself in what I will need to do.

Interviewer: Do you feel anything on the way to the event?  
(T): That whole subject is somewhat blocked.

To experience confidence and to prepare for a situation whose details were, as yet, uncertain, most of the participants described focusing their thoughts on the technical activity and management procedures that they would need to perform on arrival at the scene. Participants employed such strategies especially on the journey to particularly serious events, such as a severe road accident with a large number of injuries, or when they were involved with children and infants in life-threatening situations. This was a way of "drilling" themselves and thus avoiding connecting to their emotions on the way to the event.

#### *During the Event*

*Emotional connection to the patients.* This emotional connection occurred when the chance of saving the patient was impossible or very unlikely, or when the participants had to use a life-saving treatment with a potentially fatal outcome in the long term. During these events, the participants experienced emotions such as pain, compassion, and helplessness. Yaniv (3 years' seniority) described his feelings toward older patients in life-threatening situations:

With patients for whom I know that an endotracheal tube is likely to be their death sentence, I do make other considerations, but once again, up to a certain limit . . . which is a medical limit, not an emotional limit. Compassion is, maybe, the only feeling [which I experience], when I know that it is supposed to be a life-saving procedure, but that it carries the risk of being the last treatment that the patient will ever have.

Yaniv described an event in which his practical action could have eventually caused the patient's death. He felt compassion toward him, but as he said, in his own words, "up to a certain limit." In practice, Yaniv attempted to maintain the patient's condition without invasive intervention. From this point on, it was the medical rather than the emotional limit that determined how he would function.

*Emotional detachment from the patient: Experience and coping strategies.* During the event, the participants focused on technical activity as a means of detaching emotionally from the patients. Based on the participants' descriptions, this was one of their more prevalent strategies for coping with the stress of the encounter. Ayala (5 years' seniority) described this:

I feel far more responsibility when I see that the patient depends on me. . . . He looks at me as if to say, "I am depending on you to save me, that is why I called you here." That is a much bigger responsibility than with someone who

isn't talking to me or looking at me. In those cases, I feel less stressed, because he is just something that I am treating. When I'm resuscitating, I generally detach from the patient's emotional side. I do not relate to it, because there is no one to talk to. I relate only to the procedures, what needs to be done—infusion, ventilation, and so on—as opposed to someone who is talking to me, when I need to relate to his emotional side and make sure that he receives everything in an appropriate way. . . . That is much more difficult than treating a patient who isn't talking.

Ayala referred to the difficulty involved in the personal and emotional attitude toward patients. She made a distinction between a situation in which patients made eye contact with the paramedics or spoke to them and a situation in which communication was prevented by their medical condition. She described how, in the first instance, direct communication with the patient reinforced her sense of responsibility. In the second instance, this sense of responsibility was weakened with the emotional detachment achieved, enabling focus on the medical procedures necessary to save the patient's life, while avoiding relating personally to the man himself.

*Emotional, cognitive, and physical detachment from the patient's family members: Experience and coping strategies.* The presence of the patient's family at the scene of the event while the patient was being treated was distressing for the participants and hindered their ability to detach emotionally; they used a variety of tactics to cope with this difficulty. These included physical detachment from the family members and distancing them from the scene, and projecting their own composure onto the patient's family members. Daphna (3 years' seniority) described the sense of responsibility and professional obligation to save the life of a young girl, who still had a chance to live. She described taking concrete steps to detach emotionally from the parents:

We saw a policeman running toward us holding a little girl, who looked bluish-black . . . and we knew this was a case of near-drowning. She was all wet and she wasn't breathing, but luckily she had a pulse, so we treated her very fast with life-saving procedures and very quickly flew her to the hospital emergency room. . . . That little girl was saved. . . . You sense their [the parents'] suffering, feel their misfortune. You see everything with your eyes, but there isn't too much time to reflect on what the mother is feeling at that moment. I have a baby in my arms and I am responsible for her, and very often I prefer to close the ambulance doors and not let the family inside, because it will disturb me when providing the treatment. Some procedures need immense concentration if they are to be done properly.

Daphna described being on two dimensions simultaneously. The baby's critical condition forced her to focus

on the practical dimension, while exercising emotional, cognitive, and physical detachment from the parents, whose presence alongside their child would be natural, appropriate, and necessary in other situations of illness. Nevertheless, on the emotional dimension, this participant sensed empathy with the parents' anxiety and suffering, and was aware of her feelings. Therefore, practically (and maybe metaphorically), she closed the ambulance doors and did not allow entry to the parents, thereby maintaining her emotional distance from them and securing her ability to treat the child.

### After the Event

*Emotional connection to the patients, their families, and to other ambulance personnel.* The participants were plagued by difficult emotions and thoughts even after completing treatment in CIs. Ayala (5 years' seniority) described such an experience:

I performed resuscitation on a forty-year-old man . . . he had been completely healthy and suddenly, cardiac standstill! His wife found it very hard to cope. . . . They have two small children. The resuscitation was successful in the end, but he remained in a vegetative state. . . . I know that this could have been avoided if the team who got there before us had resuscitated him properly . . . and the result was that although he survived, his situation was very bad, which is frustrating. . . . If I had got there a few minutes earlier . . . then his condition might have been better.

Ayala experienced dual frustration (a) because of the difficulty to accept the severe and unexpected clinical outcome for a young patient—the father of small children—and because of his wife's difficulty in coping with the situation; and (b) because of the inadequate treatment provided by the medical team that had arrived earlier. She felt guilty for not having arrived sooner, felt angry with the other team, and the tragic outcome intensified her frustration.

Ayala's description represented the experiences of participants in situations in which they failed to save a patient's life, or when the patient was left severely damaged. This difficulty intensified when patients were young—infants, or children—and when they sensed that death or serious injury could have been avoided. They reported experiencing a range of emotions such as helplessness, frustration, sorrow, pain, compassion, anger, irritation, fear, self-blame, and/or blame of the patient or the patient's family for the medical outcome.

*Emotions regarding their own and their family's fate: Experience and coping strategies.* Through treating a variety of illnesses and injuries and the exposure to traumatic events, the participants confronted personal fears

regarding themselves and their families. These penetrated the private domain, as described by David (24 years' seniority):

You start thinking that it will happen to you, some kind of CVA [cerebrovascular accident]. There's nothing more frightening than that. As a paramedic, I would even know what was happening to me. We often talk about how frightening it will be if we actually understand that we are in a catastrophic situation. We kind of laugh about it: "What will it be like when I'm going to die? What will be the last words that I'll hear?" The rescue team will arrive and I will feel as though I'm drowning in my pulmonary edema and the last words that I will hear will be the apprentice [from the paramedics course] saying, "I want to do the endotracheal tube." . . . We are going to set up a secret society at work, and we're going to swear, like a blood oath . . . a Mafia oath, that we will never let each other get to that situation. It really frightens us.

David was terrified by thoughts of the possibility that some day he might find himself in a life-threatening situation and even on the brink of death. He experienced difficulty in ignoring his fears because of his broad medical understanding of the severity of such cases. The mechanism of detachment from emotions and visions, which was presented in previous examples, was ineffective in this case, and the participant presented an additional style of coping, which involved the mutual support of his colleagues. They made a binding decision (a type of blood oath) to save each other from the suffering involved in critical situations. This decision helped calm their fear.

*Emotional and cognitive detachment from the day's events at work: Experience and coping strategies.* Detachment from the experiences at work emerged as an essential need in preparation for the participant's return home at the end of the shift, as described by Amir (24 years' seniority):

Of course it happens at first [that emotions are aroused]. You get hysterical at home and maybe a bit depressed. But that's when you're a beginner, and later, you get used to it. If I hadn't gotten used to it, I do not believe that I would have stayed. It would be impossible to continue! You would fall apart! It would be impossible, with all the things you see, and dealing with illnesses and terrible things, the whole time. If you bring it home every day, it will end, at some point. If you can't make the separation, you can't go on with it.

This participant described the need to separate the home and work domains, and he attributed his ability to make this separation to years of cumulative experience. His need for emotional and cognitive detachment in preparation for returning home at the end of a day full of difficulty and pain was essential for preserving his mental

well-being and his ability to function in difficult events in the future. These were an inseparable part of his work.

## *Theme 2: Between Control and Lack of Control of the Situation*

The participants' encounters with CIs evoked varied emotions, which were influenced by their sense of control or lack of control of the situation. Those who sensed cognitive and functional control of the situation had a positive, empowering experience. Those who sensed a lack of this type of control had a difficult, negative experience. In the following paragraphs, we present examples of both types of situation.

*Control of the situation.* When participants had succeeded in saving a patient's life, and when the patient had responded well to the treatment, most of them had felt in control and, hence, had experienced positive emotions. Asaf (4 years' seniority) described his feelings:

At the moment when I have stabilized the patient and we're on the way to the hospital and I know that I was in control of the situation, I feel as though I have really provided the treatment that I was supposed to give. I think that every paramedic knows whether he or she has treated a patient well or not. The moment that you feel as if you have treated someone well, you even breathe a sigh of relief . . . you feel good about yourself: "Wow, well done . . . I did this and that." . . . Personally, I feel as if I know what is happening and I know that I have finished treating that injured person. I feel a degree of calm and lessening of all that tension that I was in.

When Asaf succeeded in saving and stabilizing the patient, his self-experience was of a good and skilled professional, which gave him a sense of control over the event. In this situation, he was able to release the tension that he had experienced during the event, and to calm down. He experienced positive emotions, satisfaction, and the sense of self-worth.

*Personal and professional satisfaction.* The study participants described frequently experiencing difficult emotions in relation to their work. At the same time, they described personal and professional growth from their exposure to CIs. This contributed to them both personally and professionally, and evoked positive and empowering emotions. These emotions were derived partly from the participants' sense of control over the situation, as described by David (24 years' seniority):

In cases when the patient is in a critical or life-threatening condition, or is clinically dead, you can still work miracles. Each and every one of us who has been working for many

years has a long list of patients at whom they can point and say, [emphasizing each word] "If it were not for me, he would not be here" . . . because I was taught well, and I learned, and I know, and I have skills, and I made the right decisions, quickly, and I managed my team well. That man or that woman or that child are alive today and are with their families, and that is what gives us satisfaction.

David acknowledged the meaningful role that he had played in saving patients. This insight granted him a sense of being in control of the situation when he experienced success in his job. While telling the story, he emphasized his positive capabilities ("I made the right decisions"; "I managed my team well"), which all confirmed his belief that he was playing an essential role and that people needed him and depended on him. He experienced satisfaction and the sense of self-worth.

### *The Sense of Lack of Control: Experience and Coping Strategies*

Although the outcomes of some events led to participants' sense of cognitive and functional control of the situation, some events ended differently. Most of the participants had experienced a lack of control during an event in which they had been unable to help the patient because of limited resources. They might have lacked knowledge or equipment, or might have been required to make a critical decision for the patient. The lack of control in these situations, or what might have happened in the future, evoked difficult emotions. Asaf (4 years' seniority) depicted this:

I had an eighteen-year-old pregnant woman who was brought into the ambulance at 30 weeks, and it was her first pregnancy. She thought it was a stomach ache. A few seconds later she gave birth to a premature baby. On the paramedics' course, you never learned what to do with a premature baby . . . and suddenly, you see something that is so small, which you have never seen before, not even at normal births in hospital . . . and there's a feeling of helplessness because I do not even know if I'll know how to care for it. . . . What should I do now? How do I cope with something so small? . . . Will I be able to open a vein for the infusion? I'm not sure, because everything there is so small. Have I got the right equipment here? . . . You never know how those cases are going to end, and you're incapable of treating the person properly, like you'd be able to if he was just a little bit bigger.

Asaf experienced helplessness, which was derived partly from his appreciation of his highly responsible role at the unexpected premature birth and partly from his understanding that he lacked the required skills and equipment to intervene in this type of emergency. He expressed doubts regarding his professional abilities, and

these only increased his experience of lack of control in the situation.

The participants described using coping strategies during events in which they experienced lack of control. Tali (5 years' seniority) described coping with the sense of helplessness during an event in which a child was in a life-threatening situation:

The meaning of the word helplessness, as I perceive it, is as if you [are saying to yourself], "Wow, there is nothing I can do." There is nothing I can do if he just dies. . . . So I can feel helpless. But in this case, you have an obligation. It's as if you're saying, "Wow, what will I do?" Some kind of helplessness, which is genuinely very momentary, because as soon as you get there and receive the child in your arms, you do whatever you can . . . to move on from that starting point of helplessness. That [the sense of helplessness] is something terrible, in which you're not active, as if you are stuck in some situation.

Tali experienced momentary helplessness following her sense of a lack of control during the event. She made the distinction between the sense of helplessness following "genuine" inability to save the patient because of his medical condition and the sense of momentary helplessness derived from her fear that she would not bring him any benefit. This feeling passed once she understood that assistance was possible. The sense of the lack of control was uncomfortable for Tali, because the professional demand from paramedics is to be in control so as to be able to function immediately in a life-saving capacity. Achieving control through some kind of action helped Tali to neutralize her negative emotions.

When referring to a CI in which Nick (20 years' seniority) was not present on his own, he said,

It is kind of a lesson; it's not always my event [colleague's events]. The very fact that I deal retrospectively with a CI, that I check [what happened] means that I am coping with this situation. . . . This is a kind of defense . . . [to realize] that if such an incident recurs, I have done my best.

Nick emphasized how the entire ambulance staff benefited from discussing what had happened during a CI, even if they had not been present at the event. Such discussion was beneficial to the participants because it helped to create a sense of control in similar situations in the future.

### **Discussion**

The findings of this study show that paramedics experienced dramatic encounters with CIs. Given the fact that they were frequently called out to treat people in life-threatening situations, they were faced with professional

and emotional challenges alike (Jonsson & Segesten, 2003), to such a degree that they experienced negative and difficult emotions (Halpern et al., 2009b). Nevertheless, in addition, the paramedics reported positive and empowering emotions when experiencing a sense of control of the situation.

The study was conducted in Israel, where terrorist attacks, including the firing of missiles on civilian areas, are part of a tough, ongoing reality. This notwithstanding, in the present study findings revealed that the main challenge facing most paramedics in Israel was their everyday encounters with CIs, which were not connected to terror. In a study by Nirel et al. (2008), the type of CIs most frequently mentioned as difficult by the Israeli paramedics (56%) involved children (death, resuscitations, and accidents), whereas only 16% mentioned disasters and terrorist attacks, including Qassam rocket attacks, as particularly difficult incidents.

### *Emotional Connection*

The paramedics in the present study scarcely elaborated on their experiences on the way to the event. It can be assumed that they devoted only little attention to the time spent on the journey to the event because of its short duration and because the full intensity of the experience of the encounter was expressed both during and afterwards.

The paramedics in the present study experienced severe frustration and helplessness, and even self-blame (see also Halpern et al., 2009b; Jonsson & Segesten, 2004). Such emotions were manifest especially during events involving infants, children, or young patients, and when the chances of saving them were either very slight or hopeless, even after exhausting all possible treatments (see also Dyregrov & Mitchell, 1992; Halpern et al., 2009b; Jonsson & Segesten, 2003). The paramedics' fierce desire to assist the patient using tools and skills acquired in the professional training, as well as their sense of powerlessness, led to the undermining of their professional confidence and to repeated self-reflection regarding their functioning during the event. However, the paramedics also blamed the staff, who had treated the patient before their arrival at the scene, for the event's disastrous outcome. Projecting difficult feelings onto someone else enabled the paramedics to distance themselves from such negative emotions, thus alleviating their own emotional distress.

Through the treatment of patients and the exposure to traumatic events, the paramedics in this study were subsequently confronted with the fear of aging, death, and illness regarding themselves, their children, and other relatives. These fears were difficult to contemplate and were even repressed on a day-to-day basis. The human belief in their lack of vulnerability, expressed through the

tendency to believe that terrible things will happen to others rather than to themselves (Dyregrov & Mitchell, 1992), might have protected them and allowed them to experience a sense of control over their lives. Nevertheless, the repeated encounter with events that were difficult to contain might have cracked the illusion of strength. The sense of personal vulnerability might have been intensified by their understanding of the significance and severity of the situations requiring their attention.

### *Emotional Detachment: Experience and Coping Strategies*

The paramedics described their emotional detachment experience in various ways and for the event's three time periods. On the way to the event, they used two means of emotional detachment: one involved thinking and pre-planning for the anticipated event and the other involved imagining how it would unfold (see also Jonsson & Segesten, 2004).

During the CI, the paramedics' mode of functioning might have affected the patients' medical condition and tipped the balance toward life or death, and hence, they carried a huge responsibility. To achieve detachment, the paramedics described their personal and professional coping strategies, which helped them to deal with their difficult emotions and enabled them to function efficiently during the event. The paramedics used emotional detachment from the patients and their families to protect themselves from difficult events that might have stirred them emotionally.

The emotional detachment strategy employed by nurses and physicians has been described in the literature (Sorensen & Iedema, 2009; Tutton, Seers, & Langstaff, 2008). Also addressed in the literature is the emotional distancing strategy among ambulance personnel (Dyregrov & Mitchell, 1992; Jonsson & Segesten, 2003, 2004; Regehr, Goldberg, & Hughes, 2002), and among nursing staff in various treatment settings (Blomberg & Sahliberg-Blom, 2007; Goldblatt, 2009; Sandgren, Thulesius, Fridlund, & Petersson, 2006; Wallerstedt, Benzein, & Andershed, 2011). In the present study, the paramedics described detachment and distancing—the two aforementioned strategies—but most of them used the word "detachment." Those who did not mention detachment observed that the two words have different meanings. They made a clear distinction between distancing from the emotional experience, which reduced their emotional involvement in the situation, and total detachment from it, which completely neutralized their emotional involvement.

One of the prevalent tactics used for emotional distancing/emotional detachment from patients and their families during the event was focusing on technical activities. This tactic helped the paramedics cope with the

difficulties and stress associated with these events (see also Dyregrov & Mitchell, 1992; Jonsson & Segesten, 2003, 2004; Regehr, Goldberg, & Hughes, 2002). Nonetheless, because the paramedics' work was guided by flow charts (professional protocols) directed toward technical/mechanical activity, several paramedics in the study explained that this type of detachment is typical of their work, which is focused on technical activity and emotional detachment from patients and their families in critical and noncritical incidents alike.

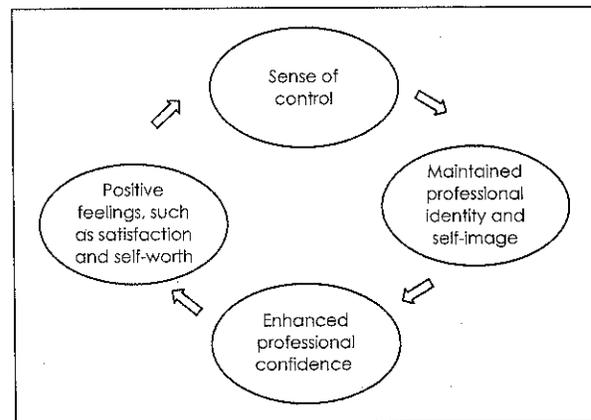
### *Physical Detachment: Experience and Coping Strategy*

Most of the paramedics described an additional coping strategy when referring to events involving infants or children. In such cases, they physically detached themselves from the patient's parents during the event and used different ways to distance them from the scene. This was because they were afraid that the parents' presence would disturb their concentration and hinder their ability to function efficiently while administering treatment. Several other studies have also showed that the fears described by professionals (nurses, physicians) regarding the presence of parents at such events related mainly to the possibility that they would disturb the medical procedure (Dingeman, Mitchell, Meyer, & Curley, 2007) by distracting them and intensifying their sense of stress and anxiety while performing the treatment.

Several studies have examined the actual presence of parents at these events, in hospital. It was found that in general, the parents' presence during treatment neither caused a disturbance nor affected the performance of the treatment staff (Dingeman et al., 2007; Mangurten et al., 2006; Miller & Stiles, 2009). In contrast, in a study conducted in a prehospital setting among paramedics, it was found that the presence of the parents of a child undergoing resuscitation did have a negative effect on their professional functioning (Compton et al., 2006). The paramedics in the present study worked in small teams and were, therefore, unavailable to give attention to the parents of infants or children. Hence, they chose to disregard the parents' current emotional state and to distance them from the scene of the event.

### *Control of the Situation: Positive and Empowering Experiences*

Most of the paramedics experienced a sense of control of the situation when they succeeded in saving the life of the patient or when the patient responded well to the treatment. This success produced instant positive feedback for their work. The sense of control during the event, which

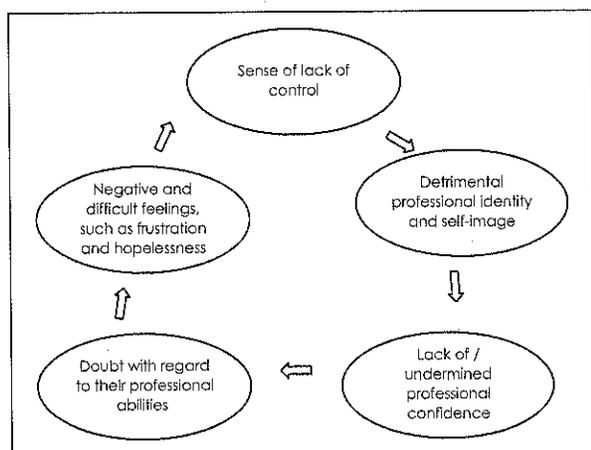


**Figure 1.** Sense of control: Positive and empowering experience.

was based on their understanding of what was happening and on their professional skill, enabled the paramedics to experience growth and positive emotions, such as a generally good feeling and a sense of satisfaction and self-worth.

In the present study, the sense of self-worth appeared to be linked to the nature of the paramedical profession. The paramedics' ability to apply their knowledge and skills to life-saving procedures and the fact that their profession played this crucial role in society enhanced their sense of self-worth and satisfaction, which empowered their personal growth. Findings from previous studies have indicated similar feelings among emergency service personnel who were first to arrive at the scene of an accident (Elmqvist, Brunt, Fridlund, & Ekebergh, 2010) and among nurses who treated dying patients in their homes (Wallerstedt et al., 2011). These professionals' unique area of knowledge and their critical role in the organization granted them the sense of being appreciated (Wallerstedt et al.), empowering their sense of protection and self-confidence (Elmqvist et al.).

Professional identity is defined as a self-image that enables personal harmony and a sense of satisfaction from professional activities (Trede, Macklin, & Bridges, 2011). This develops when the professional behaves in accordance with behavioral values and patterns appropriate to society's expectations of a person filling that role (Paterson, Higgs, Wilcox, & Villeneuve, 2002). When the paramedics in the present study sensed control during the event, they were able to maintain their positive professional identity and self-image and to strengthen their professional confidence. Hence, they experienced growth and positive emotions both during and after the event. Figure 1 presents the process undergone by the paramedics who experienced a sense of control.



**Figure 2.** Sense of lack of control: Negative and difficult experience.

### *The Sense of Lack of Control: Negative and Difficult Experiences*

Nevertheless, the paramedics also experienced events in which they were unable to assist patients because of limited resources or because of unexpected outcomes, such as situations in which the patient's condition deteriorated despite having received the paramedic's help. In these cases, they experienced the sense of a lack of control. This was a cause of discomfort because of the nature of their role and the professional demand to remain in control to save lives. The sense of a lack of control appeared to undermine their professional identity and self-image, as well as their professional confidence (Halpern et al., 2009b; Jonsson & Segesten, 2004). This was manifest in the paramedics' expressions of doubt regarding their professional abilities and their degree of suitability to the profession. They experienced stress, helplessness, anger, and guilt. Figure 2 presents the process undergone by paramedics, who experienced the sense of a lack of control.

Society expects ambulance personnel to be capable of functioning efficiently in highly stressful situations without being emotionally shaken by the difficult scenes and situations involved in their work (Jonsson & Segesten, 2004); the paramedics have similar expectations from themselves. These self-perceptions might be cracked when paramedics discover that their encounter with a CI makes them feel vulnerable, hampering their functioning in the event. The paramedics in this study appeared to have difficulty containing this sense of vulnerability. Miller (1995) used the expression "tough guys" to characterize the professional identity of emergency personnel, including paramedics. These characteristics included adaptation ability, defensive toughness of attitudes, as

well as determination, which were essential for effective functioning in such events. The vulnerability and sensitivity experienced by the paramedics in this study in certain CIs were incongruent with their professional self-expectations; thus, they experienced threat to their professional identity and self-image.

### *Paramedics' Coping Strategies Regarding the Sense of Lack of Control*

The sense of the lack of control was uncomfortable for the paramedics. Therefore, they used several strategies to detach themselves from the subsequent difficult emotions. During the event, one of these strategies included their preference to act rather than doing nothing. Achieving control through some kind of action helped them to neutralize their negative emotions.

CIs involved a heavy emotional burden. Similar to the descriptions in the literature, the paramedics in the present study, on the completion of events, used cognitive coping strategies such as reviewing and reconstructing the event while alone or with their colleagues. They used this strategy also to contemplate events at which they had not been present. The purpose of this was to meet their need to process the experience and understand what had occurred, and to learn lessons and draw conclusions for the future (Elmqvist et al., 2010; Jonsson & Segesten, 2003; Regehr, Goldberg, & Hughes, 2002). Processing their experience in this way helped relieve the emotional burden, and reviewing the event allowed the paramedics positive reframing of their actions. This reassured them that they had acted correctly, and they perceived the event as a learning experience (Regehr et al.). These processes granted the paramedics a renewed sense of control of the situation as well as professional confidence.

Finally, despite the paramedics' continued encounters with varied traumatic events, their experience appeared not to come under the category of vicarious traumatization (McCann & Pearlman, 1990; Pearlman & Maclan, 1995), which is characteristic of professionals with long-term exposure to victims of trauma. The paramedics reported neither fundamental changes in worldview nor functional and social difficulties, which resemble PTSD reactions (American Psychiatric Association, 2000). Although the paramedics reported experiencing difficult emotions both during and after the events, these situations passed after a short time and they continued with their work. It might be that the paramedics were protected, to an extent, by the demands of their role. Paramedics are required to be constantly on the alert to fulfill their life-saving role. The paramedics in the present study expressed satisfaction with their work, which they considered to be meaningful and very valuable. Therefore,

they might not have been able to afford to allow themselves to experience functional or social difficulties during and after the CI.

Paramedics whose encounter with CIs led to difficult and negative experiences and those whose experiences were empowering and positive included positive emotions in their descriptions, indicating a meaningful experience from which they had benefited and had even derived professional and personal growth. The description of the positive dimensions of the paramedics' experiences corresponds with the descriptions of positive changes that occur in the self-image and philosophy of life of therapists of trauma victims (Arnold et al., 2005; Calhoun & Tedeschi, 1999, 2006). The paramedics' experience of control and meaning in successful intervention with some CIs might have balanced the negative emotions and the sense of a lack of control during interventions with other CIs. This meaning motivated them to continue in the profession despite its associated difficulties and stress.

### Study Limitations and Suggestions for Future Research

This study was based on a purposeful sample that included 15 paramedics who constituted 3.2% of all paramedics in the largest emergency service organization in Israel. This sample did not represent paramedics from all of the emergency organizations in Israel, and therefore, caution must be used when generalizing the study findings to all paramedics. Nevertheless, because this is the largest emergency organization in Israel, the findings can be tentatively applied to its own paramedics and to those in other organizations who are exposed to CIs.

The findings might serve as the basis for several future studies, which would expand existing knowledge about the impact of the encounter with CIs on ambulance personnel in general, and paramedics in particular. For example, exploring the experiences of ambulance physicians and drivers, as well as supervisors, might deepen understanding of the overall experiences of the entire personnel, both in Israel and in other countries. In addition, in line with recent findings on posttraumatic growth among different emergency and rescue service personnel (Halpern et al., 2009b; Paton, 2005; Regehr, Goldberg, & Hughes, 2002; Shakespeare-Finch et al., 2005), it is essential to address the positive impact of such encounters with CIs and trauma on ambulance personnel, including paramedics, so as to grasp the diverse dynamics of this encounter.

### Practical Implications

In this study, we found that paramedics experienced both negative and positive emotions both during and after their

encounter with CIs. In spite of this, they reported that in the year before their participation in the study, they had not been involved in any support activity initiated by their organization. This fact points to the fundamental need to develop supervision programs, as well as individual or group support for paramedics, before and after their encounter with CIs. The development of a training program to deal with this subject might assist paramedics to create coping strategies and to enhance their sense of control while intervening with CIs. These programs will increase the paramedics' awareness of the impact of CIs and might help them to recognize the need to accept help, when necessary. They might also help them to express their emotions and fears prior to and following exposure to the event (see also Alexander & Klein, 2001; Regehr, Goldberg, & Hughes, 2002). These programs might also serve as a means to identify paramedics who need prolonged psychological support (Jonsson & Segesten, 2003; Mitchell, 1983).

### Conclusion

A large number of the events to which paramedics are exposed at work constitute encounters with CIs. Through this therapeutic encounter, they might sense a threat either to their mental well-being or to the life of the patient. Connecting to their emotions regarding the patients and their families might evoke difficult feelings in paramedics that threaten their professional identity and self-image. By navigating and regulating their emotions toward patients and/or their families, the paramedics were able to continue to function in their personal and professional lives. Striking a balance between emotional connection and detachment with regard to the patient is not easy, but is essential for the paramedics to function and to cope with CIs. Efficient coping would reduce the risk of developing vicarious traumatization, leading to professional and personal growth.

### Authors' Note

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# Symptomatology of Post-Traumatic Stress Disorder among First Responders to the Pentagon on 9/11: A Preliminary Analysis of Arlington County Police First Responders

Monica L. P. Robbers & Jonathan Mark Jenkins

*Despite the high profile given to the events of 9/11, little research has been conducted on the effects that the events had on police first responders. This study examines the psychological impact, specifically post-traumatic stress disorder (PTSD), of 9/11 as a critical event on first responding police officers at the Pentagon crash site. Results indicate that more than one-third of the officers sampled are experiencing above standardized levels of PTSD. Further, the length of time officers spent at the Pentagon significantly predicts higher levels of PTSD. Implications of the findings are discussed along with policy recommendations.*

*Keywords:* Critical Events; Police; Post-Traumatic Stress Disorder; 9/11

## Introduction

Despite the high profile given to the events of September 11, 2001, there have been few empirical studies that focus on the impact and effects of 9/11 as a critical event on police first responders. The purpose of this study is to examine the nature, prevalence, and distribution of post-traumatic stress disorder (PTSD) symptoms among police first responders to the Pentagon on 9/11. Three research questions are posed: first, what is the psychological impact of 9/11 as a critical event on police first responders at the Pentagon crash site? Second, what is the relative distribution and differential manifestation of PTSD amongst responders? Third, is there any preliminary evidence of

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possible conditioning or moderating influences on PTSD? Data for the study were collected from a sample of Arlington County first responders, defined as police who responded within 90 minutes of the initial crash at the Pentagon.

More than three years have past since 9/11, and we know very little about the effects, long and short term, of the incidents on emergency services personnel, especially on police. Such knowledge is critical to provide for proper care, support, and services to such emergency personnel. As a community, we have a vested interest in maintaining the psychological health and mental well-being of such emergency personnel.

We offer several rationales for studying the impact of 9/11 on responding Arlington County police. The Arlington County Police Department (ACPD) were among the first to respond to the Pentagon on 9/11 because the Pentagon is located in Arlington County, VA. Second, it was thought initially that the number of casualties at the Pentagon would be at least triple the final number, so first responding officers were prepared for the absolute worst case scenario. Coupled with constant threats of terrorist attacks in the Washington, DC metropolitan area post 9/11, reliving the September 11 events may be common and therefore, the risk of PTSD among police who were first responders to the Pentagon site is of great concern. Third, because of this increased risk, we suspect that the impact of 9/11 among first responders in Arlington may differ from the impact of 9/11 on first responders in New York. Fourth, although there have been numerous studies of PTSD among officers prior to 9/11 (e.g., Brosnan, 1999; Harvey-Lintz & Tidwell, 1997; Stephens, Long, & Miller, 1997; Sugimoto & Oltjenbruns, 2001), current literature has not addressed PTSD among police after 9/11 beyond anecdotal accounts (e.g., see Jenkins, 2002; McBride, 2001).

Data for this study were collected from a non-probability sample of ACPD police officers, making this study a preliminary investigation of the impact of 9/11. Results of this study can therefore add to the growing body of knowledge on the effects of 9/11, but specifically, this study may be able to provide recommendations for coping with PTSD to agencies who respond to similar crises situations. Further, since the data for this study were conducted more than two years after the events of 9/11, we can also begin to examine the long-term effects that 9/11 have on police personnel.

## Literature Review

The following section presents an abridged review of literature that examines PTSD among law enforcement personnel and comparable populations.

### *PTSD Research*

#### *Background*

Post-traumatic stress disorder, shell shock, or battle fatigue, is categorized by the *Diagnostic and statistical manual of mental disorders* (DSM-IV) as an anxiety disorder specific to the development of symptoms that occur post-exposure to a critical incident. Initially, PTSD referred to battle fatigue experienced by soldiers after exposure to critical events. In 1980, the American Psychological Association (APA) recognized that

civilians could also suffer from PTSD after exposure to critical incidents, such as death or threat of death, harm, or injury. PTSD can overwhelm an individual and become debilitating, with incident stimuli invoking symptoms such as intense fear, helplessness, and avoidance. Frightening thoughts or memories of the critical stimuli can also induce numbness, fatigue, aggression, rage, or hyper vigilance (APA, 1994).

The operational definition of a 'critical incident' varies in PTSD literature. In studies that address PTSD among police officers and other emergency workers, operational definitions of critical incidents have ranged from an incident involving multiple deaths, to a highly profiled media event (see Neylan et al., 2002 for examples). To date, literature has not addressed whether factors such as exposure to multiple deaths are associated with higher levels of PTSD, than seemingly less serious factors such as exposure to threat of death. However, Davidson, Kudler, Saunders, and Smith (1990) found that Vietnam veterans who were exposed to brutality, mutilated bodies, and the deaths of children and friends experienced greater PTSD than veterans from World War II, who recalled incidents of physical injury and captivity. The authors suggest that these differences in the frequency of PTSD could also be a result of age and telescoping problems. Kureczka (1996, p. 3) proposes that a critical incident is 'any event that has a stressful impact sufficient to overwhelm the usually effective coping skills of an individual,' and so operationally, this is very broad. Researchers that examine PTSD among police and other emergency service personnel maintain that the operational definition of 'critical incident' must remain fluid given that personnel are exposed to so many different types of traumatic events in the course of their jobs (Horn, 1991).

Physical symptoms of PTSD are manifested in the autonomic nervous system, such as increased electromyography, sweat gland hyperactivity, and somatic symptoms such as depression (Carlson & Hamblen, 2002; Sugimoto & Oltjenbruns, 2001). Symptoms of PTSD are typically experienced within three months of exposure to the critical incident, but can be experienced as late as several years after the incident (Carlson & Hamblen, 2002).

Using national data, Kureczka (1996) estimated that about 8% of American adults exhibit PTSD during their lives. Other studies estimate that experiences of PTSD vary dramatically by occupation. For example, several studies have indicated that about one-third of police officers experience PTSD (see Brosnan, 1999; Martin, McKena, & Veltkamp, 1986; Stratton, Parker, & Snibble, 1984). Sugimoto and Oltjenbruns (2001) suggest that higher levels of PTSD in police may be due to the experience of disenfranchised grief after exposure to traumatic events, that is, officers experience loss but do not have a socially recognized right to grieve. The higher frequency of PTSD among officers may also be related to police organization and management.

The organization of police is para-military and as such, officers are required to be the helpers, not the helped. Police are supposed to be in control, and are held to higher moral standards by the community (Bittner, 1970). Therefore, seeking help for stress is not accepted. Further, there is a code of silence that police officers adhere to with regard to their psychological status (e.g., see Bittner, 1970; Strecher, 1978; Van Maanen, 1978). Officers who seek counseling may be stigmatized by other officers as weak as an officer and not dependable as a partner.

Sugimoto and Oltjenbruns (2001) propose that multiple exposures to the threat of death and dying is a major contributor to PTSD, as is secondary traumatic stress (also see Fingley & Kleber, 1995). The events of 9/11 provided multiple exposures to death and threats of death; far more than officers normally experience. This was due in large part to the large volume, long hours, and dramatic nature of rescue work the officers were called upon to do during and after 9/11. The constant state of alert after 9/11 in the Washington, DC, area amplified the threats of death and injury, as it was believed by many that officers would have to respond to another similar incident (Jenkins, 2002). Coupled with the sniper events that also occurred in the Washington area, the amount of secondary traumatic stress during and after 9/11 that officers experienced would have been much higher than usual.

#### *PTSD and law enforcement*

In psychological literature, there are plenty of clinical and empirical studies that examine PTSD among law enforcement personnel, but in criminal justice literature there are few. In a study of PTSD symptomatology among Los Angeles police officers after the 1992 riots, Harvey-Lintz and Tidwell (1997) measure combat-related PTSD, coping responses, and previous stress history. The authors maintain that the riots themselves provided the critical stressful incident.

Results of this study indicated that about 17% of officers were showing symptoms of PTSD 19 months after the riots. The authors point out that this number is likely to be conservative given that officers are conditioned to be self-reliant and may not want to admit to experiencing symptoms. Further, the study also used non-probability convenience sampling. Also of interest in this study was the finding that only 17% of officers reported that they would seek professional help for stress, and officers did not see administrators as open to, or supporting of, officer requests for professional help. Harvey-Lintz and Tidwell did find a relationship between coping behavior and PTSD, indicating that officers who were less inclined to seek help were more likely to be exhibiting PTSD symptoms.

In testing a 13-item self-reported measure of PTSD called the Peritraumatic Distress Inventory (PDI), Brunet et al. (2001) compared PTSD symptoms between police officers and citizens. Results indicated that 46% of the officers vs. 60% of the civilians sampled were exposed to a critical incident. When symptoms of PTSD were examined, 91% of officers self-reported experiencing at least one of the PTSD symptoms, and slightly more civilians reported the same. The authors suggest that perhaps police officers are slightly more resilient to critical incidents than the general population, it might be the case that the police were exposed to different kinds of critical incidents resulting in different manifestation of PTSD than civilians. Further, an incident that a citizen views as critical may not be viewed as critical by a police officer.

Neylan et al. (2002) studied the impact of critical incident exposure, sleep quality, and PTSD among a convenience sample of police officers working in Oakland, CA, San Jose, CA, and New York City. The study was conducted prior to 9/11. Using the Mississippi Scale for Civilian PTSD (M-PTSD) and the Pittsburgh Sleep Quality

Index, Neylan et al. found results to suggest a strong association between poor sleep and PTSD symptoms, and a weak association between traumatic stress exposure and sleep disturbances.

Using officers from the same cities as Neylan et al., Pole et al. (2001) examined whether PTSD among urban police officers differed by gender and ethnicity. This study used the critical incident history questionnaire, which asks respondents about exposure to multiple critical incidents in a given time period. The authors also used the M-PTSD and the PDI. Results from this study indicated that there were no significant gender differences in experiences of PTSD. Results remained consistent when education and years of experience in policing were controlled for. This result concurs with PTSD research on other military-style groups, but is quite different from trends found in the general population, where women typically exhibit more PTSD symptoms (e.g., see Breslau, Davis, Andreski, Peterson, & Schultz, 1997; Breslau et al., 1998). The gender disparity in experiences of PTSD among civilian populations is being debated in literature; some researchers maintain that females experience higher levels of PTSD due to higher incidences of physical and sexual assault (see Stein, Walker, & Forde, 2000), but others maintain that when this is controlled for, the disparity remains (see Pole et al., 2001 for discussion).

Pole et al., also found results that suggest there are few differences in experiences of PTSD between white and black officers, but there are discernable differences between Hispanic and white officers (p. 447). Hispanic officers were found to experience higher levels of PTSD. Similar patterns were reported by Kulka et al. (1990). Again, the patterns of PTSD observed between ethnic groups in the military or in police populations are not the same as that for civilian populations. Among civilians, research has indicated that minorities tend to experience higher levels of PTSD, but such differences can be accounted for by other socio-demographic variables such as socioeconomic status (see Breslau et al., 1998). In non-civilian populations, these variables do not account for the differences in levels of PTSD, particularly among Hispanics. Kulka et al. (1990) suggest that the persistent differences may be due to cultural socialization experiences that encourage dissociation rather than help seeking behavior.

In a study using a non-probability sample of 1,000 police officers from the New Zealand police force, Stephens et al. (1997) examined social support as a moderating variable in experiences of PTSD following exposure to multiple critical incidents. Using the M-PTSD and a scale of social support that separated emotional support from peers and communication with supervisors, Stephens et al. found evidence to suggest that officers with more social support exhibited fewer PTSD symptoms, and also that expressing emotions moderated the relationship between exposure to traumatic events and PTSD. They also included a measure of negative social support, which was correlated with PTSD only when emotional support from peers was controlled. Stephens et al. suggest that this relationship could be a product of disgruntlement with work because of PTSD symptoms experienced. It is worth noting that the critical incidents respondents in the New Zealand sample may have been exposed to are not directly comparable to studies that use American police because New Zealand police are not armed, and violent crime rates and crime involving firearms are very low (Robbers, 2005).

Other studies of PTSD have been conducted on populations who have experienced combat or other disasters. Some researchers also distinguish between PTSD and Combat PTSD (e.g., Machell, 1993). Military groups are not so different from police who responded on 9/11, as first responders on 9/11 felt that they were entering a combat zone. Many of the studies focusing on combat zones and other disasters use the Impact of Event Scale (IES) to measure PTSD (see Curle & Williams, 1996; Hunt & Robbins, 2001; Robbins & Hunt, 1996). The IES was developed by Horowitz, Wilner, and Alvarez (1979), and focuses on avoidance and intrusive behaviors. It has been validated by Shelvin, Hunt, and Robbins (2000).

Studies of PTSD among other emergency services personnel are fairly infrequent. However, one example is Weiss et al.'s examination of the extent of symptomatic distress among a non-probability sample of emergency services (EMS) personnel who responded to the 1989 Interstate 880 freeway collapse during the San Francisco Bay Area earthquake (Weiss, Marmar, Metzler, & Ronfeldt, 1995). Using the IES and the M-PTSD scale, results from this study indicated that greater exposure, or responding immediately to the critical incident, had a greater impact on frequencies of PTSD symptoms. Results also concurred with other studies that had found relationships between high levels of social support and lower levels of PTSD; more years of experience and lower levels of PTSD; and high levels of dissociative experiences and higher levels of PTSD. The authors did not report between groups analysis for the demographic variables.

### **Research Focus and Methodology**

We examine three research questions in this study. First, what is the psychological impact of 9/11 as a critical event on police first responders at the Pentagon crash site? Second, what is the relative distribution and differential manifestation of PTSD amongst such police first responders? Third, is there any preliminary evidence of possible moderating influences on PTSD?

This study was borne from the realization that there had been little written about the crash site at the Pentagon on 9/11 as a critical incident, and there was a very real possibility that officers from ACPD may be experiencing symptoms of PTSD. Marymount University has a close working relationship with ACPD, so we approached the then chief of the ACPD and proposed that this issue be studied. The chief was privy to the information provided in the section below. The project was not sponsored.

### **Sample**

Arlington County Police were the first police officers to arrive at the Pentagon on 9/11 and within 90 minutes of the attack, approximately 78 ACPD officers responded to the scene.<sup>1</sup> These first responding officers arrived at the Pentagon with little or no information, were charged with bringing order to a completely chaotic scene, and were under the assumption that a bomb had been detonated at the nearby State Department. Officers that responded after this time had time to digest what was happening in New York and at the Pentagon, had been briefed with more accurate information, and

were prepared for the crash site. Further, the crash site had been secured. We did not want to include those later arriving officers in the sample as the effects of the critical incident would not have been as acute.<sup>2</sup>

The survey was given to first responding ACPD officers off duty, and an envelope was provided for the completed surveys. This was done to ensure anonymity and also to make the officers feel comfortable with participating. The study was approved by the Institutional Review Board of Marymount University and by the ACPD. Two of the 78 first responding officers had left the ACPD since 9/11 and could not be located. Of the remaining 76 officers, 20 initially returned the survey, and after reminder cards, an additional 32 surveys were returned, bringing the response rate to 52 or 68%. Two surveys were excluded due to missing data. Of the respondents, 68% were male and 32% were female. Seventy-eight percent of the respondents were white, 8% were black, 12% were Hispanic, and one respondent was Asian. Thirty-four percent of sworn officers in Arlington County are either female or minorities, so our sample mimics the demographics of the entire ACPD fairly closely.<sup>3</sup> The age of the sample ranged from 23 to 46 ( $M = 32.90$ ;  $SD = 5.60$ ). Years of experience as a police officer ranged from one to 26 ( $M = 8.69$ ;  $SD = 5.53$ ). Sixty-four percent of respondents hold a bachelor's degree, 26% hold an associate's degree, 6% hold a graduate degree, and 4% reported having had some college education.

## **Variables**

### *The Critical Event*

In many previous studies on PTSD among police officers, scales have been used to assess exposure to critical events (e.g., see Brunet et al., 2001; Carlier, Voerman, & Gersons, 2000; Stephens et al., 1997). In this case, we did not use such a scale since all the respondents were at the Pentagon and witnessed the same critical event. Further, the events of 9/11 are widely recognized as traumatic (see Jenkins, 2002). However, we did ask respondents how long it was after the plane impacted the Pentagon that they responded. Answers ranged from immediately to 90 minutes ( $M = 18.04$  minutes;  $SD = 23.79$  minutes).

### *PTSD*

In this study we adapted Robbins and Hunt's (1996) version of the IES, which was originally devised by Horowitz et al. (1979), and designed to measure PTSD after combat experiences. The IES is a 15-item scale that measures the two main components of PTSD, which are intrusion and avoidance (see Hunt & Robbins, 2001; Robbins & Hunt, 1996). Respondents were asked how often the following occurred, and responses ranged from no or never, to extremely or always:

1. Experience of upsetting memories or dreams
2. Reliving of the terrorist attack
3. Disturbing reminders of 9/11
4. Avoidance of thinking about the attack and rescue

5. Avoidance of situations and activities that trigger memories of 9/11
6. Loss of memory about events or details on 9/11
7. Loss of interest in activities and things that were important prior to 9/11
8. Feelings of emotional withdrawal or lack of expression
9. Loss of hope/trust in career and family
10. Difficulties falling asleep or staying asleep since 9/11
11. Increased irritation in temperament since 9/11
12. Trouble concentrating since 9/11
13. Become startled by sudden movements, sounds, smells, or touches since 9/11
14. Reminders of 9/11 that invoke sweating, tenseness, trembling, or physical over-response
15. Feeling that another terrorist attack is imminent.

Items 1, 2, 3, 10, 11, 12, 13, and 15 measure intrusion, and items 4, 5, 6, 7, 8, 9, and 14 measure avoidance (see Robbins & Hunt, 1996). Scores on the composite scale ranged from 15 to 53 ( $M = 27.12$ ;  $SD = 8.86$ ), and Cronbach's alpha for the scale was 0.92. Principal components analysis confirmed Robbins and Hunt's (1996) schema as the items loaded on two factors.

#### *Control Variables*

Consistent with literature on PTSD among police, control variables included in this study were education and years of experience as a police officer, and previous critical incident experienced on the job. Religious salience was included as officers who are devoutly religious may have used religion to help cope with the critical incident. This was a one-item measure that asked respondents whether they were religious or not. Sixty percent of respondents said they were religious, and 40% said they were not. Previous exposure to a critical incident was also measured using one item; we asked whether respondents had previously discharged their weapons in the line of duty. Only two officers had discharged their weapons prior to 9/11.

We also questioned respondents as to how many hours they spent at the Pentagon after their response. This was included as a control variable since we felt prolonged exposure to the critical incident is likely to increase the chances of PTSD. Responses to this question were amazing—officers stayed from less than one hour to 576 hours (24 days). The mean stay was 136.12 hours, or 5.67 days ( $SD = 138.52$  hours). In other words, many of these officers did not leave the Pentagon for days; some resided in what became known as Camp Unity, while others went home at night only.

#### **Method of Analyses**

The analysis proceeds in three stages. First, discussion of levels of PTSD, descriptive statistics, and mean differences in the dependent variable based on the appropriate independent variables are presented. This is done to ascertain whether officers are exhibiting symptoms of PTSD and whether symptoms vary by alternating demographic

variables. Second, we employ correlational analysis and regression analysis to test whether there are relationships between PTSD and the set of independent variables. Third, we employ regression analysis using cross-product terms to conduct a preliminary investigation of moderating effects between the main study variables.

## Results

### *Incidence of PTSD Symptoms*

The recommended cut-off point, or base-line PTSD level in relation to standardized data on the IES is 30 (Hunt & Robbins, 2001). Table 1 shows the distribution of Arlington County officers above and below this cut-off point.

The table shows that more than one-third of officers, 36%, scored at or above the cut-off point indicating that these officers are exhibiting higher levels of PTSD than the standardized population. Given the extent of repeated and prolonged exposure to the trauma of 9/11 events, this was lower than expected. Previous researchers such as Brosnan (1999), Martin et al. (1986), and Stratton et al. (1984), all found that one-third or less of police officers suffered from PTSD. Results do provide some empirical evidence to support our first research question, that is, responding to the Pentagon on 9/11 does have a psychological impact on first responding police.

### *Analyses of Means*

Table 2 depicts mean differences on the dependent variable, PTSD, for the nominal and dichotomous independent variables, which were gender, race, religious salience, and education.<sup>4</sup> Discharging a weapon was not included since only two officers had responded affirmatively to this question. Independent samples *t*-tests and one-way ANOVA's with Tukey's *post hoc* statistics were used where appropriate.

Results indicate few mean differences in levels of PTSD. Males show a slightly higher average PTSD score than females, but the difference is negligible ( $M = 27.14$  vs.  $27.06$ ). These findings concur with other studies of PTSD among police officers (e.g., see Neylan et al., 2002; Pole et al., 2001). Results also indicate that white officers reported lower average PTSD scores than did minority officers ( $M = 26.28$  vs.  $30.09$ ), but again the difference is not significant. Other studies have found that minority officers, particularly Hispanic officers, have higher levels of PTSD (e.g., see Pole et al., 2001). Unfortunately, we did not have enough Hispanic officers to test this premise. For religious salience, those officers who said religion was an important part of their lives scored

**Table 1** Percentages of Officers Scoring Above or Equal to ( $\geq$ ) and Below ( $<$ ) the Cut-off Point for the IES

	$\geq 30$	$< 30$
IES	36.00	64.00

**Table 2** Mean Differences for PTSD

Variable	Mean	SD	t-Value/F-value
Gender: female	27.06	6.90	0.031
male	27.14	9.74	
Race: other	30.09	6.77	-1.27
white	26.28	9.26	
Religiosity: no	26.94	8.84	-0.11
yes	27.22	9.01	
Education: some college	23.50	4.90	4.18**
associate's degree	33.30*	9.01	
bachelor's degree	25.66*	8.06	
graduate degree	18.33*	2.08	

\*\* $p \leq 0.01$ ; \* $p \leq 0.05$ .

slightly higher on the PTSD scale than did those officers who said religion was not an important part of their lives, but this difference was not significant.

The only significant mean difference found was for PTSD scores by education. Results indicate that the less education an officer obtained, the more PTSD symptoms he or she reported on average. Tukey's *post hoc* statistics revealed that there were significant differences between those officers who held associate's degrees and graduate degrees, and between those who held bachelor's and graduate degrees. In both instances, those officers who held graduate degrees had lower average scores of PTSD.

### Correlational Analyses

In order to assess the relationships between the interval and dichotomous main study variables, Pearson's product moment correlation was utilized. Examining the correlations between PTSD and the independent variables, the only significant correlation found was the association between the amount of time spent at the Pentagon and PTSD ( $r = 0.56$ ;  $p < 0.05$ ). The relationship was positive, indicating that longer time periods spent at the Pentagon were associated with higher PTSD scores (table omitted). This relationship was expected given the officers who were at the Pentagon for long periods were exposed to numerous incidents involving death and threats of death. This finding confirms our second research question in that there are some variations in the relative distribution and differential manifestation of PTSD amongst first responders.

### Regression Analysis

The next step in the analyses was to construct an Ordinary Least Squares (OLS) regression model using the study variables. Prior to the running of regression models, histograms were run to assess normality of the variables. To assess multicollinearity, variance inflation factors (VIF) were included in the model. Results are given in Table 3.<sup>5</sup>

**Table 3** Regression Model

Variable	<i>b</i>	Std error	Std beta	<i>t</i>	Signif.
Constant	18.48	11.58		1.59	0.12
Gender	2.13	2.35	0.11	0.91	0.37
Race	1.13	2.80	0.05	0.40	0.69
Age	-0.27	0.40	-0.17	-0.66	0.51
Years' exp.	-0.01	0.42	-0.01	-0.03	0.97
Education	-4.04	1.66	-0.29	-2.44	0.02
Saliency	0.19	2.27	0.01	0.08	0.93
Weapon disch.	-1.39	6.45	-0.03	-0.22	0.83
Response time	-0.06	0.05	-0.16	-1.25	0.22
Time spent	0.04	0.01	0.58	4.54	0.00
$R^2$ (adjusted)	0.45 (0.40)				
<i>n</i>	49				

Regression results indicate that education and time spent at the Pentagon both play a significant role in predicting PTSD symptoms. Given comparison of means and correlational analyses, these results are not surprising. However, again we see that an increase in education is associated with a decrease in PTSD symptoms, and an increase in time spent at the Pentagon is associated with an increase in PTSD symptoms. There were no other significant predictor variables of PTSD. The model as a whole is significant ( $F = 2.89$ ;  $p < 0.05$ ), and explains 45% of the variance in PTSD symptoms.

The last step in the analysis was to look for potential interacting or moderating variables. However, given the lack of significant findings in the above analysis, we did not expect to find significant interaction variables. One relationship that was of interest was that between religion, our proxy for social support, hours spent at the Pentagon, and PTSD. Our prediction here was that involvement in religion may moderate the effect that hours spent at the Pentagon had on PTSD. Namely, if an officer was religious, this would lessen the effect that long hours spent at the Pentagon would have on PTSD symptoms. To test this premise, we created an interacting variable using a cross-product of religion and time in hours spent at the Pentagon, and subsequently regressed PTSD on this interacting term and the other variables. No significant effect was found, suggesting that even when an officer was religious and spent a long period of time at the Pentagon, PTSD would still be high (table omitted).

### Conclusion

This study assessed the extent to which police first responders to the crash site at the Pentagon on 9/11 experience PTSD symptoms. We also tested whether PTSD symptoms differed by socio-demographic and other variables. Results indicated that 36% of Arlington County officers sampled scored at or above the recognized cut-off point for PTSD (Hunt & Robbins, 2001). Given the traumatic extent of the events these officers witnessed, this was surprisingly low. However, even though we tried to minimize

hesitancy in reporting PTSD symptoms, our results may be conservative given the police culture of reticence to acknowledge psychological trauma. Further, our sample was relatively small. We did find during informal talks with some officers that they did experience large numbers of PTSD symptoms, especially sleep disturbances, but this smaller group may not be a representative one. Thus, the results of this study provide a good descriptive foundation from which other studies that assess the psychological impact of 9/11 on first responders could be based.

The most important finding from this study was that the number of hours an officer spent at the Pentagon significantly effected PTSD. The average number of hours an officer spent at the Pentagon was 136 hours, with some officers not returning home for several weeks. The officers we spoke to said that they stayed out of a sense of duty and also because they felt they needed to make a significant contribution to the clean up and restoration of the Pentagon.

Among the control variables, education was the only significant predictor of PTSD. In previous studies of PTSD and police officers, education was not examined thoroughly. Although previous studies have found relationships between race and PTSD (e.g., Pole et al., 2001), such findings were not replicated here. This could be attributed to a smaller sample than other studies and to less variation in racial groups. Our finding that the gender of the officer did not have a significant impact on PTSD echoes findings in previous research (e.g., see Neylan et al., 2002; Pole et al., 2001).

When Arlington County police officers were dispatched to the Pentagon initially, they were told that a commercial airliner had crashed into the Pentagon. Information given to the first responding officers was sketchy and often inaccurate. There were reports of a bomb at the State Department and other false reports of additional planes being hijacked in the Washington, DC area. Cellular signals and radio communications were also intermittent for the first few hours after the crash and so first responding officers did not have abundant information other than the observable.

Officers responding to the Pentagon several minutes after the attack experienced a scene of chaos. As one officer said 'the Pentagon was burning, but there were no apparent signs of the airplane ... it was not until I got out of my cruiser that I observed small airplane parts hundreds of feet from the point of impact.' Officers were initially directed to assist the fire department in rescue operations, and also to control traffic in the immediate vicinity of the Pentagon. Later, the officers were part of the teams that sifted through the rubble, searching for body parts, personal effects, airplane parts, and top secret information. Most of these officers came in contact with body parts and personal effects. There is no doubt that these events were traumatic. One veteran officer told us that after finding burnt human remains, the thing that bothered him the most was the discovery of a small, pink child's purse. Another officer said a charred teddy bear left the most indelible image.

Usually, trauma experienced by police officers is not compatible with that experienced by other emergency services personnel because the latter deal more with rescue work. In this case however, Arlington County officers did take part in rescue operations, and so results from this study may be applicable to other emergency personnel and also

those who are exposed to combat zones. In future studies however, it would be interesting to examine between group differences of PTSD among different emergency services personnel. We would also recommend that future studies strive for probability samples of emergency personnel when examining PTSD. Our sample was a non-probability sample, as were almost all of the samples included in literature reviewed in this paper. The very nature of self-reporting symptoms of PTSD may mean that we are severely underestimating the frequency of PTSD among emergency personnel.

We have not set out to find causal links in this study, nor have we attempted to explain why some officers are more at risk of experiencing PTSD. Such investigation is beyond the scope of this paper. However, other researchers have suggested that manifestation of PTSD symptoms are influenced by the individual's cognitive assessment of the trauma compared to their subjective feelings about the trauma, which are in turn influenced by factors such as culture and personal values (see Brosnan, 1999).

The ACPD, like many other departments, does have mandatory debriefing for officers who are involved in incidents where there is a loss of life. In other situations, debriefing is at the discretion of the supervisor. Debriefing was not mandated after 9/11. Debriefing may help officers adjust after exposure to trauma, but there is conflicting research on its effectiveness (see Carlier et al., 2000 for discussion).

Officers we spoke to indicated that more than any other incident, they talked among themselves a great deal about their experiences on 9/11, and also had a great deal of community support afterwards. Thus in retrospect, we should have included a measure to assess the extent of fellow officer support post 9/11. Previous research has found that this type of informal debriefing may work better for police officers (Carlier et al., 2000).

The results of this study may not be applicable to New York City first responders given the differences between the two jurisdictions. Although an urban area, Arlington County has very low violent crime rates when compared with New York City (US Census, 2002), therefore, the events of 9/11 were often the first major crisis involving death that required Arlington County officers' response. New York City officers are likely to have witnessed critical events more frequently in the line of duty.

An officer who suffers from PTSD may experience low self-control, increased aggression, irritability, or anger, none of which are desirable in a police officer. It appears that the majority of officers sampled here have coped extremely well with the events of 9/11, although there is a small group of officers who need additional services. The number of officers who have left ACPD since 9/11 should be examined in future studies, along with continual monitoring of PTSD symptoms among remaining officers. Awareness of PTSD also needs to be increased among police administration and immediate supervisors. Such awareness is probably best tackled in conjunction with Employee Assistance Agencies of respective jurisdictions.

During a time when threats of terrorist attacks and war are oft-cited, and exposure to critical incidents is frequent, the study of PTSD among law enforcement personnel is key to ensuring the preservation of our protectors, and also to ensure we are prepared for the long-term consequences of exposure to trauma.

## Notes

- [1] Under normal circumstances, the ACPD would have an exact count of the number of officers responding to a critical incident. On 9/11 this was not the case as some officers went to the Pentagon before their shifts began, or happened to be in close proximity to the Pentagon. In addition, communications were initially intermittent in the area around the Pentagon. Estimates of how many ACPD officers were on the scene within 90 minutes varied from 72 to 80.
- [2] We could not find a consistent precedent in literature for the timing of experiencing a critical event, although Harvey-Lintz and Tidwell (1997) classify their sample group as officers who were present at the most serious point of the riots and Weiss et al. (1995) propose that first responders were more likely to experience higher levels of PTSD.
- [3] Exact numbers of female officers and minority officers were not available.
- [4] Race was re-coded into a dichotomous variable given the small numbers of Asian, African American, and Hispanic officers.
- [5] VIF values have been omitted from the table given that none were above 5.0.

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# Trauma exposure and symptoms of post-traumatic stress disorder in emergency medical services personnel in Hawaii

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## ABSTRACT

**Background** Exposure to traumatic stressors is potentially an integral part of the job for emergency medical services (EMS) personnel, placing them at risk for psychological distress and mental health problems.

**Study objective** The prevalence of post-traumatic stress disorder (PTSD) and post-traumatic stress symptoms was examined in a sample of EMS personnel in a multiethnic locality in Hawaii. Commonly encountered traumatic incidents at work were also assessed.

**Methods** The PTSD Check List-Civilian version was sent to 220 EMS personnel. The survey included questions on demographics, traumatic incidents at work, general stressors, coping methods and post-traumatic stress symptoms.

**Results** 105 surveys were returned (48% response rate); 4% of respondents met clinical diagnostic criteria for PTSD, 1% met subclinical criteria for PTSD, 83% reported experiencing some symptoms but no PTSD and 12% had no symptoms. However, few had received treatment for these symptoms. Serious injury or death of a co-worker along with incidents involving children were considered very stressful. General work conditions also contributed to the overall stress levels. Most common coping strategies reported were positive reinterpretation (63%), seeking family and social support (59%) and awareness and venting of emotions (46%), with significant differences by ethnicity.

**Conclusion** EMS personnel are at high risk of experiencing post-traumatic stress symptoms. Early identification and treatment of potential stressors, psychiatric and medical problems is warranted and necessitates ongoing assessment and employee assistance programmes at the minimum.

## INTRODUCTION

The stress that results from exposure to traumatic events can precipitate a spectrum of psychoemotional and psychopathological outcomes such as post-traumatic stress disorder (PTSD), depression, anxiety disorders and co-occurring substance abuse. PTSD is a psychiatric disorder that results from the experience or witnessing of traumatic or life-threatening events. The most frequently experienced traumas are witnessing someone being badly injured or killed, being involved in a fire, flood or natural disaster, and being involved in a life-threatening accident. The lifetime prevalence of PTSD among adults ranges from 1% to 8%, depending on the country and methodology used, with women more likely to be affected than men.<sup>1–3</sup> Many of those who experience a traumatic

incident may exhibit symptoms but may not meet the full criteria for PTSD as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-R). Subclinical PTSD can be defined as satisfying criterion B (re-experiencing) and either criterion C (avoidance) or criterion D (hyperarousal), but not both.<sup>2</sup> Rates of subclinical PTSD have ranged from 15% to 40%.<sup>4–6</sup> Subclinical PTSD has been associated with significant impairment in vocational and social functioning as well as higher rates of depression and poorer physical health.<sup>4,7</sup>

Despite being identified as a high-stress occupational group, few studies have examined the prevalence of mental health issues among emergency medical services (EMS) personnel.<sup>8</sup> Previous studies have identified a prevalence of PTSD as low as 6% and as high as 22% in this group.<sup>9,10</sup> The most common symptoms reported were re-experiencing, avoidance and hyperarousal. Berger and colleagues suggested that this was due to other risk and protective factors.<sup>6</sup> In addition to event-related variables, empirical research has suggested risk factors that the individual brings to his or her work, such as age, background of the person and personality characteristics.<sup>11</sup> There have been reports of the influence of earlier psychiatric history as a risk factor.<sup>12</sup> One of the primary factors related to decreased distress and increased resilience in emergency service and relief personnel is social support.<sup>10</sup>

Certain ethnic groups have been found to be more at risk for development of PTSD symptoms. For example, in a study of urban police officers, more PTSD symptoms were reported among Hispanic-American officers.<sup>13</sup> Sociocultural factors unique to Hispanic-Americans, such as reporting style and culture-bound idioms of distress, may explain the increased PTSD levels observed in this group.<sup>14</sup> 'Ataque de nervios' is a culture-bound expression of distress seen in Hispanic people. 'Ataque' comprises symptoms of anger, agitation and altered level of consciousness along with hallucinations sometimes which are similar to hyperarousal and dissociative symptoms of PTSD. While African Americans, Asian Americans and native Americans tended to report having experienced fewer traumatic events than European Americans and Latinos, they were all more likely to develop PTSD after experiencing a traumatic event.<sup>15</sup> However, lifetime prevalence rates for PTSD in Vietnam veterans were higher among all ethnic minority samples except Japanese Americans when compared with European Americans.<sup>16</sup> This study examines the prevalence of PTSD and post-traumatic stress symptoms among an ethnically diverse group of EMS personnel.

## METHODS

### Sample

Two hundred and twenty EMS personnel working for the City and County of Honolulu were eligible for the study. This represents the total number of the city's EMS personnel. This sample included 80 basic emergency medical technicians and 140 paramedics. The City and County of Honolulu encompasses the entire island of Oahu and includes metropolitan, suburban and rural areas. Serving a population of approximately one million, EMS personnel respond to more than 66 000 calls each year for medical emergencies and traumatic injuries.

### Procedures

Potential participants received a letter distributed at the EMS main office in May 2007 inviting them to complete a short online survey related to PTSD. Two reminders were sent out and the survey was left open online through July 2007. The letter served as both an invitation to participate and as the informed consent; a participant's completion of the form was taken as consent to participate. In addition, a copy of the survey, referral list for PTSD information and treatment and self-addressed return envelopes were included. Participants had the option of completing the survey either on paper or online. The survey took about 15 min to complete and was anonymous. In appreciation of their time, participants received a US \$10 gift card.

### Instruments

The survey included a short PTSD-related questionnaire and the PTSD Checklist-Civilian version (PCL-C). The short PTSD-related questionnaire addressed criteria A (trauma exposure) and F (impairment) of DSM-IV-R diagnosis of PTSD, demographic variables, types of traumatic events encountered most commonly at work, general work conditions which contribute to overall stress, coping methods and if treatment was sought. Sources of stress and coping strategy questions in the questionnaire were adapted from Clohessy and Ehlers.<sup>9</sup>

The PCL-C consists of 17 questions that correspond to DSM-IV-R criteria for PTSD.<sup>17, 18</sup> Respondents are asked how often they have been bothered by each symptom in the past month on a 5-point severity scale, (1=not at all and 5=extremely). Responses 3–5 were considered symptomatic and anything below was considered non-symptomatic. The questionnaire addressed criteria A (trauma exposure) and F (impairment) of DSM-IV-R diagnosis of PTSD as these are not taken into consideration in the PCL-C.

The information from the survey was used to categorise participants as having (1) no symptoms; (2) non-clinical symptom levels; (3) subclinical PTSD; and (4) meeting PTSD criteria. To meet PTSD criteria the participants had to have exposure to trauma (criterion A) and also had to endorse at least one re-experiencing item (criterion B); endorse at least three avoidant items (criterion C); endorse at least two hyperarousal items (criterion D); and had impairment (criterion F).<sup>19</sup> Subclinical PTSD was defined as satisfying criteria A, B and F, and either criterion C or criterion D but not both.<sup>2</sup>

## RESULTS

### Participation rate

The survey was distributed to all EMS personnel (n=220); 105 surveys were returned, giving a response rate of 48%. Those who did not complete the PCL-C were excluded from the analyses, resulting in a sample size of 101 respondents (45% completion rate).

### Demographic characteristics of EMS personnel

The final sample of 101 participants included 57% men and 43% women; 26% of respondents identified themselves as Caucasian, 26% as Japanese, 14% as Hawaiian/part-Hawaiian, 19% as mixed ethnicity (more than one), 12% as other and 2% refused to identify their ethnicity. Thirty-seven per cent were aged 18–35 years, 54% were aged 35–54 years and 8% were >55 years of age. Forty-six per cent of respondents were married, 7% were living with a partner, 35% were single and 12% were divorced. The length of time that respondents had worked in EMS ranged from 2 months to 36 years, with a median of 10 years. The respondents generally resembled all EMS employees in terms of their demographic characteristics.

### Sources of stress

Table 1 shows the respondents' mean ratings for potential stressors at work. Serious injury or death of a co-worker and incidents involving children were considered the most stressful. Dealing with patients with mental health problems, patients with burns and relatives of patients were considered somewhat stressful. Dealing with suicidal patients as well as death pronouncements or dealing with dead-on-arrival cases were the least stressful. General work conditions also contributed to the overall stress levels. Conflicts between work demands and home life as well as shift work were considered somewhat stressful but dealing with frequent user calls was not very stressful.

### PTSD/Subclinical PTSD

Four per cent of respondents met clinical diagnostic criteria for PTSD, 1% met criteria for subclinical PTSD, 83% reported experiencing some of the PTSD symptoms but did not meet criteria for PTSD or subclinical PTSD and 12% had no symptoms.

### Criterion A (exposure)

Twenty-two per cent of respondents met criterion A of PTSD (table 2). Nearly three-quarters of respondents (71%) reported exposure to a traumatic event at some point during their experience in EMS, which involved actual or threatened death or serious injury or a threat to the physical integrity of self or others. Twenty-three reported intense fear, helplessness or horror at the time of experiencing such trauma. The younger age group (18–24 years) reported significantly more trauma exposure during their experience working in the EMS than the older age group; this difference was significant ( $p=0.016$ ). Specific ethnic groups may have experienced more traumatic incidents than others, but the findings were not significant ( $\chi^2=10.75$ ;  $df=7$ ;

**Table 1** Mean ratings of stressors

Sources of stress	Mean rating
Incidents at work	
Serious injury or death of a co-worker	3.95
Sudden infant death	3.89
Trauma to child	3.69
Aggressive or violent mental health patient	3.00
Burn patients	2.96
Relatives	2.66
Suicidal patients	2.28
Death pronouncements or dead-on-arrival cases	1.98
General work conditions	
Conflicts between work demand and home life	3.04
Shift work	2.78
Frequent flyer calls	2.13

Ratings range from 1 (not at all stressful) to 5 (extremely stressful).

**Table 2** Frequency of meeting post-traumatic stress disorder (PTSD) criteria among emergency medical service workers

PTSD criteria	Subclinical frequency	Clinical frequency
Criterion A (exposure)	Not applicable	22%
Criterion B (re-experiencing)	Not applicable	27%
Criterion C (avoidance)	8%	8%
Criterion D (hyperarousal)	14%	26%
Criterion F (impairment in functioning)	Not applicable	29%

$p=0.150$ ). The trend seemed to show a higher rate among Caucasians (89%) and Hawaiian/part-Hawaiians (72%) compared with Japanese EMS personnel (58%).

#### Criterion B (re-experiencing)

Twenty-seven per cent of respondents met criterion B of PTSD which includes experiencing at least one criterion B symptom. Eighteen per cent of respondents reported repeated disturbing memories, 18% reported psychological distress upon reminder of the event, 11% reported repeated disturbing dreams of the event, 8% experienced flashbacks or reliving the event and 7% had physical reactions upon reminder of even a small aspect of the event.

#### Criterion C (avoidance)

Eight per cent of respondents met clinical criterion C of PTSD and 8% met subclinical criterion C of PTSD. Fourteen per cent reported avoiding thinking about the event, 10% avoided activities which reminded them of the experience, 9% had difficulty remembering the important aspect of the trauma, 13% reported loss of interest in significant activities, 18% felt distant or cut off from other people, 14% reported emotional numbness and 13% felt their future would be somehow cut short.

#### Criterion D (hyperarousal)

Twenty-six per cent met clinical criterion D of PTSD and 14% met subclinical criterion D of PTSD. Twenty-eight per cent reported trouble sleeping, 15% felt irritable or had anger outbursts, 14% reported difficulty concentrating, 25% felt hypervigilant or super-alert most of the time and 10% had an exaggerated startle response.

#### Criterion F (impairment in functioning)

Twenty-nine per cent of respondents met criterion F, indicating that the work-related stress caused difficulties at work.

#### Treatment

Of the total 5% who met the criteria for PTSD/subclinical PTSD, only two (40%) received any sort of treatment.

#### Coping strategies

The coping strategies reported by participants were positive reinterpretation (63%), seeking family and social support (59%), awareness and venting of emotions (46%), use of alcohol and drugs (10%) and denial (3%). Ethnic differences were found in the use of seeking family and social support as a strategy. Japanese (73%) and native Hawaiians (71%) were more likely to use this strategy than Caucasians (46%) and those of mixed ethnicity (41%;  $\chi^2=25.14$ ;  $df=12$ ;  $p=0.014$ ).

#### DISCUSSION

Specific symptoms from criteria B and D were commonly reported among EMS personnel including intrusive thoughts and

memories, psychological distress upon reminder and hypervigilance. Several studies have shown that hyperarousal and sleep disturbances were more characteristic of PTSD than were re-experiencing and emotional numbing.<sup>20 21</sup> While a substantial proportion of EMS personnel experienced symptoms of PTSD with a few meeting the DSM-IV-R criteria for PTSD, the overall prevalence rate of PTSD in our sample was lower than in other studies of first responders and the national average prevalence of PTSD.<sup>1 6 9 10</sup> This could be due to several factors. One reason could be the protective effect of the local culture which is very group-orientated with a strong social network as well as the cohesiveness among the EMS programme. These factors may be worth exploring in future studies. Another reason may be lower reporting due to a number of factors.

Culture may play a role in minimising symptoms.<sup>22 23</sup> Specific symptoms from criterion B (intrusive memories, feeling upset) and criterion D (sleep problems, irritability and hypervigilance) seem to be more common, especially among certain ethnic groups. For example, the Hawaiian/part-Hawaiian group reported experiencing more intrusive thoughts and memories, psychological distress upon reminder, sleep problems and hypervigilance than Caucasians. Mental health stigma remains a major factor in many Asian cultures.<sup>23</sup> Although the overall rates were low and statistical significance was not met, there appears to be ethnic variation which deserves further exploration in a larger sample. Denial and avoiding talking about the symptoms could also have been a contributing factor as these are core symptoms of PTSD and people experiencing these symptoms tend not to talk about it. However, avoidance appears to be a defence strategy to the distress generated by re-experiencing the trauma rather than a primary link to the symptoms.<sup>20 21</sup> We found ethnic differences in the use of seeking family and social support as a strategy, with Japanese American and native Hawaiians reporting this strategy more frequently. This finding is consistent with research showing lower risk and stronger social support among Japanese American and native Hawaiian veterans.<sup>24</sup>

Research has shown ethnic differences in cultural belief systems such as fatalism and familism which may result in differences in risk and help-seeking behaviours.<sup>15</sup> Assessment must therefore take into account cultural expressions of distress. DSM-IV-R offers clinical guidance in formulating the role of culture in symptomatology as well as developing a culturally sensitive treatment approach.<sup>19</sup>

Early detection can allow for early intervention, so it is important to offer treatment to all those with clinically significant PTSD symptoms. All EMS personnel should receive information regarding the phenomenon of traumatic stress. While not universally accepted, Critical Incident Stress Debriefing (CISD) has been reported to be effective in trauma cases.<sup>25-27</sup> It has been the most widely applied intervention strategy for use with the emergency response service personnel who have experienced some form of critical incidence stress. Initiated after the experience of a traumatic event, CISD allows the rescuers to express their thoughts and feelings about the traumatic incident following the event. However, its extension beyond this population has been criticised.<sup>25 26</sup> All EMS managers or other relevant personnel categories should inquire about the status of their employees' exposure to traumatic experiences and their ability to cope with their working situations. Other methods of intervention to shape organisational culture have been shown to prevent or moderate the creation of burn-out and encourage effective coping, such as the peer support or 'Buddy' system where professionals share their concerns and experiences with each other.<sup>10 28</sup> Preventive

measures such as seeking help from peers, Employee Assistance Programs and being able to access local mental health crisis or support programs as and when needed are highly recommended.

This study has some methodological limitations. The small sample size and moderate response rate of 48% necessitates caution in interpreting the findings. EMS personnel experiencing more PTSD symptoms may have been more likely to participate in the study because of greater interest in the topic. Conversely, they may have been hesitant to take the survey due to fear of losing their job in case of being diagnosed with a mental health condition. This is the first study to examine Asian and Pacific Islander EMS personnel. The potential ethnic and gender differences found in this study warrant a larger sample to validate our findings.

The findings suggest that EMS personnel are experiencing significant PTSD symptoms and are at risk of developing PTSD and/or impairment. Preventive measures, early identification and treatment can alleviate months of suffering from distress of traumatic events. It is imperative that emergency services develop strategies for both prevention and treatment of the significant levels of mental health problems associated with emergency work. Such interventions need not only to take into account the severity and the magnitude of the problem, but also to consider ethnocultural and age differences. Future implications from the data in this study are the need for more research on subclinical PTSD, the need to identify other potential stressors for EMS personnel and also to identify other comorbid psychiatric and medical problems in this high-risk group.

**Competing interests** None.

**Ethics approval** This study was conducted with the approval of the University of Hawaii Committee on Human Studies (IRB).

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