DEATH AND TRAUMA ON NEW YORK'S SUBWAYS AND BUSES: A SURVEY OF THE PSYCHOLOGICAL RESPONSE OF NEW YORK CITY TRANSIT WORKERS – PHASE II

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The purpose of this survey is to review the experiences of Behavioral Medicine Associates (BMA) as treating psychologists for New York City Transit workers after incidents involving death (12-9's) and trauma. Behavioral Medicine Associates is the leader in providing behavioral health care for injured workers.

This study extends the findings of the 2006 survey: *"Death on New York's Subways and Buses: A Survey of the Psychological Response of New York City Transit Workers."*

LITERATURE REVIEW

Little research has been conducted about transit workers who experience death accidents, and even less about the non-death related traumas they face. Reviewing the literature reveals that train operators and other transit workers who experience trauma generally report more health problems than do other workers. The strongest reactions were attributed to those accidents that included death. Interestingly, this was not the case in our sample; although workers do report transient physical correlates of anxiety and stress, few of these complaints persist for any significant period of time.

An extensive literature review was presented in the first study conducted regarding Death on New York's subways and buses published in August of 2006. This article can be found on the Behavioral Medicine website: www.behavmed.com. (Click on "recent publications.")

In a 2006 issue of the Journal of Psychosomatic Research, a study of Korean railroad drivers who experienced person-under-train (PUT) accidents looked at the prevalence of PTSD according to individual and work environment characteristics. They concluded that those drivers who experienced person-under-train incidents displayed more adverse physical and psychological symptoms than those who did not. Young railroad drivers were found to express a higher prevalence of Post-Traumatic Stress than did older railroad drivers. This study also found that there was greater prevalence of PTSD in those railroad drivers who had more experiences of person-under-train accidents within one year. The authors concluded that governmental programs were needed to prevent railroad suicide and to formally establish treatment programs for traumatized workers. Recommendations also included preparing workers for the possibility of these incidents.

As previously noted, there is a general lack of published data on the topic of traumatic accidents in the transit systems despite the relatively high frequency of incidents. There are a number of possible reasons for this including the transit systems' reluctance to reveal data and to provide access on the frequency and pervasive nature of these events. Workers are often not comfortable being interviewed about their experiences for research purposes. The lack of publicity about these incidents is perhaps the most significant reason for the lack of published literature on the topic.

SUBJECTS

We identified 271 incidents in which transit workers experienced some traumatic event while on the job. Though these cases are continuously being referred for treatment, those occurring from approximately September of 2006 to approximately October 2009 were selected for this study. Of these 271 cases, 166 of them involved 12-9 incidents. The other 105 cases consisted of workers being exposed to trauma; these incidents did not result in death. All workers were initially screened by a medical doctor, who then referred the workers to this psychology practice. The amount of time between the incident and first psychological consultation ranged from 1 day to 271 days (just over 9 months), with an average time span of 25 days.

The largest group of workers in these cases was train operators, followed by bus operators. Train operators were most prevalent in 12-9 cases, whereas bus operators make up the bulk of the other trauma cases. Train conductors, station agents, track workers, as well as several specialist operators and power distribution technicians were included in this group. A collection agent, construction worker, and a security worker also experienced non-death traumas, as well as a cleaner and a worker in equipment maintenance.

These workers had been employees of the NYCTA for an average of 10.3 years, with span of employment ranging from 1.5 months to 28 years; of the 271 workers, 199 were male and 72 were female. The mean age of these workers was 44.3 years.
Of the 271 individuals treated, 39 had previously experienced one or more similar traumatic incident.

After evaluation of each worker by a psychologist, the predominant diagnoses were Post-Traumatic Stress Disorder and Acute Stress Disorder. The diagnostic criteria for both of these diagnoses are the same; Acute Stress Disorder is given to those individuals who present within 30 days of the incident. Once the symptoms persist for longer than 30 days, the diagnosis of Post-Traumatic Stress Disorder can be used.

Table 1

Transit Worker Demographics

Characteristic	Non-death Trauma	12-9s	ALL
Total	105	166	271
Sex			
Male	70	129	199
Female	35	37	72
Age			
Mean	43.6y	44.7y	44.3y
Range	25-70y	28-62y	25 - 70y
Education			
Non-HS	5	2	7
High School	33	59	92
GED	4	1	5
Some College	38	61	99
Associate's Degree	5	13	18
Bachelor's Degree	8	26	34
Master's Degree	1	0	1
N/A	10	4	14
Job Title			
Bus Driver/Operator	77	4	81
Train Operator	13	117	130
Train Conductor	6	18	24
Track Worker	0	17	17
Station Agent	3	5	8
Motor Man	1	1	2
Power Distribution	0	2	2
Specialist Operations	0	2	2
Collection Agent	1	0	1
Construction Worker	1	0	1
Equipment Maintenance	1	0	1
Cleaner	1	0	1
Security Worker	1	0	1
Length of Occupation			
Mean	8.75y	11.33y	10.34y
Range	8m – 22y	1.5m – 28y	1.5m – 28y
Prior Incidents			
None	91	141	232
Yes (1)	13	20	33
Yes (2)	1	5	6
Time Between Incident and Psychological Evaluation			
Mean	1m, 6d	18d	25d
Range	1d – 9m, 19d	2d – 5m, 19d	1d – 9m, 19d

INCIDENT CHARACTERISTICS

The biggest difference between the two groups (12-9 and non-death trauma) is based upon the details of the incidents. The most obvious difference is the occurrence of a death in 12-9 incidents, which is not present in the non-death traumas. However, the general nature and circumstances of the incidents tend to differ between groups as well.

The vast majority of 12-9s involved subways, most occurring as the trains were pulling into the station. Passengers were usually struck while lying on the tracks or jumping in front of an on-coming train in an effort to end their own lives. In some other cases, passengers unintentionally fell onto the tracks. Track workers involved in 12-9s saw a co-worker hit and killed by a train while he/she was working on the track.

Other 12-9s involved conductors and station agents who were not involved in the incident first-hand, but did witness the event or its immediate aftermath. Although less common, bus operators have also reported 12-9 incidents, usually occurring when a pedestrian is hit and killed by their bus; fatal accidents involving buses were also noted.

Non-death trauma incidents are characterized by a variety of different circumstances, most often including some form of assault. Many of these traumas involved physical assault. A number of workers were punched in the face or had something thrown at them; seven workers reported being cut or stabbed. One worker was shot while on the job, and two others reported being shot at. An alarming and increasing number of workers have also been spat on, often causing anxiety about contracting an infection or disease (HIV/hepatitis). This fear also arises from some other incidents; one bus operator's hand was punctured by an unidentified type of needle when picking up a bag that was left on the bus. Another bus operator was bitten by a passenger, and three female employees were sexually assaulted at work. Numerous workers witnessed passengers or pedestrians being hurt in some way, and one person reported witnessing a co-worker electrocuted. A number of station agents and other workers had been robbed; many workers were verbally abused and threatened. Some of these workers were threatened with weapons, including baseball bats, knives and guns.

Table 2

Non-death Trauma Incident Details

Description of Incident	# of Workers
Physically assaulted	43
Spat on	22
Yelled at / threatened	16
Vehicle hit someone	9
Threatened with weapon	8
Cut/stabbed	7
Saw someone else hurt	5
Robbed	5

Bus accident	4
Sexual assault by coworker	2
Sexual assault by passenger	1
Shot at	2
Shot	1
Bitten	1
Other	11

TREATMENT ISSUES

The NYCTA workers involved in these incidents experienced fear and feelings of helplessness during the traumatic event, which then persisted after the initial trauma. Consistent with the Diagnostic and Statistical Manual of Psychiatric Disorders (DSM-IV) criteria for Acute Stress Disorder (ASD) and Post-Traumatic Stress Disorder (PTSD), these events result in psychological/behavioral problems which impact and interfere with their lives, not only at work, but across the entire range of daily functioning. Typically, workers reported repeated, disturbing memories thoughts and images of the event. They often feel compelled to re-play the event in their minds, constantly thinking of what they could have done differently to avoid the situation.

These recurrent and intrusive recollections are most frequently experienced by workers involved in 12-9 incidents, particularly those involving a suicide. Workers often feel responsible and guilty, as well as angry with the person for involving them as the means of his/her death. Many experience a misplaced and illogical sense of control, believing they were somehow at fault. This intense guilt tends to last for only a brief period, as they begin to realize the incident was unavoidable; they were powerless to stop it.

In addition to these recurring thoughts, many workers experience a feeling of literally reliving the event, with flashbacks as well as distressing, recurrent dreams. Many workers experience some physiological symptoms including sleep disturbance, loss of appetite, and tension, which can manifest as headaches, stomach aches and fatigue. Often these vivid recollections/feelings are brought on by something that reminds them of the event. Workers experiencing classic PTSD symptoms such as hyper vigilance, irritability, and an exaggerated startle response, are highly sensitized to the circumstances of the incident and a variety of environmental cues can trigger episodes of psychological anguish.

In efforts to avoid these reminders of the trauma, workers will often stay away from places or activities that may remind them of the incident. They may steer away from people, such as co-workers, and even avoid conversation that somehow relates to the incident. Additionally, they often distance themselves from friends and family. Workers sometimes feel as though the incident separated them from others; they experience feelings of detachment, as if they are “alone.” They remain socially isolated because they

believe that the other people in their lives could not understand or relate to what they have experienced or what they are feeling. This sense of isolation is a hallmark of ASD/PTSD.

It should be noted that the symptoms reported were all within the range expected; there were no reports of psychotic reactions, "nervous breakdowns," or other sequelae that would indicate a more serious psychiatric disturbance.

As part of the evaluation process, most of these workers were given a series of brief psychological measures to fully assess their condition and to provide information for both diagnostic certainty and treatment planning. One of the measures given is the Health Status Questionnaire (HSQ). The HSQ, a standardized psychological test, evaluates a patient's self-assessed health status at intake. It measures in an objective, normative manner, a patient's physical functioning, role limitations, and current perceptions of their functioning and health. The HSQ allows for an understanding of their condition from their own individual perspective, permitting definitive treatment planning.

TREATMENT PROGRAM

At Behavioral Medicine Associates, Cognitive-Behavioral Therapy (CBT) is the cornerstone of our treatment programs. Our psychological staff develops treatment plans specific to the individual needs of the worker. With a foundation in CBT, a variety of skills and techniques are used to ensure that the problems the workers present can be treated effectively. Our psychologists provide relaxation training, self-instructional skills, desensitization training, and behavioral assignments. Support, empathy, and concern are also key aspects of our treatment program. Perhaps most pertinent to our long-term goals of treatment are techniques in cognitive restructuring and Rational-Emotive Therapy (RET). Cognitive restructuring (RET is one method) enables workers to view the incident and their response in a manner which enables them to adjust, accept and move forward. Many workers define themselves as psychologically "impaired" following a trauma. CBT allows workers to re-define the experience and to adjust their perspectives to foster recovery and coping.

We maintain a critical focus on the social aspect of workers' responses; this is a key element in a successful recovery. Workers often have trouble discussing the event with others; they fear others will not or cannot understand what they are going through. It is a critical part of recovery to help workers to share their feelings with others, and to normalize their interactions and reintegrate into their social networks.

The psychoeducational component of treatment is essential for these workers. Our treatment goals are multi-faceted; it is not sufficient to merely desensitize a worker from the traumatic aspects of the incident. The goal is to equip them with the psychological skills to cope and manage effectively should future events occur. Helping workers to 'get better" is not the only goal of our treatment program. We provide a systematic method of dealing with the trauma, its aftermath, and the social/occupational ramifications workers experience. The skills the workers learn during treatment can also be used in the event

they experience another 12-9 or work-related trauma. They are given systematic, concrete methods to deal with the countless challenges of everyday life. Clinical experience has demonstrated that those workers who have been exposed to a subsequent trauma are able to cope with the second incident more effectively, efficiently and with less emotional/behavioral/social upheaval.

Behavioral Medicine Associates also works closely with occupational health physicians, coordinating care for injured and traumatized workers. The observations of these physicians are critical in identifying problems and in referring for psychological evaluation and treatment. The team approach to the management of this group of workers is fundamental to the success of our program.

GROUP THERAPY

As a voluntary part of treatment, we have started a support group to which all patients are invited. The psychologist is present at the group meetings to guide the group. Though the psychologist has an educational objective in the group, the main objective is for the members to support each other. In this group they can share their experiences, how they are coping, and provide each other with support and validation. Workers are able to share their stories in the group including details that are so specific to their job that no other person, professional, family member or friend could possibly understand.

In the group workers help each other deal with all aspects of the experience. Older group members often help newer members and validate their experience. After meetings, they will sometimes go with a fellow coworker and group member to places that he/she fears, such as the subway, to help him/her get over the fear, using the techniques of in vivo desensitization that are discussed in their individual treatment sessions.
For many, this group combined with the individual sessions, which helps them clearly organize their thoughts and enables them to move on with their lives. Many others cannot even contemplate going to the group; the distress at hearing stories too similar to their own is overwhelming. For those who decide to try it, the experience is usually a positive one, and one that can be a turning point in their recovery. This initial Group Therapy program was implemented by Dr. Kari Sherman, who continues to lead this group. A second group is scheduled to begin in March 2010; this group will be lead by Dr. Eli Isaacson.

TREATMENT OUTCOME

The majority of the treated individuals were able to return to work and terminate treatment within one year. The average span of treatment was just over six months, though about 37 percent of the clients included in this study were successfully treated in less than 90 days. An interesting difference in the length of treatment emerged between the 12-9 and non-death trauma groups. About 23 percent of the non-death trauma workers continued in treatment for over one year. However, this was only the case in less than 10 percent of the 12-9 group– and less than 14 percent of the overall sample.

It is typical for these workers to terminate psychological treatment once they are able to return to work in their full capacity. Several of the individuals who returned to work, however, continued in treatment for a short time in order to maintain their treatment gains and maximize their ability to use the psychological skills learned during treatment. Support, from both the treating psychologist and from family and friends, was an important component of the success seen with these individuals. Some workers were able to return to work, but needed changes in the work setting; this group generally included workers who were assigned to positions that did not require direct contact with the public, i.e., a bus operator who now is shuttling empty buses between garages, depots, etc.

Consistent with other reports, there were no indications of permanent or chronic psychological damage resulting from these incidents. Our experience treating NYCTA workers involved in 12-9 incidents and non-death traumas did not indicate any increase in physical problems as a result of the incidents. Temporary increases in blood pressure and occasional panic reactions were noted, but these effects abated rapidly.

Table 3

Treatment/Diagnostic Details

	Non-death Trauma	12-9s	ALL
Span of Treatment			
Mean	7m, 8d	6m, 13d	6m, 23d
Range	1w – 2y, 11m	1w - 3y, 3m, 9d	1w - 3y, 3m, 9d
Percentage of Clients to Complete Treatment			
within 90 days	33.65%	37%	36.90%
within 6 months	57.65%	57.50%	21.77%
within 1 year	77.85%	90.05%	86.35%
over 1 year	<23%	<10%	<14%
over 2 years	5.77%	3.00%	4.05%
Number of Visits			
Mean	19.6	18	18.64
Range	2 – 97	1 - 97	1 - 97
Diagnoses			
Post-Traumatic Stress Disorder			
(PTSD)/Acute Stress Disorder (ASD)	101	151	252
PTSD/ASD w/ Pain Disorder	(46 of 101)	(0 of 151)	(46 of 252)

PTSD & Adjustment Disorder w/ Mixed Anxiety and Depressed Mood	3	1	4
Adjustment Disorder w/ Mixed Anxiety and Depressed Mood	0	10	10
Adjustment Disorder w/ Depressed Mood	0	2	2
Adjustment Disorder w/ Mixed Anxiety	0	2	2
Major Depressive Disorder (MDD)	1	0	1
Health Status Questionnaire (HSQ) Transit worker's perception of their overall health (expressed as a percentage)			
Mean (out of 100%)	56%	69.3%	63.7%
Range (out of 100%)	5% - 97%	30% - 100%	5% - 100%

DISCUSSION

A thorough review of almost 300 cases in which transit workers experienced 12-9s or non-death traumas, has resulted in a series of conclusions and recommendations. Overall, the psychological problems these workers developed as a result of these incidents were remediable; there was no impact on long-term occupational fitness. We were able to see an improvement of psychological well being in each of these workers, and any somatic complaints were temporary, usually experienced immediately after the incident.

The common issues experienced by the workers were social distancing, guilt, sleep disturbance and anxiety. All of these difficulties were addressed and resolved during the course of treatment. Our experience was similar to that seen in the psychological literature; the majority of the behavioral problems were observed in the immediate aftermath of the incident and disappeared within a relatively brief period of time. Although some workers stayed in treatment longer than others, they were able to return to work in a reasonable amount of time.

As previously described, many clients are given the Health Status Questionnaire (HSQ) at intake, which assesses each worker's perception of their overall health. Workers who experienced a non-death trauma reported an average HSQ percentage that was significantly lower than that of the 12-9 group.

One reason may be that workers in the non-death trauma group were assaulted or attacked in some way; this is an experience that falls outside of their expectations about the "dangers" of the job. Additionally, these incidents were directed at the worker, in

contrast to the 12-9 group in which the incidents involved death (injury) to others. Therefore, in the non-death trauma group the worker was the victim. These workers experienced direct physical pain or injury; their perception of their health therefore, was worse than those workers who were not directly injured. This finding has implications for future research; determining what factors influence these self-perceptions.

Future implications of this study include the issue of preparedness of transit workers for the types of situations that may arise. We recommend that new train and bus operators, as well as other transit workers, are educated about the possibility of 12-9 and other traumatic workplace incidents. There is evidence that education, orientation and developing realistic expectations can reduce the emotional impact of these incidents.

Overall, the reviewed cases and their outcomes suggest the treatment provided by Behavioral Medicine Associates for these Transit workers is critical to their recovery from these traumatic incidents. Through Cognitive-Behavioral Therapy, workers were able to regain their emotional equilibrium and develop the psychological/behavioral skills necessary to deal with any future incidents.

We cannot discuss the successful recovery of these individuals without crediting the workers themselves. The psychologists of BMA are encouraged by the dedication and devotion expressed by the workers. We are pleased to be able to help these workers resolve the problems discussed as a result of 12-9 and non-death traumas.

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