

Relationship of Stress, Experienced by Rescue Workers in the Highland Towers Condominium Collapse to Probable Risk Factors – A Preliminary Report

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Summary

The aim of this study was to examine the relationship between the level of stress experienced by rescue workers after the collapse of a 13 storey condominium in Kuala Lumpur, and other probable risk factors. Within a month of the incident, 123 firefighters filled up the Impact of Life Event score (Horowitz) and the General Health Questionnaire (GHQ). The results indicated that 7 (6%) firemen could be classified as possible 'cases' on the GHQ, and significantly 5 from this group also scored highly on the impact of events score. No other risk factors were identified in the firemen. On conclusion, the GHQ can be used to screen those with high impact scores to pick up possible cases early enough, so that intervention can be successful.

Key Words: Disaster, Stress levels, Psychiatric morbidity

Introduction

When a man-made or natural disaster occurs, at the direct centre of the disaster all the victims may die. Just outside the centre of the disaster the victims may have severe physical injury; further away still people may be affected but not suffer physical injury and in the community too there will be some reactions to the disaster. On December 11, 1993 a 13 storey block of condominiums called the "Highland Towers" collapsed. At the epicentre of the disaster only 3 victims survived, with 70 having perished sometime over the 11 days that rescue workers toiled trying to

extricate survivors. Nobody else was subject to severe physical injury, and besides the surviving kin and close friends of the deceased, only the rescue workers were at any time in close proximity to the disaster. Many studies have reported that post traumatic stress disorders are common after both man-made and natural disasters, and some reports quote prevalence rates of up to 50% in the population most affected e.g after a tornado disaster¹, after burns injury² and in South East Asian refugees³.

A study on firefighters who handle Australian bush fires⁴ showed that 35% developed symptoms of Post

Traumatic Stress Disorder, with the symptoms mainly appearing after 4 months and persisting up to almost two years.

The aim of this study was to examine the relationship between the stress experienced by the rescue workers and other probable risk factors.

Material and Methods

Method

The Fire Department requested for professional psychological help, and this batch of 123 firemen met with the second author for one session of "debriefing" within one month of this incident. This session included education of the firemen of the signs, symptoms, management and prognosis of Post Traumatic Stress Disorder. Firemen were invited to ventilate about their experiences and feelings during the disaster. All the firemen consented to filling up the "Impact of Event Scale: A measure of subjective stress"⁵ and the "General Health Questionnaire" (GHQ)⁶ besides other questions on demographic data, length of exposure (in total hours of rescue work carried out), previous exposure to disaster of similar type, and presence of other physical and or psychiatric problems before this tragedy. The impact of event scale was translated into Bahasa Malaysia by the second author and others, while the General Health Questionnaire already has a Bahasa Malaysia version⁷.

The impact of event scale consists of 15 items, with the specific life event here "The Highland Towers Disaster" recorded at the top of the page. The subject was to indicate whether or not each item had been experienced within the past seven days. If he recalled any such experiences he rated it for frequency as rarely, sometimes and often. The impact of event scale is self rated and therefore any variations in variability would be intra observer, and this is very minimal. The validity would depend on the identification of cases of post-traumatic stress disorder which could not be done at this point, because symptoms of post-traumatic stress disorder are delayed consequence of the incident usually manifesting within 6 months. Thus, high scores on impact of event scale arbitrarily using the mean as

a cut-off point were taken to identify potential cases and it was suggested to this group of fireworkers that they should be followed-up regularly by the psychiatric team.

The GHQ, consists of a 30 item questionnaire, with a maximum score of 30. Scores of greater than 5/6⁷ were indicative of the probable presence of a psychiatric disorder needing further diagnostic assessment. The items were then scored and statistical analysis was done using "Anova" at a level significance of $p < 0.05$.

Results

One hundred and twenty three firemen completed the questionnaires voluntarily. Their mean age was 32, their mean duration of being employed was 9 years, on an average each of them had spent a total of 68 hours, at the site of the disaster and had been exposed to the sight of dead and dismembered bodies and to the possibility of debris from the collapsed building falling on them. No one was injured during the rescue work. The mean of the total scores for the 123 subjects for the impact of event scale was seven and was taken to divide the total group into high impact as all who scored above the mean and low impact as all who scored below the mean.

There was no significant difference in the two groups for the variables age, duration of employment, time (in hours) spent at the site of the disaster, and presence of physical and psychiatric morbidity in the subjects. There was significant difference in the GHQ scores and 12.5% who had high impact scores also had high GHQ scores greater than 5 as compared to those with 'low' impact scores (2%) (Table I).

Figure 1 demonstrates the distribution of the scores versus the frequency. The mean-7 is taken to divide high impact from low impact.

Discussion

This study shows that a significant number of persons with high impact of life event scores had high GHQ scores as compared to those with low impact scores. This indicates possible 'caseness' for psychiatric

Table 1

	Subjects with High Impact Scores (>7) n(40)(32.5%)	Subjects with Low Impact Scores (<7) n(83)(67.5%)	Test of significance
Age (in years)	31.9	31.8	NS
Duration of employment in years	9.5	9.25	NS
Total direct exposure to the disaster in hours	66	70	NS
Presence of psychiatric morbidity or physical illness in the past	nul	nul	
GHQ scores	5(12.5%) Score > 5 Total of 7 (6%) score > 5	2(2%) Score > 5	p < 0.05%

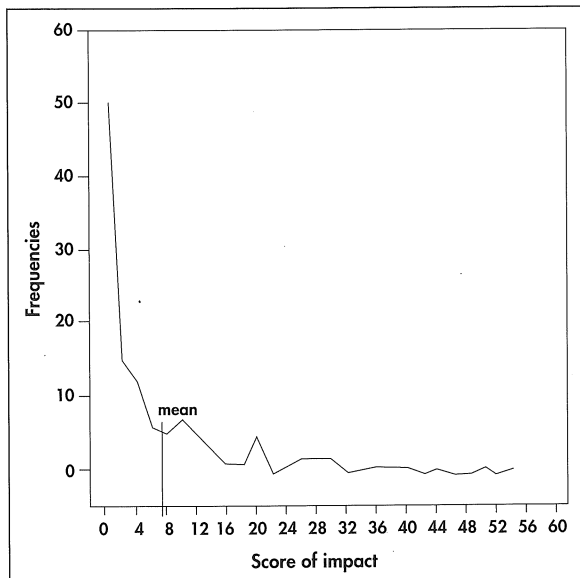


Fig. 1: Distribution frequency of impact scale

morbidity. Since there was no significant past history of psychiatric illness, or any significant premorbid risk factors that could be elicited, it could be postulated that the Highlands Tower disaster was likely to have

been a powerful precipitator of high stress scores as assessed by the impact of life events and psychiatric 'caseness' as assessed by the GHQ. None of the rescue workers experienced any loss due to physical injury, loss of loved ones through death, damage to their property or to loss of status. However, in the aftermath of the disaster, many rescue workers felt guilty that more was not done or done earlier and this was to some extent played up by the community as well in apportioning blame on the rescue workers. Many could have felt 'culpable' although 'not causally responsible'⁸. This group with high GHQ scores needs to be further examined to determine whether they have developed post-traumatic stress disorder which is defined as a delayed or protracted response to a stressful event or situation which can cause pervasive distress with episode of intrusive memories and avoidance of cues that remind the sufferer of the original trauma⁹. A current study is reexamining the original group of 123 to ascertain how many have developed post-traumatic stress disorder a year later.

This study by attempting to eliminate all other possible confounding variables suggests that the impact of the

disaster has had a profound effect on a total of seven of the firemen (i.e 6%) resulting in high GHQ scores. If the mean of the impact of event scales was used alone, 40 (33%) scored above the mean but this could result in misclassification since the mean as the cut-off point would be too sensitive and not specific enough to identify possible cases with psychiatric morbidity. A local study¹⁰ which studied another batch of firemen involved in rescue work in the same disaster four months after the incident identified a median of 7 for the Impact of Event Scale and a median of 2.5

for matched controls who were hospital staff. Therefore at a cut-off point of 7, 33% of the rescue workers can be considered to have some symptoms of post-traumatic stress. The GHQ should be used to screen cases with high impact scores to pick up possible cases early enough so that intervention can be successful. To establish the validity of the impact of life event scale and or the GHQ as a predictor of post-traumatic stress disorder, all the cases need to be followed up to establish a definitive diagnosis and this is part of a on going study in the department.

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