

London Fire Brigade's screen and treat approach to the Grenfell Tower incident

Abstract

Purpose. To report on the mental health response with the Grenfell incident within London Fire Brigade.

Design/Approach: The LFB implemented screening for the symptoms of posttraumatic stress disorder (PTSD) at 28-days, 3-months and 6-months for all personnel directly involved in the incident.

Findings: The prevalence of PTSD within frontline personnel was 13.4% at 28-days, falling to 7.6% at 6-months. The LFB's internal Counselling and Wellbeing service offered treatment to those scoring above the cut-off for PTSD along with accepting self-referral and referrals from line-managers and Occupational Health. There were 139 referrals within the 12-month period following the incident.

Research implications: The outcomes for those who engaged in treatment are broadly in line with other studies evaluating post-disaster interventions. Issues for consideration within national guidelines are discussed.

Practical implications: The screen and treat approach adopted by London Fire Brigade was shown to be a feasible approach to adopt within such a scenario.

Key words: Emergency Services, Screen and Treat, Posttraumatic Stress Disorder, Mental Health Response, Psychological Treatment.

Article Classification: Research Paper

Introduction

On 14th June 2017 a major fire broke out in Grenfell Tower, a 24-storey block of flats located in The Royal Borough of Kensington and Chelsea, West London. The incident was one of the most significant structural fires in recent United Kingdom history and resulted in 72 deaths. Emergency services assisting with the rescue effort included the London Ambulance Service, the Metropolitan Police, London's Air Ambulance and the London Fire Brigade (LFB). The LFB responded by deploying more than 1,000 personnel from stations across the region.

A firefighter's role involves exposure to hazards, including fighting fires and working in dangerous environments. When exposed to such events, individuals are at risk of developing posttraumatic stress disorder (PTSD). Rates of PTSD among firefighters range between 6.5% (Bryant and Harvey, 1996) and 37% (Khan et al., 2018), with depression, anxiety, suicide and drug and alcohol misuse all associated with this PTSD in this group (NICE, 2018). However, UK emergency services do not currently undergo routine screening for PTSD, instead a referral system for those seeking help is adopted. Clearly, screening at an early stage enables appropriate psychological treatment to be offered to those who may need it. One exception was the London bombings in 2005 which resulted in a proactive and systematic attempt to contact and screen those involved in the major incident and an effort to offer treatment to those who could benefit from psychological therapy (Brewin et al., 2010). This approach is consistent with National Institute for Health and Care Excellence guidelines (NICE, 2018), which recommend that:

“For people at high risk of developing PTSD after a major disaster, those responsible for coordinating the disaster plan should think about the routine use of a validated, brief screening instrument for PTSD at 1 month after the disaster.”

The guidelines also states that disaster planning should include immediate practical support and access to specialist mental health, evidence-based assessment and treatment services.

The intensity and prolonged nature of the Grenfell Tower fire may have resulted in an adverse impact on the mental health of those attending. In response to the incident, psychological support was made available for LFB personnel through an internal Counselling and Wellbeing service (CWS). The CWS responded to the incident by attempting to adhere to NICE guidelines through making contact with all of the personnel involved, screen for symptoms of PTSD and offer psychological services to those experiencing difficulties following the incident.

We report on the screening assessments carried out by the LFB’s CWS following the Grenfell Tower fire, and summarise the treatment offered to individuals presenting to the service within the twelve months following the incident. The aim was to add to the current knowledge-base on the psychological impact of a major incident on emergency service workers, and effective approaches to screening and treating psychological difficulties in these populations.

Methods

Population and Screening

The immediate response from the CWS identified 1074 LFB personnel whom were known to the LFB as being involved in the incident and were therefore the target of their initial screening attempt. Wellbeing centres were established at day 1 and around day 28 after the incident, offering individuals exposed to the incident the opportunity to have individual meetings with CWS staff.

The CWS attempted to contact all 1074 individuals to initiate the screen and treat approach. The IES-R was administered face-to-face at 28 days and was sent out in the post for self-completion at 3-months and 6-months following the incident. LFB personnel were asked to respond to the questionnaires specifically in relation to impact of the Grenfell fire.

Measures

Impact of Events Scale Revised (IES-R, Weiss and Marmar (1995)).

The 22-item IES-R was developed as a screening tool for PTSD symptomatology and is comprised of eight items each measuring intrusion and avoidance, as well as six items assessing hyperarousal. Each item is rated on a 0 (*not at all*) to 4 (*extremely*) scale with respect to how distressing each item has been during the past week, providing a total score in the range of 0-88. The IES-R has been reported as having sufficient test retest reliability ($r = -0.89$ to 0.94) and internal consistency (Cronbach's α) for each subscale (intrusion = 0.87 to 0.94 , avoidance = 0.84 to 0.97 and hyperarousal = 0.79 to 0.91) and a clinical cut off score for PTSD symptomatology of 33 has been suggested in the literature (Creamer et al., 2003).

Clinical Outcomes in Routine Evaluation (CORE, Evans et al., 2000)).

The CORE is a 34-item transtheoretical and transdiagnostic measure of psychological distress designed to measure four key domains of psychological health: wellbeing, symptoms, functioning and risk. The CORE-10, used for session by session monitoring, is a 10-item

version of the CORE outcome measure. Each item is rated on a scale of 0 to 4 providing a total in the range of 0 to 40. The CORE has been reported by Evans and colleagues (Evans et al., 2000) as having adequate internal (.75) and test retest (.95) reliability, sufficient validity compared with other measures and a clinical cut off score of 10.

Treatment

Psychological support and therapy was available from the LFB CWS for those affected by the incident. LFB personnel were offered treatment if they self-referred to the service, were referred by a manager or third parties (e.g. occupational health) or if they scored above 33 on the IES-R at any assessment time point. Anonymised data relating to this treatment were made available via the CWS secure electronic records system. Data were collected from the referrals made over the twelve-month period following the incident. Individuals who were seen within the service completed the IES-R and CORE throughout counselling.

Analysis of Treatment Outcomes

Change in PTSD symptoms, as measured by the IES-R, and psychological distress, as measured by the CORE, were analysed in a number of ways. First a paired t-test was used to indicate whether the change over time was statistically significant. Second, we report the proportion of those who received treatment who experienced a reduction in symptoms above the reliable change index for the relevant measure. A reliable change identifies how much change is needed on a measure for the change to be deemed statistically reliable rather than resulting from measurement error (Jacobson and Truax, 1991). If a client's pre and post change scores on the IES-R and CORE exceeded the calculated reliable change index, they were classified as making a reliable change. Third, we report the proportion of the sample who achieved a clinically significant change, i.e. whether treatment moved a client's post

treatment scores on the IES-R and CORE to within the normative distribution (i.e. below the measurements clinical cut off, as described above) as opposed to within the clinical distribution (i.e. above the clinical cut off). Fourth, we report Cohen's d effect size (Cohen, 1992) which is a standardised measure of change to enable comparison of change across different studies.

Results

Screening

The London Fire Brigade (LFB) personnel identified as being involved in the incident included firefighters, crew managers, watch managers, senior managers, control staff and a small number of other personnel. The breakdown of staff by role can be seen in Table 1, which indicates that the majority of the 1,074 personnel involved were firefighters. The shift patterns, or watches, of the personnel are indicative of the order in which staff arrived at the incident; red watch was the shift on duty when the incident began and therefore acted as the first responders from LFB. They were followed by blue, green, and white watches, respectively. As indicated in Table 1, not all staff were linked to a specific watch.

INSERT TABLE 1 HERE

As indicated in Table 2, at 28-days post incident, 689 IES-R screening questionnaires were obtained, a response rate of 64.2% of the total sample. 13.4% of those responses had a total score above the clinical cut-off of 33, indicating symptoms consistent with a diagnosis of PTSD. The data reported in Tables 2, 3 and 4 are based on the groups of personnel who were most likely to have been immediate responders, i.e. firefighters (FF), crew managers (CM) and watch managers (WM) from the first two responding watches to have been on duty during the incident (Red and Blue) and senior managers. However, the total responses in

these tables include the responses from all watches and other personnel. The response rate dropped to 188 (17.5% of the total sample) at 3-months with 8.5% of these scoring above the PTSD diagnostic threshold on the IES-R. At 6-months the response rate was 315 (29.3%) of which 7.6% scored above the PTSD diagnostic threshold on the IES-R.

INSERT TABLE 2 HERE

INSERT TABLE 3 HERE

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Referrals and Demographics

There were 139 referrals to the Counselling and Wellbeing service (CWS) for LFB personnel who reported experiencing difficulties relating to the incident. This represents 12.9% of the total number of personnel involved in the screening process. Of these 139 referrals, 111 engaged with the service and attended at least one appointment (see Figure 1). 104 were male and 7 were female, with an age range of 26 to 65 ($M = 43$, $SD = 7.81$). The majority, 80.2% were White British, 7.2% were Asian British, 5.4% were Black British, 0.9% were of Mixed Ethnic Origin, 1.8% recorded their ethnic background as other, and ethnic background was not recorded for 4.5%.

INSERT FIGURE 1 HERE

Presenting Difficulties

Individuals were assessed by the CWS staff using the CORE during their first appointment. The CORE identified a range of presenting difficulties amongst LFB personnel, where each individual may record more than one presenting problem. These included anxiety (n=67, 60.4%) and problems related to trauma, such as PTSD (n=64, 57.7%) and depression (n=54, 48.7%). Other recorded difficulties were self-esteem (n=24, 21.6%), interpersonal and/or relationship problems (n=21, 18.9%), work and/or academic problems (n=21, 18.9%), bereavement (n=17, 15.3%), physical problems (n=10, 9.0%), living and/or welfare problems (n=8, 7.1%), cognitive and/or learning problems (n=4, 3.6%) and addictions (n=1, 0.9%).

Treatment

Treatment was individualised and multiple treatment approaches were available for the wide range of presenting problems. When appropriate, more than one approach was offered to any one individual over the course of treatment. The CWS followed NICE (2019) guidelines for treating PTSD, and as such individuals were offered EMDR and trauma-focussed CBT. The most commonly used treatment approaches were integrative psychotherapy (n=65), psychodynamic (n=33), supportive (n=32), person centred (n=32), systemic (n=28), structured/brief treatment (n=23), cognitive behavioural therapy (CBT; n=18), trauma focused CBT (TF-CBT; n=14) and EMDR (n=10).

Of the 111 individuals that engaged with the service, 91 individuals were discharged within the 12-month period following the incident. The mean number of sessions attended was 6 ($SD = 4.89$, range = 1-25). Sixty-nine clients completed their planned treatment, whereas 22

individuals dropped out of treatment, either due to loss of contact (n=15), choosing not to continue (n=6) or due to a crisis (n=1). At the time of data analysis, 20 individuals were still within treatment and therefore their data were not included (see Figure 1). Although 69 personnel completed treatment, the pre and post measures were incomplete for a number of cases.

Psychological distress

Pre and post CORE scores were available from 48 personnel that completed treatment. There was a statistically significant difference between the pre (M=12.9, SD=5.1) and post mean (M=4.3, SD=3.4) scores ($t=9.31$, $p<0.001$). Over half (64.6%) of the sample showed a reliable change in symptoms, and 50% moved into the non-clinical (as measured by the clinically significant change) group. The effect size of the symptom reduction was large at 1.78 (see Table 5).

Of this group, 33 (68.8%) reported trauma as a presenting problem. There was a statistically significant difference between the pre (M=13.3, SD=5.4) and post mean (M=4.6, SD=3.2) scores ($t=7.96$, $p<0.001$). A reliable change was achieved by 69.7% and a clinically significant change by 63.6% of the sample, with the effect size again large at 1.96 (see Table 5).

PTSD symptoms

Pre and post IES-R scores were available for 33 personnel that completed treatment. There was a statistically significant difference between the pre (M=39.3, SD=14.6) and post mean (M=13.2, SD=10.7) scores ($t=10.3$, $p<0.001$). A reliable change was achieved by 84.8% and a clinically significant change by 51.5% of the sample, and a large effect size of 2.04 (see Table 5).

Of this group, 25 (75.8%) reported trauma as a presenting problem. There was a statistically significant difference between the pre ($M=43.2$, $SD=12.8$) and post mean ($M=14.9$, $SD=11.2$) scores ($t=9.89$, $p<0.001$). A reliable change was achieved by 92.0% and a clinically significant change by 56.0% of the sample, with the effect size again large at 2.35 (see Table 5).

INSERT TABLE 5 HERE

Treatment Completion

Treatment completers ($n=69$) scored lower on the CORE at baseline assessment ($M=10.95$, $SD=5.25$) compared to non-treatment completers ($n=22$) ($M=14.79$, $SD=6.24$). The same pattern was demonstrated in the IES-R baseline data (Completers ($n=43$) ($M=37.07$, $SD=16.1$); Non-completers ($n=8$) ($M=45.5$, $SD=10.1$)).

Discussion

The current study reports on the implementation of a screen and treat programme implemented by a UK fire service after a major incident. From over 1,000 personnel just under two-thirds completed a screening tool for PTSD at 28 days post-incident. Unlike previous screen and treat programmes, such as that implemented after the London bombings of 2005 (Brewin et al., 2010), this study is able to report the exact number of individuals who may have been affected by the incident in order to report the level of success of the screening programme. The fact that one-third failed to complete a screening assessment is a matter of

concern. Clearly it is unknown how many individuals did not complete the screening measure as they were not distressed. The current approach aimed to ensure that all relevant individuals were asked to complete the measure, but that it was voluntary to do so. Enforcing completion may have resulted in a higher return rate, although this would most likely be with less reliable data. Adopting a culture of forced screening at an early stage may also alienate individuals from seeking help at a later stage should they need it.

Despite a drop in the screening returns at 3-months, the return rate rose at 6-months to approximately 30% of the total sample. During this time the level of diagnostic PTSD indicated by the screening tool dropped from 13.4% at 28-days to 7.6% at 6-months. Previous research has reported varying levels of PTSD within similar samples. Mirsa et al. (2009) used the Trauma Screening Questionnaire (TSQ, (Brewin et al., 2002) and reported that 4% of 341 London Ambulance Service workers reported probable PTSD two months after the 2005 London bombings. Other studies report higher levels of diagnostic PTSD both in emergency service responders, including a rate of 15.2% in Swedish ambulance personnel (Jonsson et al., 2003) and between 17-22% within a sample of US firefighters (Del Ben et al., 2006). However, both of these studies used the IES-15 (Horowitz et al., 1979) as a screening tool, which is associated with a lower sensitivity in predicting PTSD than the IES-R (Creamer et al., (2003) and TSQ (Walters et al., 2007). The current study used the IES-R, which is a valid screening measure for PTSD assessing the core PTSD symptoms, i.e. intrusions, avoidance and hyperarousal. However, the introduction of DSM-5 (APA, 2013) includes negative alterations in cognition and mood within the assessment of PTSD, which will mean that the IES-R will need updating before being used as a screen in further research.

Current data indicate a 7.6% rate of PTSD at 6-months post incident. However, these data includes personnel who were engaged in treatment, and therefore is likely lower than would have been the case without engaging in a screen and treat programme. When considering the range of presenting problems that personnel presented with during the months following the Grenfell Tower incident, then there was clearly a need for a mental health intervention for a significant percentage of the LFB staff. As stated previously, all those individuals who scored above the cut-off for a diagnosis of PTSD were offered a psychological intervention. The fact that 12.9% of the total sample were referred, and that this figure includes other sources of referral than those identified as suffering from PTSD via screening, suggests that many of the 13.4% scoring above PTSD threshold at 28-days did not take up this offer. However, these individuals may have accessed a mental health intervention from outside the CWS, or taken up the offer of help more than 12-months after the incident.

The range of interventions offered to those who were referred reflects the range of presenting problems, as well as the approaches offered within the CWS. Sample sizes were not large enough to extract meaningful outcomes for different approaches or presenting problems.

Whilst the initial assessment identified a group who were suffering from trauma as a presenting problem, it is possible that there may have been some variance in the definition of trauma within firefighters and clinicians. However, those with clear PTSD as the presenting problem were identified using a reliable measure, and offered treatment approaches consistent with the NICE (2019) guidelines. The outcomes of this group will be reflected in the IES-R data for those who identified trauma as a presenting problem. The effect size obtained in this group is broadly comparable to that obtained within NHS services following the London bombings (Brewin et al., 2010) and also in line with the significant clinical gains obtained within routine clinical services offering evidence-based treatments for PTSD

following the 1998 Omagh bomb in Northern Ireland (Gillespie et al., 2002). As would be expected, the effect sizes in these studies are above those obtained within controlled clinical trials due to the fact that there is no control group and, therefore, symptom reduction will represent a combination of treatment effects and natural recovery. With respect to the current study, the treatment outcome data was collected by the therapists employed by LFB. This process may have led to a bias towards the inflated effect sizes associated with non-blind ratings. The processing and analysis of data, however, was conducted by authors who were not employed by LFB (ZT, LM & CS). Given that people offered treatment in the current study received an average of seven sessions (median of six), approximately half of that received in the Brewin et al. (2010) study, it is likely that many individuals resolved their issues relatively quickly with a few problem-focused sessions or through a generic counselling approach. A full protocol of evidence-based treatment may therefore only have been delivered and/or required by a subset of the 25 individuals whose data are reported on the IES-R for a trauma-related presentation. Of note, the CWS offered EMDR as an evidence-based treatment for PTSD, which was not the case in the Gillespie et al. (2002) study. Although there are few studies specifically evaluating the effectiveness of EMDR in emergency workers (Kitchiner, 2004), the current data suggest positive outcomes for this intervention.

The current study highlights the need to identify and treat adverse psychological reactions to trauma within firefighters. Future research should be aimed at understanding the barriers to getting high returns from screening programmes, barriers to help-seeking in this population and ongoing evaluation of interventions. Previous studies indicate that first responders may refrain from seeking help due to limited knowledge about mental health, along with issues of stigma and 'showing weakness' (Jones et al., 2020; Kim et al., 2018). It is quite possible that

these issues also contribute to individuals not completing screening assessments. Therefore, whilst we would recommend the use of a screen and treat programme at future incidents, we would also suggest workplace interventions in order to enhance the outcomes. Appropriate change can take place via workplace culture, including facilitating open discussion about mental health and reactions to incidents. This may also include a prepared protocol for delivering such a programme, adapted to the specific geography and organisation of the relevant workforce. Such planning would result in an increased awareness within personnel, and potentially contribute to higher returns.

Ongoing reviews of the psychological support provided to LFB personnel following the Grenfell Tower major incident have highlighted the effective CWS interventions and consider recommendations for future consideration. These will include considering possible mandatory completion of screening tools; specified support for Control room personnel; development of a network of LFB peer trauma support volunteers; enshrining in policy the level of support offered to LFB witnesses at a public inquiry and gathering feedback and evaluative comments from personnel receiving outreach interventions.

Competing Interests

DL, MC and AS are in paid employment from the LFB.

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