



Original Research

A longitudinal comparative study of the physical and mental health problems of affected residents of the firework disaster Enschede, The Netherlands

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KEYWORDS

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Summary Objectives: After the firework disaster in Enschede, The Netherlands, on 13 May 2000, a longitudinal health study was carried out. Study questions were: (1) did the health status change over this period; and (2) how is the health status 18 months after the disaster compared with controls?

Study design: A longitudinal comparative study with two surveys at 3 weeks and 18 months after the disaster.

Methods: A control group for the affected residents was included in the second survey. Respondents filled in a set of validated questionnaires measuring their physical and mental health problems.

Results: The prevalence of physical and emotional role limitations, severe sleeping problems, feelings of depression and anxiety, as well as intrusion and avoidance decreased from 3 weeks to 18 months after the disaster for the affected residents. Independent of background characteristics and other life events, residents had 1.5 to three times more health problems than the control group; for example, physical role limitations (odds ratio [OR] = 1.5, 95% confidence interval [CI] 1.2–2.0) and anxiety (OR = 3.1, 95% CI 2.4–4.2).

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Conclusions: Although health problems decreased compared with 3 weeks after the disaster, 18 months after the disaster, the affected residents had more health problems than the people from the control group.

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Introduction

In the past decade, many health studies that were mostly cross-sectional in design have been carried out in the aftermath of disasters. These studies show that survivors report, even years later, suffering from intrusive thoughts of the disaster, avoidance behaviour, feelings of anxiety and depression, severe sleeping difficulties and (medically unexplained) physical symptoms.¹⁻³ Although studies have indicated that most physical and mental health problems decline after disasters over time,^{2,4} survivors reported generally more, and more persistent, health problems than the respondents in the control groups.⁵⁻⁷

Disasters are often described as a disruption exceeding the adjustment capacity of the affected community.⁸ The disruption can also include a need for healthcare that exceeds normal levels. Therefore, healthcare workers in the affected area need information about the prevalence and trends of the health problems of the affected community to evaluate and improve their health policy. However, longitudinal comparative studies providing that information have been scarce.³

On 13 May 2000, The Netherlands was startled by a disaster. A firework storage facility exploded in a residential area in Enschede in the east of The Netherlands, close to the German border. The series of two explosions and subsequent fire killed 23 people, including four fire-fighters, and injured over 900 people; about 500 homes were severely damaged or destroyed. The Dutch government declared this a national disaster and the Ministry of Health, Welfare and Sports decided to launch a comprehensive health study for the first time shortly after the disaster. After an aeroplane crash in a residential area in Amsterdam in 1992, no such rapid health survey was organized. Years later, health symptoms were still attributed to the disaster, due partly to uncertainty about exposure to toxic substances. A parliamentary committee in 1999 recommended a rapid assessment of immediate health effects after a disaster in the future.⁹

Three weeks after the firework disaster, a study was carried out to measure potential exposure and

the health problems among residents and emergency rescue workers who were present at the time of the disaster.¹⁰ The main aim was to collect data on exposure and health to inform health care and policy makers, and decrease uncertainty about exposure to toxic substances. Data collection for scientific purposes was a minor goal. To study potential exposure to substances related to fire-works and fire, elements in blood and urine were measured; no harmful levels in relation to the disaster were determined.¹¹ In addition, the respondents' location and experiences during, and in, the hours just after the disaster, and their physical and psychological health, were assessed with a set of standardized questionnaires.¹⁰ The study was part of a larger healthcare programme especially designed for the survivors.¹²

Although we were in a unique situation to study the survivors so quickly after the disaster (3 weeks), we did not have time to collect reference data that were lacking for most of the specific questionnaires for the immigrant groups living in the affected area.¹⁰ At the second survey, 18 months after the disaster, a control group was included. In this paper, we describe the results of the health status of the affected residents in the first follow-up, about 18 months after the disaster. The study questions were as follows: (1) were there changes in health problems of affected residents 18 months after the disaster compared with 3 weeks after the disaster?; and (2) were the prevalence estimates of the health problems 18 months after the disaster different between affected residents and respondents of the control group?

Participants and methods

About 3 weeks after the disaster, the first survey was carried out. All residents were personally invited, and about 30% participated. In addition, rescue workers and passers-by were invited to participate, through their employers or through the media. In this paper, we only focus on the residents. The second survey started in November 2001, about 18 months after the disaster.

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