



Research Paper

Characteristics, circumstances and pathology of sudden or unnatural deaths of cases with evidence of pathological hoarding

Shane Darke^{a,*}, Johan Duflou^{a,b}^a National Drug & Alcohol Research Centre, University of New South Wales, Australia^b Sydney Medical School, University of Sydney, NSW, Australia

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ABSTRACT

The study aimed to determine the characteristics and circumstances of cases sudden or unnatural death ($n = 61$) with evidence of pathological hoarding, their major organ pathology and toxicology. The mean age was 65.8 yrs (a mean of 16.1 years of potential life lost), 62.3% were male, and 28.2% were obese. 95.1% lived alone, and 96.7% died in their residence, with no medical intervention. In all cases severe squalor and extensive hoarding were noted. The direct cause of death was attributed to disease in 75.4%, heart disease being a significant factor in 52.5%. Accidents causing death directly related to hoarding occurred in two cases. Autopsy revealed extensive pathology: severe coronary artery narrowing (42.4%), myocardial replacement fibrosis (44.1%), emphysema (39.0%), nephrosclerosis (46.6%). Signs of hypothermia were present in 14.8%, and diabetes was diagnosed in 21.3%. The most commonly detected substance was alcohol (32.1%). Medications for heart disease (5.4%) or diabetes (7.1%) were rare. The overall clinical picture was of an isolated group, with a heavy burden of physical disease and, in all probability, a high level of psychiatric disorders, who died alone in their homes.

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1. Introduction

Hoarding Disorder has been recognised in DSM V as an independent diagnosis, characterised by an obsessive accumulation of objects causing functional impairment.^{1–7} The population prevalence was recently estimated at 1.5%,⁵ but may range up to 5%.^{1,7–9} High rates of hoarding behaviours are also seen other disorders, such as obsessive-compulsive disorder and schizophrenia.^{7,10} The behaviour appears more prevalent amongst males and older adults.^{1,5}

Pathological hoarding behaviours are associated with social isolation, self-neglect, squalor, poorer quality of life and poor health.^{1,3,5,6,8,11–13} There are high rates of psychiatric comorbidity, particularly mood and anxiety disorders.^{6,14,15} Functionally, excessive clutter may substantially restrict mobility, and people who hoard frequently reside in unsanitary, squalid living conditions.^{1,3,10,11} Restrictions in mobility, self-neglect, poor diet and poor sanitation expose people who hoard to chronic health problems, including obesity and hypertension.^{1,10,16} There is also risk of injury from falling piles of clutter and fire.^{1,10,11} Those who hoard

rarely seek treatment, and treatment outcomes are poorer than for other obsessive compulsive disorders.^{2,7}

While studies have characterised people who pathologically hoard, no study to date has reported on the characteristics and circumstances of cases of sudden or unnatural deaths of such cases. The demographic characteristics, circumstances of death, major organ pathology and toxicology of such cases is unknown, as is the proportion role of such deaths in which hoarding behaviours were a direct cause. The current study aimed to provide the first data to:

1. Determine the demographic characteristics and circumstances of death of cases where there was evidence of pathological hoarding;
2. Determine the major organ pathology of cases; and
3. Determine the toxicology of cases.

2. Methods

2.1. Case identification

All cases presenting to the Department of Forensic Medicine Sydney (DOFM) between 1 January 2001–31 September 2015 were identified in which compulsive hoarding was noted in the autopsy

* Corresponding author.

E-mail address: s.darke@unsw.edu.au (S. Darke).

file by the forensic pathologist, police reports and/or witness reports. Police death investigation summaries and autopsy reports of all such cases were retrieved from the DOFM database. The DOFM is located in central Sydney, and is the primary forensic pathology centre in New South Wales (NSW), conducting between 2000 and 2500 autopsies per year during this time period. Permission to inspect the files was received from the Sydney Local Health District human research ethics committee. All cases were reviewed by the authors.

2.2. Death investigation and autopsy

In NSW a case must be reported to the Coroner where a person dies a violent or unnatural death, or where the person has died suddenly and unexpectedly of unknown cause. The majority of such cases undergo a standardised forensic autopsy, with examination of all major organs and quantitative toxicological analysis. Cause of death is determined by the forensic pathologist on the basis of circumstances of death, the autopsy findings and the toxicological analyses. The pathologist may report the direct cause of death, antecedent causes leading to this, and other clinically significant factors. Circumstances of death, and case histories, were obtained from accompanying police reports to the Coroner.

2.3. Toxicological analyses

All autopsy blood samples were taken peripherally (femoral or subclavian vessels). Toxicological data were reported for alcohol, cannabis (Δ -9-THC), opioids, psychostimulants, hypnotics, as well as prescription medications including antidepressants, antipsychotics, cardiovascular medications and diabetes medications. All samples were screened by immunoassay and either by gas chromatography or high-performance liquid chromatography (HPLC) for drugs of abuse and common therapeutic substances. All analyses of blood were conducted by the Forensic Toxicology Laboratory of the NSW Forensic & Analytical Science Service (formerly the Division of Analytical Laboratories).

2.4. Statistical analyses

For continuous distributions means, standard deviations (SD) and ranges were reported. In order to measure the extent of premature mortality, years of potential life lost (YPLL) were calculated subtracting age at time of death from the average life expectancy of the Australian population, specified for gender and the year in which the death occurred,¹⁷ as has been conducted in other studies of premature mortality.^{18–22} All analyses were conducted using SPSS Statistics, 20.0.²³

3. Results

3.1. Case characteristics

A total of 61 cases were identified over the 15 year period. The mean age was in the mid-60s, and two thirds were male (Table 1). The mean number of YPLL for cases was 16.1 yrs (SD 13.5, range 0–47 yrs), with 86.9% dying at an age younger than average life expectancy. In all cases there was evidence of extensive hoarding in the decedent's residence, with hoarded objects restricting mobility throughout the residence, and hampering access by police and emergency personnel. All but two were single at the time of death, and all but 3 were living alone. The majority were retired, and few were in paid employment. A third were tobacco smokers, and a history of schizophrenia was noted in 6.6%. Almost all deaths occurred in the decedent's home. In no case was there any medical intervention proximate to death, all cases being found deceased.

The direct cause of death was attributed to natural disease in three quarters of cases (Table 1). The most frequent direct cause of death was heart disease (44.3%) (ischaemic heart disease 41.0%, myocarditis 1.6%, cardiomegaly 1.6%). Heart or cardiovascular disease was a significant factor in a contributing further 8.2% of cases. Other deaths due to disease were: pulmonary thromboembolism (three cases), diabetic ketoacidosis (three), haemorrhagic stroke (three), sepsis (two), bronchopneumonia (two), gastrointestinal bleeding (one), colon cancer (one), and chronic alcoholism

Table 1
Characteristics of cases of sudden or unnatural death of compulsive hoarders.

| | N = 61 |
|--|-------------------------------------|
| Age (mean yrs) | 65.8 yrs (SD 13.8, range 36–88 yrs) |
| Sex (% male) (n) | 62.3 (38) |
| Marital status % (n) | |
| Single | 96.7 (59) |
| Married/Cohabiting | 3.3 (2) |
| Living circumstances % (n) | |
| Lived alone | 95.1 (58) |
| Lived with others | 4.9 (3) |
| Employment status % (n) | |
| Employed | 4.9 (3) |
| Unemployed | 32.8 (20) |
| Retired | 62.3 (38) |
| Documented smoker % (n) | 36.1 (22) |
| Location of death % (n) | |
| Home | 96.7 (59) |
| Another's home | 1.6 (1) |
| Public park | 1.6 (1) |
| Death particulars % (n) | |
| Disease | 75.4 (46) |
| Accident | 8.2 (5) |
| Accidental Drug toxicity | 6.6 (4) |
| Suicide | 1.6 (1) |
| Homicide | 1.6 (1) |
| Undetermined | 6.6 (4) |
| Death directly related to hoarding % (n) | 3.3 (2) |
| Fire | 1.6 (1) |
| Head injury from falling hoarded objects | 1.6 (1) |

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