Journal of Affective Disorders 168 (2014) 254–261

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research report

# The chronic impact of work on suicides and under-utilization of psychiatric and psychosocial services

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ARTICLE INFO

*Article history:*
Received 25 November 2013
Received in revised form
21 June 2014
Accepted 24 June 2014
Available online 5 July 2014

*Keywords:*
Employment
Suicide
Depression
Service utilization
Non-contact
Psychological autopsy study

ABSTRACT

*Background:* Work-related stress appears to be a contributing factor in the lives of employed people who kill themselves, particularly during economic downturns. However, few studies have compared them with working community controls who may be experiencing similar strains, in order to explore the role of mental disorders in these deaths and the implication of such strains on their service use pattern. We hypothesized that both work stress and mental illness were associated with suicides, and that mental illness served as the mediator between work stress and suicide. Based on the Behavioral Model, we also assumed work stress associated with their use of services.
*Methods:* A sample of 175 employed individuals (suicides=63; controls=112) drawn from a psychological autopsy (PA) dataset was examined based on demographics and socioeconomic factors, psychiatric diagnoses and use of services, psychosocial factors, and life events. A mediator analysis was conducted to examine the impact of work on suicides.
*Results:* Suicides generally had depression and anxiety, debts, higher impulsivity and poorer social support in comparison to controls. Chronic impact from work, which was fully mediated by psychiatric illness, was found higher among those suicides that did not seek contact with clinical service providers.
*Limitations:* PA is a post-hoc cross-sectional comparison method which does not allow causal analyses.
*Conclusion:* It is important to develop new approaches for engaging vulnerable individuals in the workplace before they become suicidal, as their depression and social isolation can serve to cut them off from help when they are most in need. Occupational mental health programs should be made available for employees and their families.



## 1. Introduction

Suicide studies often focus on people who are unemployed (Lewis and Sloggett, 1998; Ostamo et al., 2001) and who suffer clinically significant mental disorders (Blakely et al., 2003; Chan et al., 2007; Schneider et al., 2011). Available data consistently have linked an increase in unemployment rates and suicide rates (Gunnell et al., 1999; Inoue et al., 2008; Yamasaki et al., 2008). However, recent work has underscored the difference between individual-level work status and population indicators such as the unemployment rate (Yip and Caine, 2011). This work showed that during a time of economic hardship in Hong Kong, the suicide rate among employed workers rose substantially while the rate dropped among the unemployed, the latter reflecting the migration of relatively healthier workers into the out-of-work pool. While these findings may not be applicable to all regions or nations, they serve to focus attention on employed as well as unemployed persons who kill themselves.

Employment can be associated with multiple forms of day-to-day stress, such as job strain, low decision latitude, low social support, and high job insecurity—all of which have been associated with poorer physical health as well as poorer mental health, including depression and anxiety disorders, particularly among men (Ferrie et al., 2002; Kim et al., 2006; László et al., 2010; Meltzer et al., 2010; Netterstrom et al., 2008; Stansfeld and Candy, 2006; Virtanen et al., 2011; Wang et al., 2008). Stress experienced at work appears to be strongly associated with attempted suicides and suicides in both men and women (Feskanich et al., 2002; Ostry et al., 2007; Routley and Ozanne-Smith, 2012). Those who experienced less control at work were found to have a fourfold increase in suicide risk (Tsutsumi et al., 2007). However, there is a lack of research comparing suicides among the employed with working controls who may be experiencing similar strains, and

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http://dx.doi.org/10.1016/j.jad.2014.06.031
0165-0327/

assessing whether mental disorders play a significant role in these deaths. While there have been studies suggesting that workers' depression plays a role in subsequent suicides (Amagasa et al., 2005; Tsutsumi et al., 2007), contributing factors have been difficult to disentangle. For example, several authors have suggested that published findings reflected biased (self-selected) samples (Reichenberg and MacCabe, 2007; Stansfeld and Candy, 2006).

Work stress alone may insufficient to motivate persons to seek professional psychosocial or psychiatric support services. However, work stress coupled with significant or disabling psychiatric illness has greater potential to instigate service use. As suggested by the Behavioral Model of service use, seeking access to healthcare is a rational decision process, which is mainly determined by a number of predisposing variables (e.g. age, gender), enabling resources, and level of needs (Andersen, 1995). However, our preliminary work, begun using data from the same sample of "psychological autopsies" (PAs) used for this study, suggested that those persons who killed themselves and were employed at the time of death used relatively fewer mental health services prior to death than unemployed persons who died by suicide (Law et al., 2010). In essence, while we found previously that employed suicides used fewer services than unemployed suicides, the former nonetheless would use more than living community controls, that they would fall into an intermediate position. We aim to examine if work stress coupled with psychiatric illness constitutes a greater demand for psychiatric and psychosocial services among employed suicides.

The data collection phase of our PA study occurred when Hong Kong had been under great financial stress following the Asian Economic Crisis of the late-1990s and the subsequent outbreak of SARS, which battered local tourism and commerce during 2002–2003 and had continuing repercussions for another two to three years. In this context, we had the opportunity to examine factors associated with suicide among employed workers compared with live controls with the same employment status at a time of community economic turmoil. We sought to elucidate whether adverse effects from work were associated with suicide, with and without the presence of psychiatric illness. We hypothesized that both stress related to work and mental illness were associated with employed suicides, and that mental illness was the mediator between these two factors. Then, based on Behavioral Model of Service use, we hypothesized a greater negative impact from work experienced by employed suicides, in comparison to the live controls, as indicated by their use of psychiatric and psychosocial support services.

## 2. Method

### 2.1. Study subjects

Data analysis was conducted on a sample of 175 employed individuals drawn from the main Hong Kong psychological autopsy (PA) dataset (63 out of 150 or 42% of suicide cases; 112 out of 150 or 74.4% of live control cases). Employed individuals included those were employed full-time ($n=134$; 76.6%) and part-time ($n=18$; 10.3%), and the self-employed ($n=23$; 13.1%) at time of interview (control group) or at time of death (deceased group; Fig. 1). The study was approved by the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster (HKU/HA HKW IRB) and the Ethics Committee of the Department of Health, Hong Kong SAR. Details of the data collection process, measures used, and the results have been published in a number of peer-reviewed academic journals (Chan et al., 2007; Chen et al., 2006, 2007; Law et al., 2010).

### 2.2. Measurements

The two groups were examined across four domains of variables:

#### 2.2.1. Demographics and socioeconomic factors

Age, gender, marital status, living arrangement, education, income, financial debt, and other related factors.

#### 2.2.2. Psychiatric diagnoses and use of services

Retrospective psychiatric diagnoses were assessed using the Structured Clinical Interview for DSM-IV® Axis I Disorders (SCID-I) (American Psychiatric Association, 1997). Informants were asked to recall the service utilization of the deceased and control cases in three aspects: whether the deceased or control had consulted a doctor (excluding a psychiatrist) for health problems in the six months prior to death or interview, respectively; whether the deceased or control ever received treatment for mental health problems from other professional services (e.g., clinical psychologists, social workers, and psychiatric nurses); and whether the deceased or control had visited a psychiatrist in the last six months before death or interview. In Hong Kong, the bulk of psychiatric treatment services are provided by public hospitals and clinics administered under the Hospital Authority; social and vocational rehabilitation services for mentally ill persons are offered through the Social Welfare Department and non-governmental social service providers (NGOs). In order to identify the extent to which a basic type of psychiatric treatment had been offered to deceased cases in comparison to live controls, we had specifically asked the latter, have you visited a psychiatrist in the last six months? The second question asked was whether other professional services had been sought, including those offered by psychiatric nurses, clinical psychologists, social workers, and school counselors for mental health problems. These services are considered psychosocial support or rehabilitative services. As a substantial number of informants could not recall the exact time or period of contact with services for mental health problems by other professional services, it was decided to use a yes or no criterion for this category of services.

#### 2.2.3. Psychosocial factors

Psychosocial factors include impulsivity, social support (size, frequency, and content), and social problem-solving ability. Impulsive-state behavior was measured by the Impulsivity Rating Scale (IRS) (Lecrubier et al., 1995). Social support was evaluated in terms of three aspects: the size of the social support network based on the number of close family members, extended relatives, and friends upon whom subjects were able to rely when dealing with life problems; frequency of social activities within the final month before the suicide; and social support content in terms of emotional, instrumental, informational, and appraisal support. Informants were asked to rate these four areas from scenario-based questions that determined the accessibility of support within the deceased's social network. Social problem-solving ability was measured by the shortened 8-item Social Problem-Solving Inventory (SPSI) (D'Zurilla and Nezu, 1990), which was divided into four constructs: problem orientation, generation of alternative solutions, decision-making and solution implementation, and verification.

#### 2.2.4. Life events including impact from work

With reference to the work of Phillips et al. (2002), life events were checked based on whether any of the incidents had happened to the subjects, the frequency, time of the occurrence, and their impact on the subjects. There are five aspects, including physical health problems (i.e. hospitalized, seriously injured,