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Research paper

Deliberate self-harm among Chinese medical students: A population-based study

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ABSTRACT

Background: The phenomenon of deliberate self-harm (DSH) among college students has received increased attention in recent decades. Adopting a psychosocial perspective, this study aims to describe self-reported DSH among Chinese medical college students, assess respective associations between uncertainty stress and social capital with DSH, and explore the mechanism linking these three phenomena.
Methods: A cross-sectional survey employing multi-stage, sampling was conducted. 4446 undergraduate students were recruited from 22 participating Chinese medical universities. Perceived stress from uncertainty and social capital were assessed among the students. The Chi-square test and multiple logistic regression models assessed correlates of DSH. Relationship among social capital, uncertainty stress, and DSH were examined by means of Structural Equation Modeling.
Results: The prevalence of DSH in the past 12 months among Chinese students was 9.6%. The most common types of physical DSH reported were scratching, cutting, and pinching. Age ($\chi^2=26.63$, $p<0.01$), gender ($\chi^2=30.24$, $p<0.01$), major field ($\chi^2=28.13$, $p<0.01$), and annual household income ($\chi^2=11.10$, $p<0.05$) were statistically associated with DSH. Uncertainty stress is a unique correlate of DSH, and shows a stronger association than do three certainty stressors. Social capital is also a strong correlate of DSH, especially cognitive social capital. Moreover, social capital may be indirectly associated with DSH through impacting uncertainty stress.
Limitations: This study was a cross-sectional and thus could not evaluate causal relationships.
Conclusion: We recommend that a DSH intervention study should target uncertainty stress management and social capital accumulation. This study provides scientific evidence and theoretical foundation for future DSH interventions, with a view to enhancing the mental health of medical college students.

1. Introduction

Globally, self-inflicted injury is the fourth leading cause of death and the sixth leading cause of ill-health and disability among people aged 15–44 years (WHO, 2002). Self-inflicted injury comprises suicide and deliberate self-harm (DSH). Suicide has been extensively studied for well over a century. Until recently, phenomenon of DSH has gained increasing attention by researchers. DSH is defined as the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent (Gratz, 2003). Previous research has confirmed that DSH is not only encountered frequently in patients with psychiatric diagnoses, but also occurs in nonclinical populations, especially adolescents and young adults (Klonsky et al., 2003; Laukkanen et al., 2009). Onset of DSH typically occurs between ages 14 and 24 years (Kerr et al., 2010; Nixon et al., 2008), and exhibits a bimodal peak among people ages 12–14 and 18–19 (Kerr et al., 2010). In recent years, DSH has become more prevalent among adolescents and young adults, and consequently a more prominent research topic (Kerr et al., 2010). Prevalence of DSH appears high among college students (Kharsati and Bhola, 2015; Li and Meng, 2014). A plausible explanation is that the students are in emerging adulthood (ages 18–25) – a unique stage of psycho-social development – (Arnett, 2000) and are facing added pressures in the form of higher education. This developmental and educational nexus exposes students to a totally new environment. Physical separation from parents, elevated academic demands, greater independence, and new social networks to negotiate often leave college students feeling lonely, helpless, confused, and anxious – all significant

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stressors (Arria et al., 2009). Students plausibly experience increased risk for DSH in the face of psychological vulnerability and inadequate social support (Taliaferro and Muehlenkamp, 2015).

Twelve-month self-reported prevalence of DSH among American college students was 7%, and lifetime prevalence 17% (Whitlock et al., 2006). A study of Turkish undergraduates found that 15% had a lifetime prevalence of DSH (Toprak et al., 2011). An Indian study of college students reported a 12-month prevalence of DSH of 31% (Kharsati and Bhola, 2015). The prevalence of DSH in Chinese college students, based on extant literature, ranges from 11% to 33% (Huang et al., 2011; Li and Meng, 2014; Su et al., 2010). Given concealment of superficial-to-moderate DSH, and unwillingness to reveal it, there is potential for under-reporting DSH among students (Mahadevan et al., 2010). The relationship between DSH and suicide is very complex. Although DSH and suicide attempts are commonly treated as different phenomena, they can occur synchronously (Taliaferro et al., 2012; Whitlock and Knox, 2007). DSH not only causes physical pain, but also influences affect, interpersonal relationships, and academic performance (Kong et al., 2014). Repeated DSH even elevates suicide risk (Joiner et al., 2012). DSH among young adults has emerged as a major social and public health issue.

1.1. DSH and uncertainty stress

Previous studies have shown that DSH can be a response by individuals in stressful conditions or who are experiencing difficulty coping with stress (Nock, 2009). Self-harm is invariably associated with high stress (Cochrane and Robertson, 1975; Rickelman and Houfek, 1995). Sun and Wang (2011) identified three sources of stress, namely, study, economic, and employment as correlates of DSH among Chinese college students. Another study found that study pressure (43%), problems in intimate relationships (25%), and interpersonal conflict (24%) were highly correlated with self-reported DSH among these students (Su et al., 2010).

A host of studies and accompanying evidence support uncertainty as a powerful stressor (Greco and Roger, 2003). Scholz defined uncertainty as “incomplete information or knowledge about a situation, or the possible alternatives or the probability of their occurrence, or their outcomes are not known by the subjects” from a psychological perspective (Scholz, 1983). Yang and colleagues surveyed urban residents in six Chinese metropolises. They found that 43% of urban residents felt moderate or severe stress in the face of uncertainty, and that individuals with high perceived uncertainty had six times the likelihood of Health Risk Stress than those with none (Yang et al., 2007). Existing research on the effects of uncertainty suggests that uncertainty constitutes a stressful condition, and further contributes to ill-health by arousing stress (Monat et al., 1972).

No research has hitherto examined the association between DSH and uncertainty stress. There is an absence of systematic studies on this relationship, and an urgent need to fill this gap. Previous studies on DSH in China were either restricted to school-based surveys with limited generalizability, or had an epidemiologic focus. We conducted a population-based survey that covered 22 universities across China, in order to explore DSH among Chinese college students. Our objectives were to estimate the prevalence of DSH, identify key correlates, and, most importantly, to assess the salience of uncertainty stress as a predictor.

1.2. Stress, social capital and DSH

In recent decades, concepts and theories of ‘social capital’ have been widely applied in health settings. Numerous researchers have reported an association between social capital and various health outcomes, such as adverse health behaviors and other self-rated health problems (De Silva et al., 2005; Kawachi et al., 1999). Social capital has been defined multidimensionally. One influential definition distinguishes cognitive and structural components (De Silva et al., 2005). The cognitive component covers perceptions of support, trust, reciprocity, and shared values, whereas the structural component includes extent and intensity of associations or activities, such as social participation and networking (Harpham et al., 2002). There is strong evidence of an inverse association between cognitive social capital and common mental disorders. The higher the level of cognitive social capital (trust and reciprocity), the lower the risk for mental disorders (De Silva et al., 2005). Little research has been conducted on the direct relationship between social capital and DSH. One study, however, partly confirmed an association between social capital and self-inflicted injury (Huisman and Oldehinkel, 2009). Social network, a sub-dimension of social capital, has been confirmed as triggering a buffering response to stressors among elderly residents (Cohen et al., 1985). Social capital can provide relevant information or actual support for avoiding potentially stressful situations or enhancing personal resources (such as self-esteem, self-efficacy, or optimism) for coping with stress (Gerich, 2013).

This study aims to characterize DSH among Chinese medical college students, and identify correlates from a psychosocial perspective. Focus is on examining the association between uncertainty stress and DSH relative to study, familial, and interpersonal stress, and exploring social capital as a mediator between uncertainty stress and DSH. In this research, we are guided by two hypotheses: (1) uncertainty stress is directly and positively associated with DSH, and (2) social capital is indirectly and negatively associated with DSH, mediated by uncertainty stress. This second hypothesis has two related aspects, namely, (2a) the higher the social capital, the lower the degree of uncertainty stress, and (2b) the higher the social capital, the lower the prevalence of DSH.

2. Methods

2.1. Study area and participants

This study employed a cross-sectional, multi-staged sampling design. In Stage 1, 14 provinces, autonomous regions, and municipalities were randomly selected from eastern, middle, and western China taking account of geographic diversity and level of economic development. In Stage 2, 22 universities were identified based on geographic distribution and number of medical universities in each province, autonomous region or municipality, and existing research collaboration with the primary investigator, and willingness of site investigators to conduct the survey. Stage 3 of the sampling strategy involved selection of classes within each university. Cluster sampling was used to randomly select two classes, taught using medical or other health professional curricula, in each university or college. All students enrolled in those classes were recruited as study participants.

2.2. Data collection

The same research protocol was utilized across all 22 universities to assure homogeneity of data collection. A standardized questionnaire was administered privately to participants in the classroom. Upon receiving instructions from survey administrators, participants were asked to complete a questionnaire of approximately 15-min duration. Each was afforded an opportunity to seek clarification of questions regarding the survey or questionnaire items, and given adequate time for completion. In order to ensure greater data reliability, the survey was anonymous and