Psychotic experiences and accidents, injuries, and poisonings among adults in the United States

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ABSTRACT

Psychotic experiences (PEs) have been linked to an increased risk for accidents and injuries. However, this association remains little researched in many countries. To address this research gap, the current study used cross-sectional data from the United States to examine the association between PEs and accidents, injuries, and poisoning in a general population sample. Data were analyzed from 2274 individuals who completed the psychosis screen as part of the National Comorbidity Survey Replication (NCS-R). Information was obtained on PEs (hallucinations and delusions) and the experience of past 12-month accidents, injuries, and poisoning. Logistic regression analysis was used to examine the association while adjusting for demographic variables and common mental disorders (CMDs). In a fully adjusted model past 12-month PEs were associated with almost three times higher odds for reporting accidents, injuries, and poisoning (odds ratio [OR]: 2.97, 95% confidence interval [CI]: 1.13–7.74). The results of this study indicate that PEs are associated with higher odds for accidents and injuries among adults in the United States. Research is now needed to determine the direction of this association and the factors linked to it.

1. Introduction

Accidents and injuries are common and inflict a terrible toll on human health in countries across the world. In 2013, 973 million people were estimated to have sustained injuries that required medical attention while 4.8 million people died as a result of being injured (Haagsma et al., 2016). More recent data from the Global Burden of Disease Study has shown that injuries were responsible for over 10% of Disability-Adjusted Life Years (DALYs) in 2016 (GBD 2016 DALYs and Hale Collaborators, 2017). Besides physical consequences, research has highlighted that accidents and injuries are also associated with an increased risk for poorer mental health. In particular, studies have shown that for different types of injury, as many as 10–40% of those affected may develop anxiety, depression and posttraumatic stress disorder (PTSD) (Bienvenu et al., 2015; Jorge et al., 2004; Kennedy and Duff, 2001; Williams and Murray, 2015). However, worse mental health might not only be a consequence of injury. Longitudinal research has shown that the relation may be bidirectional (Patten et al., 2010) and that psychiatric disorders such as anxiety and depression might be associated with increased odds for future injuries (Mykletun et al., 2011), with injury possibly being common in groups such as outpatients with major depressive disorder (Hung et al., 2016).

The current study will examine the association between psychotic experiences (PEs) and accidents, injuries, and poisonings among adults in the United States. PEs are subclinical delusions and hallucinations that are common in the general population (ca. 7%), which remit over time in about 80% of individuals (Linscott and van Os, 2013). Despite being predominantly transitory and a less severe manifestation on the psychosis continuum (Oh et al., 2015), a growing body of evidence suggests that PEs may nonetheless be associated with a number of

detrimental outcomes, including an increased risk for morbidity and mortality (Scott et al., 2018; Sharifi et al., 2015). In terms of the present study, there are several reasons why a focus on the PEs-accident/injury association is warranted. First, research has indicated that PEs may be associated with self-injurious behavior (Koyanagi et al., 2015a). Second, traumatic events such as automobile/life-threatening accidents that can result in injury have been linked to the first onset of PEs (McGrath et al., 2017b). Third, other research has indicated that there may also be a cross-sectional link between PEs and injury (Keraite et al., 2016; Moreno et al., 2013) and that assault with injury may lead to subsequent PEs (hallucinations) via specific trauma cognitive processing styles e.g. dissociation (Geddes et al., 2016).

Despite this research, the association between PEs and accidents, injuries, and poisonings remains little researched in many countries including the United States. This may be an important omission. Recent research has shown that not only are PEs prevalent in the general population in the United States (McGrath et al., 2015) but there is also evidence that injuries are common in this setting with as many as 12.6% of the U.S. population possibly experiencing traumatic injury (Davis et al., 2017) with accidents (unintentional injuries) being the third leading cause of death in 2016 (Xu et al., 2018). Importantly, other research has found that potentially injurious behavior such as physical victimization by the police both with and without a weapon is associated with PEs in this setting (DeVylder et al., 2017).

The main aim of this study is thus to examine the association between PEs and accidents, injuries, and poisoning while controlling for the presence of other psychiatric disorders. This may be important given that common mental disorders (CMDs) such as depression and anxiety as well as substance use and eating disorders have been linked to the onset of PEs (McGrath et al., 2016) and might be a risk factor for injury (Borges et al., 2005; Patten et al., 2010). However, the role of CMDs has not been a focus in several of the previous studies that have examined these associations.

2. Methods

2.1. Sample

We analyzed data from the National Comorbidity Survey Replication (NCS-R; (Kessler and Merikangas, 2004)). This face-to-face survey was conducted between 2001 and 2002, and used multi-stage probability sampling to achieve nationally representative samples of adults in the general population of the 48 contiguous states. The NCS-R contains 9090 adults (over the age of 18) who completed 'Part 1' of the survey, which included measures of DSM-IV psychiatric disorders. All respondents who screened positive for a psychiatric disorder were administered 'Part 2' of the survey, as were an additional probability subsample of other Part 1 respondents. A total subsample of 5554 respondents completed Part 2, and a random subsample ($n = 2308$) of these individuals completed the psychosis screen. Recruitment and consent procedures were approved by the institutional review boards of both Harvard Medical School and the University of Michigan. Informed consent was obtained from all participants.

2.2. Measures

2.2.1. Psychotic experiences (independent variable).
PEs were assessed with the WHO−CIDI 3.0 Psychosis Screen (Kessler and Ustun, 2004), which is a validated measure used previously with nationally representative data from the U.S. (Kessler et al., 2005). Respondents were asked to report the past 12-month occurrence of six forms of PE, including: (1) visual hallucinations, (2) auditory hallucinations, (3) thought insertion, (4) thought control, (5) telepathy, and (6) delusions of persecution. Reporting at least one of these experiences constituted a positive screen for past 12-month PEs. Responses were not considered a PE when occurring in the context of falling asleep, dreaming, or substance use.

2.2.2. Injury (dependent variable).
Accidents and injuries were measured using the single dichotomous item: "In the past 12 months did you have an accident, injury or poisoning that required medical attention?" All respondents who reported any form of injury were coded '1' in the analysis.

2.2.3. Covariates.
The choice of covariates was based on past research examining injury outcomes (Cubbin et al., 2000). All models were adjusted for age (a continuous variable), sex (male, female), race (White, Black, Latino, Asian, Other), income (poor, near poor, non-poor in relation to the federal poverty line), education (in year length categories corresponding to less than high school, high school graduate, some college, college graduate and beyond). For marital status respondents were classified as being either married, single or divorced. CMDs were measured using past 12-month psychiatric disorders based on the World Mental Health Survey Composite International Diagnostic Interview (Kessler and Ustun, 2004), which is a fully structured lay interview to screen for diagnoses according to DSM-IV criteria. Respondents were coded as '1' (having a disorder) if they reported that they had at least one of the following psychiatric disorders at some point in the previous 12 months: mood disorder (dysthymia, depressive episode, major depressive disorder, bipolar I, bipolar II), anxiety disorder (agoraphobia with and without panic disorder, generalized anxiety disorder, panic attacks, panic disorder, post-traumatic stress disorder, social phobia), substance use disorder (drug abuse and dependence), alcohol use disorder (alcohol abuse and dependence), and eating disorder (anorexia, bulimia). Respondents not reporting the presence of any past 12-month psychiatric disorders were coded 0.

2.3. Statistical analysis

Individuals were dropped from the analysis ($N = 5$) if they reported having received a diagnosis of schizophrenia from a medical professional at any point in life. Individuals with missing values for any of the variables were also excluded resulting in an analytic sample of 2274 people. Descriptive statistics of the sample and stratified by the presence of injury/accident were first calculated. Next, multivariable logistic regression analysis was conducted to examine the relation between PEs and injury, adjusting for socio-demographic variables and psychiatric disorders. Standard errors were estimated through design-based analyses that used the Taylor series linearization method to account for the complex multistage clustered design, with US metropolitan statistical areas or counties as the primary sampling units. Sampling weights were used for all statistical analyses to account for individual-level sampling factors (i.e. non-response and unequal probabilities of selection). All analyses were performed with STATA SE 15.0. Results are presented as odds ratios (ORs) with 95% confidence intervals (CIs). The level of statistical significance was set at $p < 0.05$.

3. Results

The mean (SD) age of the sample was 46.3 years (18.7) with 52.5% being female. Almost 3.0% of the weighted sample reported past 12-month PEs, while 8.7% reported an injury/accident/poisoning (Table 1). The prevalence of accidents and injuries was comparatively higher among those with PEs. In a multivariable logistic regression model that was adjusted for sociodemographic characteristics and psychiatric disorders, PEs were associated with 2.97 times higher odds (95% CI: 1.13–7.74) of reporting injury/accident/poisoning. Interestingly, past 12-month psychiatric disorder was not associated with accidents and injury whereas being divorced was associated with higher odds for accidents and injury (OR: 1.93, 95% CI: 1.19–3.12), while female sex (OR: 0.69, 95% CI: 0.50–0.96), older age (OR: 0.98, 95% CI: 0.96–0.99) and Black ethnicity (OR: 0.58, 95% CI: 0.36–0.94) were all linked to lower odds for accidents and injury (Table 2).