General Hospital Psychiatry 36 (2014) 669–673

Contents lists available at ScienceDirect

General Hospital Psychiatry

journal homepage: http://www.ghpjournal.com

Posttraumatic stress symptoms in older adults hospitalized for fall injury ☆

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ARTICLE INFO

Article history:
Received 10 March 2014
Revised 17 July 2014
Accepted 6 August 2014

Keywords:
Traumatic injury
Acute stress
Posttraumatic stress
Fall accidents
Older adults

ABSTRACT

Objective: Although unintentional falls may pose a threat of death or injury, few studies have investigated their psychological impact on older adults. This study sought to gather data on early posttraumatic stress symptoms in older adults in the hospital setting after a fall.
Method: Participants in this study were 100 adults age 65 years or older admitted to a large urban hospital in New York City because of a fall. Men and women were represented approximately equally in the sample; most were interviewed within days of the fall event. The study's bedside interview included the Posttraumatic Stress Symptom Scale, which inquires about the presence and severity of 17 trauma-related symptoms.
Results: Twenty-seven participants reported substantial posttraumatic stress symptoms (moderate or higher severity). Exploratory bivariate analyses suggested an association between posttraumatic stress symptom severity and female gender, lower level of education, unemployment, number of medical conditions, and back/chest injury.
Conclusions: A significant percentage of older patients hospitalized after a fall suffer substantial posttraumatic stress. Future investigations are needed to assess the association between the psychiatric impact of a fall and short-term inpatient outcomes as well as longer-term functional outcomes.

Psychological trauma was initially described in relation to events outside the range of normal human experience [1]. Although some scholars are reluctant to extend the boundaries of what qualifies as a traumatic stressor, others argue that commonplace medical events may fulfill posttraumatic stress disorder (PTSD) criterion A1 [1–3]. Following the latter line of reasoning, we hypothesized that older adults might experience unintentional falls as traumatic because these events pose the threat of death or injury. If this were to turn out to be the case, falls would be among the most common potentially traumatic events of late life. One in three adults over the age of 65 years falls each year, and falls are a leading cause of injury-related death in older adults [4]. In addition, approximately 20% of non-fatal falls in this age group result in an injury, making falls the leading cause of injury-related hospital admission [5]. Fall accidents result in greater loss of function and independence in older adults than do other medical events [6]. Falls and fall-related morbidity will likely continue to rise as the population of adults older than age 65 is projected to double in the next 40 years [7,8].

Although physical injury [9], and falls specifically [10], have been linked to posttraumatic stress, many studies of traumatic injury survivors exclude adults over the age of 65 or fail to provide information on inclusion criteria with respect to any upper limit on age. Some important studies that include older adults do not offer a breakdown of symptoms across age groups [11], and only a few focus on older populations [12]. One possible reason for the lack of attention to older adults is that epidemiological studies find a much lower PTSD prevalence in older adults than in younger adult cohorts [13]. Diverse factors associated with aging, such as wisdom and resilience, reluctance to endorse psychiatric symptoms, or dampening of physiological responding [14], might account for this pattern. However, a significant number of older adults report clinically meaningful posttraumatic stress symptoms after natural disasters [15–17]. Moreover, the lower prevalence of PTSD is not inconsequential given the increasing size of the aging population.

Documenting for inpatient and outpatient medical providers whether posttraumatic stress symptoms emerge in the early course of hospitalization is important for two reasons. First, the presence of

☆ Conflicts of Interest and Source of Funding: The authors have no conflicts of interest to report. This study was supported by K23 MH 090244 (PI: Jayasinghe). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Mental Health. Dr. Jayasinghe is also recipient of research grant support from Weill Cornell Medical College ("Return to mobility and healthy living in fall injury in later life: A monitor with analyzer for sensory feedback for improvement of gait and balance" and "Multimedia consent for older research participants") and Fidelity Investments, Inc. ("Addressing late life anxiety").
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http://dx.doi.org/10.1016/j.genhosppsych.2014.08.003
0163-8343/

such symptoms could potentially complicate hospital care, and addressing them early could have a positive impact on outcomes [18]. Second, symptoms in the acute phase of hospitalization might later develop into chronic PTSD, which could contribute to poor long-term functional outcomes and add a considerable burden of disability [19]. Approximately 10% of older British adults hospitalized for fall injury reported symptoms consistent with PTSD at 3 months post-discharge, as did 4% at 6 months [20]. More recently, a small study of French elders also demonstrated that anxiety during hospitalization predicted subsequent PTSD [21]. But cumulative evidence is needed to document the consistency of posttraumatic stress symptoms in this patient population.

This is a documentary study, focused on the prevalence and associates of symptoms in an acute medical setting in an American sample. The goal was to assess posttraumatic stress symptoms rather than PTSD because formal diagnosis requires a 1-month symptom duration [2]. The alternative would have been to focus on acute stress disorder (ASD), which was rejected because dissociation as a feature of ASD is easily confounded with head trauma and with the effects of analgesics frequently used in the treatment of injury survivors [22].

We predicted that early posttraumatic stress symptoms would be prevalent among older patients hospitalized because of a fall. We also sought to explore, in a preliminary manner, the relation of these symptoms to demographic, clinical, and fall event characteristics. We placed emphasis on factors that could be easily identified by providers in the hospital setting without specialized assessment tools. Based on the literature, we hypothesized that early symptoms in hospitalized older patients would be associated with female gender [13] and injury severity [23].

1. Methods

1.1. Participants

We recruited a convenience sample of individuals admitted for falls to a large urban hospital between February 2, 2011, and June 20, 2014. Inclusion criteria were age >65 years, English-speaking, local community-dwelling residents, and sufficiently medically stable to provide written informed consent and tolerate a brief interview. Exclusion criteria were: Mini-Mental State Exam score <23 (MMSE [24]), delirium (detected by staff report or Confusion Assessment Method [25]), and diagnosis of dementia, schizophrenia, bipolar disorder, substance abuse/dependence, and aphasia (determined by staff/participant report).

1.2. Procedure

Screenings were conducted as part of recruitment for a home-based intervention for anxiety after fall injury. Research clinicians approached potential participants at bedside to describe the purpose and nature of the treatment study. All measures were administered during an interview lasting approximately 20 minutes to participants who provided written informed consent. Of 252 potential subjects approached, 108 (43%) agreed to participate. Eight were excluded due to MMSE score, leaving a final sample of 100. The study was approved by the Committee on Human Rights in Research of the relevant institution (institutional review board).

1.3. Measures

1.3.1. Posttraumatic stress

The Post-Traumatic Stress Symptom Scale (PSS [26]) inquires about the presence and severity of 17 symptoms across three symptom clusters (re-experiencing the trauma, avoidance/numbing, and hyperarousal) consistent with DSM-IV diagnostic criteria. Items are scored on a scale from 0 ("not at all") to 3 ("a lot"), with total scores ranging from 0 to 51. Interpretation of total scores was made as follows: 0="none", 1–10="mild", 11–20="moderate", 21–35="moderate to severe", 36 and above="severe" [27]. The PSS has well-established reliability and validity in a variety of trauma populations, and previously has been used with older adults injured by falls [20].

1.3.2. Additional measures

Demographic background (i.e., age, gender, race/ethnicity, marital status, education, employment), clinical characteristics (i.e., other medical conditions, prior psychiatric history), and characteristics of the fall event (i.e., days since fall, location, time waiting to get help, body areas injured, and severity of injury) were assessed by interview. The Modified Falls Efficacy Scale measured self-efficacy as it relates to mobility [28].

1.4. Analytic strategy

In order to characterize early posttraumatic stress in this sample, the PSS total score was computed[1]. Substantial posttraumatic stress was defined as total score 11 or greater, and the percentage of participants falling in this range was calculated accordingly. In order to identify which symptoms are commonly experienced in this patient population, the frequency with which each of the 17 posttraumatic stress symptoms was endorsed was tallied. A symptom was counted towards this total if reported to be present "a little" or more.

Because PSS total scores were not normally distributed (Median=7.0, skewness=1.68, kurtosis 3.14), the study's exploration of the associates of posttraumatic stress total score employed non-parametric analyses. Spearman's Rho correlations were performed for continuous and ordinal variables (i.e., age, education, number of other medical conditions, days since the fall, MMSE score, falls efficacy score). Mann-Whitney-U tests were performed for dichotomous variables in order to compare two groups (i.e., gender, ethnicity, employment, location of fall, body areas injured, prior psychiatric history). Kruskal-Wallis one-way analysis of variance tests were performed for variables with three or more levels (i.e., marital status, time waiting to get help, severity of injury). Because these analyses were exploratory, significance was set at 0.10 without adjustment for multiple comparisons. All analyses were performed using the SPSS® Statistics 20 software package.

2. Results

2.1. Participant characteristics

Table 1 summarizes the demographic, clinical and fall event characteristics of the sample. The median age was 84 (range, 65–97). Participants were predominantly female (59%), white, non-Hispanic (91%), without a spouse/life partner (63%) and with high school or higher level of education (78%). On average, the fall of concern had occurred 3 days prior to interview. Most participants had fallen in the home (62%) and received help within one hour (82%). The most common type of injury resulting from the fall was a fracture (43%).

2.2. Posttraumatic stress

The median PSS total score was 7.0 (IQR = 3.25–11.00; range, 0–39). Twenty-seven participants met the study criteria for "substantial" posttraumatic stress. The median number of symptoms endorsed was 4 in the overall sample (range, 2–6) and 8 among those with Substantial

[1] In seven instance in which subjects answered "don't know" to one of the scale's 17 items, total score was imputed by replacing the missing item with an average.