Blood-injection-injury phobia in older adults

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Abstract

Background—This study aims to (i) estimate the prevalence of blood-injection-injury phobia (BIIP) diagnosed as present at any time during the life prior to the interview, with or without another Specific Phobia diagnosed as present during the 12 months prior to the interview, (ii) characterize types and frequencies of co-occurring fears, (iii) evaluate the association with chronic medical conditions and lifetime psychiatric comorbidity, and (iv) explore medical service use associations in a nationally representative sample of older adults.

Methods—A sample of 8,205 older adults, aged 65 years or older, was derived from Wave 1 of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC).

Results—The weighted lifetime prevalence of BIIP with and without 12-month Specific Phobia was 0.6% (95% CI: 0.4–0.8) and 4.2% (95% CI: 3.7–4.8), respectively, and these two groups ranked similarly in terms of sociodemographic, health, and psychiatric characteristics. BIIP most frequently co-occurred with other lifetime fears, and was positively associated with hypertension and lifetime history of anxiety and personality disorders after controlling for sociodemographic and psychiatric confounders.

Conclusions—Our findings suggest that lifetime BIIP may bear mental and physical health significance in older adults.

Keywords

anxiety; phobia; epidemiology; geriatric; late life

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BIIP is a Specific Phobia sub-type characterized by fear and avoidance of seeing blood and receiving injections. The Baltimore Epidemiologic Catchment Area (ECA) study estimated a lifetime prevalence of 3.5%, most notably among younger women, and reported high comorbidity with other psychiatric conditions (Bienvenu and Eaton, 1998; Bracha *et al.*,

2007). Despite age-related reductions in prevalence, anxiety disorders remain highly prevalent in older adults, and become increasingly associated with physical symptoms (Trollor *et al.*, 2007; Miloyan and Pachana, 2015; Reynolds *et al.*, 2015). BIIP may bear particular health significance in older age groups, due in part to high disability and low rates of health and mental health service use among older adults in general (Trollor *et al.*, 2007; Lin *et al.*, 2011; Brault, 2012). For example, the results of a previous study suggest that BIIP is associated with peripheral vascular and cardiovascular disease among diabetics, presumably due to differences in general health behaviors, or specifically insulin use by injection (Bienvenu and Eaton, 1998). However, these issues have not been addressed in older adults, for whom BIIP may bear important health implications due to the high prevalence of medical conditions that require routine compliance. The purpose of this study is to evaluate the prevalence, medical and lifetime psychiatric comorbidity, and medical service use associated with BIIP in a national sample of older adults.

Method

Sample

The NESARC was undertaken in 2001–2002 in a nationally representative sample of 43,093 civilian, non-institutionalized adults who were sampled from all 50 U.S. states and the District of Columbia (Grant *et al.*, 2003a). African-Americans, Hispanics, and young adults were purposively oversampled, and sampling weights were used to adjust data for oversampling and non-response, and to allow population estimates to be standardized against census data. The overall response rate was 81% and face-to-face interviews were conducted by trained lay interviewers using the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV version (AUDADIS-IV). In the present study, all analyses were limited to participants aged 65 years or older ($N = 8,205$).

Measures

Lifetime fears and 12-month non-hierarchical Social Phobia (SP) diagnoses were obtained by trained interviewers using the AUDADIS-IV, which has good overall psychometric properties (Grant *et al.*, 2003b). Specifically, the AUDADIS-IV has been found to have good reliability for assessing lifetime SP fears (ICC: 0.71), and fair-to-moderate reliability for SP diagnoses (κ 0.40 for 12-month and 0.48 for lifetime). Sociodemographic and health variables consisted of age, sex, education, personal income, marital status, self-perceived current health, and chronic medical conditions. The presence of chronic medical conditions was determined by asking respondents to report whether they had ever had a diagnosis of any of the following conditions: arteriosclerosis, hypertension, liver cirrhosis, liver disease, angina pectoris, tachycardia, myocardial infarction, heart disease, stomach ulcer, gastritis, and arthritis. Anxiety (panic disorder with or without agoraphobia, social phobia, and generalized anxiety disorder), mood (major depression, dysthymia, mania, and hypomania), substance use (alcohol abuse or dependence, drug abuse or dependence, and nicotine dependence), and personality (conduct, antisocial, avoidant, dependent, obsessive-compulsive, paranoid, schizoid, or histrionic) disorders were diagnosed with the AUDADIS, which asks detailed questions about symptoms related to each of the psychiatric disorders. Past-year medical service use was examined using reports of the following: (a) number of

days stayed in hospital, (b) number of times treated in emergency room, and (c) number of injuries that caused one to seek medical help or cut down usual activities for more than half a day.

Statistical analyses

Prevalence estimates for BIIP were calculated with survey weights to allow for comparison to census data and estimates for the entire nation. Those endorsing lifetime BIIP with and without a 12-month SP diagnosis were compared using a binary logistic regression analysis. Odds ratios predicting lifetime psychiatric conditions, chronic medical conditions, and service use from BIIP were calculated with logistic regression, with and without adjustment based on sociodemographic characteristics and psychiatric diagnoses. Due to the large number of comparisons, we opted to use a p-value threshold of 0.01 in lieu of the standard 0.05. All statistical analyses were performed using Stata 12 (StataCorp, 2011).

Results

Sociodemographic characteristics of the sample

The total sample consisted of 8,205 older adults aged 65 years or older ($M_{age} = 75\pm7$; 62% female). Approximately 33% of participants completed high school, with 35 % completing at least some college. Eighty-five percent reported a personal income of less than \$35,000 per year, with 34% reporting an annual income of less than \$10,000. Forty-three percent of participants reported being married or cohabiting, 52% reported being widowed, divorced or separated, and 5% reported being widowed. Eighty-two percent of participants were White, 8% were Black, 2% were Native American, 3% were Asian, and 5% were Hispanic. Sixty-five percent of participants reported their self-perceived current health to be good, very good, or excellent, and 56% reported having a maximum of one chronic medical condition. Approximately half of all the older adults in the sample reported having at least one lifetime fear.

Prevalence of lifetime BIIP with and without 12-month SP

A total of 386 participants reported having a lifetime BIIP, corresponding to a weighted population prevalence of 4.2% (95% CI: 3.7–4.8). Among those with lifetime BIIP, a total of 51 participants met 12-month DSM-IV diagnostic criteria for SP, corresponding to a weighted population prevalence of 0.6% (95% CI: 0.4–0.8). Respondents' age was not significantly related to the prevalence of BIIP (Table 1).

A binary logistic regression analysis was conducted in order to compare those who did or did not meet 12-month SP criteria (coded 1 and 0 respectively) along with their lifetime BIIP in terms of sociodemographic, health, and psychiatric characteristics. None of the variables in this model significantly differentiated the two groups at the 0.01 threshold, so subsequent analyses no longer distinguish the two groups.

Type and frequency of co-occurring lifetime fears

BIIP occurred together with other lifetime fears in over 90% of all cases (Figure 1). The two most common co-occurring lifetime fears were of animals and heights, each endorsed by

approximately half of the individuals with BIIP. It is surprising that only approximately one-third of those with BIIP reported a lifetime fear of dentists and one-fifth reported a lifetime fear of hospitals.

Psychiatric comorbidity

Lifetime BIIP was significantly associated with lifetime anxiety, mood, and personality disorders in the unadjusted model. These associations persisted after adjusting for sociodemographic characteristics. After adjusting for other psychiatric disorders, however, only the associations with lifetime SP, any lifetime anxiety disorder, and personality disorders remained significant (Table 2).

Medical comorbidity

Lifetime BIIP was significantly associated with hypertension, tachycardia, stomach ulcer, and gastritis in the unadjusted model and after adjusting for sociodemographic variables. After additionally adjusting for psychiatric diagnoses, only the association with hypertension remained significant (See Table 3). With regard to service use, lifetime BIIP was significantly associated with number of injuries during the past year that required the respondent to cut down physical activity for at least half a day in the unadjusted model and after adjusting for sociodemographic characteristics, but not after additionally adjusting for lifetime psychiatric diagnoses (Table 4).

Discussion

In a national sample of older American adults, the weighted lifetime prevalence of BIIP was 4.2%. The Baltimore ECA study estimated a similar lifetime prevalence of 3.5% (Bienvenu and Eaton, 1998); however, a Swedish population register study estimated a much higher lifetime prevalence of 7.9% among older adults (Sigström *et al.*, 2011). Although reasons for this discrepancy are unclear, the actual lifetime prevalence of BIIP may in fact be significantly higher than the estimate reported in the present study, due to recall errors that lead respondents to underestimate the occurrence of psychiatric symptoms earlier in their lives (Moffitt *et al.*, 2010; Takayanagi *et al.*, 2014).

In the present study, those who endorsed a lifetime BIIP with or without a 12-month SP diagnosis were not differentiated by sociodemographic, health, and psychiatric characteristics. This finding is consistent with those of previous studies, which report only marginal differences between older adults with a 12-month diagnosis of SP, a lifetime diagnosis of SP, or sub-threshold SP, relative to asymptomatic controls (Chou, 2009; Grenier *et al.*, 2011).

Lifetime BIIP was significantly associated with hypertension among older adults in our sample after controlling for sociodemographic and psychiatric confounders. We are unable to draw causal inferences about this observed association due to the use of cross-sectional data. However, the higher odds of chronic medical conditions may be due to differences in preventive lifestyle or treatment-seeking behaviors earlier in life (Thyer *et al.*, 1985; Marks, 1988). Although findings from the Baltimore ECA suggest that there may be no major

health ramifications of having lifetime BIIP in terms of health-seeking behaviors (Bienvenu and Eaton, 1998), diabetics with BIIP were more likely to report having vascular disease.

Lifetime BIIP was associated with a range of anxiety, mood, and personality disorders in our unadjusted model, and after adjusting for sociodemographic characteristics. After similar adjustments, Bienvenu and Eaton also found high lifetime comorbidity, particularly for mood and anxiety disorders, among those with a lifetime BIIP. After additionally adjusting for comorbid psychiatric conditions, we found that BIIP was significantly and most strongly associated with a lifetime diagnosis of SP and personality disorders. Similarly, Grenier and colleagues reported that older adults with a 12-month diagnosis of SP were more likely to have comorbid anxiety disorders than their sub-threshold counterparts.

Approximately 8% of those with lifetime BIIP did not report any other lifetime fears, suggesting that BIIP usually occurs in tandem with other fears. The two most commonly co-occurring lifetime fears were of animals and heights, consistent with previous findings suggesting that these are the most common fears in general (Magee *et al.*, 1996). Additionally, we found that dental phobia was not among the most frequently co-occurring lifetime fears, consistent with previous findings suggesting that BIIP and dental phobia represent two distinct SP sub-types (De Jongh *et al.*, 1998; van Houtem *et al.*, 2014). Interestingly, fear of hospitals was also among the least frequently co-occurring fears.

A strength of the present study is that it was based on a large, nationally representative sample of the U.S. population. However, there are also some important limitations. First, as previously alluded to, the estimated prevalence of lifetime BIIP may have underestimated the true lifetime prevalence in our sample, due to recall errors that are known to impact the accuracy of lifetime prevalence estimates (Moffitt *et al.*, 2010; Takayanagi *et al.*, 2014). It is possible that those who remember having had a lifetime BIIP (those in our sample) vary in important respects to those who forget or deny earlier fears, for instance in terms of recency or severity, and other characteristics. Additionally, cohort effects may explain observed differences in the prevalence of BIIP between older adult samples (Sigström *et al.*, 2011). Second, in the structured interview, participants were only required to answer 'yes' or 'no' to whether they had any lifetime fears. Therefore, we were unable to examine whether the intensity of the fear of blood, injection, or injury has an impact on medical and psychiatric comorbidity. Finally, we were unable to investigate in greater detail whether BIIP has a general effect on health behaviors and treatment seeking due to the limited number of questions about medical service use in the AUDADIS. Longitudinal datasets with more detailed measures of health behaviors and service use are needed to further examine this issue.

Acknowledgments

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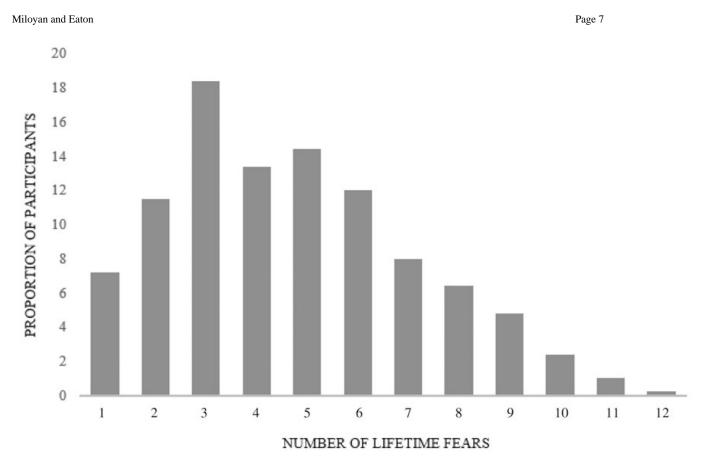
Figure 1.
Frequency of lifetime fears among older adults with blood-injection-injury-phobia.

Table 1

Weighted lifetime BIIP prevalence estimates among older age groups

	65–74 *N* = 4,186	75–84 *N* = 2,878	85+ *N* = 879	TOTAL *N* = 7,943
Lifetime BIIP with or without 12-month SP	4.2 (3.4–5.0)	4.6 (3.7–5.5)	3.3 (2.0–4.5)	4.2 (3.7–4.8)
Lifetime BIIP with 12-month SP	0.6 (0.3–0.9)	0.5 (0.3–0.7)	0.5 (0.04–1.04)	0.6 (0.4–0.8)

Note: The results of binary logistic regression analyses indicated that there were no significant age-related differences in BIIP prevalence among older adults.

Table 2

Prediction of lifetime psychiatric disorders from lifetime BIIP

	UNADJUSTED		SOCIODEMOGRAPHIC[a]		SOCIODEMOGRAPHIC AND PSYCHIATRIC[b]	
	OR	95% CI	OR	95% CI	OR	95% CI
Anxiety disorders						
Panic disorder	1.96	1.15–3.31	1.83	1.08–3.10	1.15	0.63–2.11
Social phobia	**3.99**	**2.49–6.43****	**3.90**	**2.45–6.19****	**2.88**	**1.71–4.85****
Generalized anxiety disorder	**2.42**	**1.43–4.08***	**2.14**	**1.26–3.63***	1.39	0.81–2.39
Any anxiety disorder	**2.55**	**1.83–3.56****	**2.42**	**1.73–3.38****	**1.84**	**1.25–2.73***
Mood disorders						
Major depression	**1.85**	**1.33–2.57****	**1.69**	**1.21–2.35***	1.16	0.78–1.72
Dysthymia	**2.18**	**1.25–3.80***	1.96	1.11–3.44	1.31	0.70–2.47
Mania or hypomania	**2.76**	**1.54–4.92***	**2.56**	**1.39–4.71***	1.53	0.77–3.05
Any mood disorder	**1.89**	**1.58–2.61****	**1.73**	**1.28–2.34***	1.25	0.85–1.82
Substance use disorders						
Alcohol abuse/dependence	0.93	0.65–1.34	1.25	0.85–1.85	1.05	0.71–1.57
Any drug abuse/dependence	2.43	0.84–7.09	2.19	0.76–6.33	1.40	0.42–4.61
Any substance use disorder	0.94	0.66–1.35	1.26	0.86–1.86	1.04	0.71–1.56
Nicotine dependence	**1.67**	**1.15–2.43***	**1.74**	**1.19–2.54***	1.42	0.94–2.15
Personality disorders						
Any personality disorder	**2.64**	**1.86–3.73****	**2.76**	**1.96–3.86****	**2.25**	**1.57–3.21****

*
$p < 0.01$,

**
$p < 0.001$.

[a] Odds ratios adjusted for age, sex, education, income, marital status, geographic region, and urbanicity.

[b] Odds ratios adjusted for age, sex, education, income, marital status, geographic region, ubranicity, and other psychiatric disorders.

Table 3

Prediction of chronic medical conditions from lifetime BIIP

	UNADJUSTED		SOCIODEMOGRAPHIC[a]		SOCIODEMOGRAPHIC AND PSYCHIATRIC[b]	
	OR	95% CI	OR	95% CI	OR	95% CI
Arteriosclerosis	0.96	0.57–1.61	1.06	0.63–1.78	0.93	0.55–1.58
Hypertension	**1.61**	**1.26–2.06****	**1.52**	**1.18–1.94***	**1.46**	**1.14–1.87***
Liver cirrhosis	1.03	0.13–8.24	1.06	0.13–8.57	1.06	0.15–7.69
Liver disease	1.10	0.24–5.08	1.06	0.23–4.84	1.09	0.23–5.18
Chest pain	1.39	0.97–2.00	1.35	0.94–1.95	1.18	0.81–1.71
Tachycardia	**1.77**	**1.24–2.53***	**1.65**	**1.15–2.37***	1.45	1.01–2.09
Myocardial infarction	1.33	0.77–2.68	1.41	0.70–2.84	1.29	0.64–2.60
Heart disease	1.02	0.64–1.61	1.06	0.67–1.70	0.95	0.60–1.50
Stomach ulcer	**2.37**	**1.46–3.86***	**2.08**	**1.28–3.37***	1.83	1.10–3.04
Gastritis	**1.92**	**1.30–2.86***	**1.81**	**1.22–2.69***	1.56	1.03–2.35
Arthritis	1.12	0.87–1.44	1.01	0.78–1.30	0.91	0.69–1.20

*
  $p < 0.01$,

**
  $p < 0.001$, PY: past year.

[a]Odds ratios adjusted for age, sex, education, income, marital status, geographic region, urbanicity.

[b]Odds ratios adjusted for age, sex, education, income, marital status, geographic region, urbanicity, and other psychiatric disorders.

Table 4

Prediction of medical service use from lifetime BIIP

	UNADJUSTED		SOCIODEMOGRAPHIC[a]		SOCIODEMOGRAPHIC AND PSYCHIATRIC[b]	
	OR	95% CI	OR	95% CI	OR	95% CI
Number of days in hospital in PY	1.00	0.71–1.40	1.02	0.72–1.45	0.97	0.68–1.38
Number of times treated in emergency room in PY	1.15	0.86–1.53	1.15	0.86–1.53	1.07	0.81–1.44
Number of injuries requiring medical help or to cut down physical activity in PY	1.55	1.13–2.13*	1.56	1.14–2.15*	1.49	1.08–2.06

*
p < 0.01,

**
p < 0.001, PY: past year.

[a]Odds ratios adjusted for age, sex, education, income, marital status, geographic region, urbanicity.

[b]Odds ratios adjusted for age, sex, education, income, marital status, geographic region, urbanicity, and psychiatric comorbidity.