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Childhood trauma and lifetime syncope burden among older adults

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ABSTRACT

Objective: Vasovagal syncope is governed by the autonomic nervous system and often precipitated by highly salient emotional situations. We hypothesized that a lifetime tendency towards vasovagal syncope may be precipitated by exposure to childhood trauma.

Methods: We examined data from the first wave of The Irish Longitudinal Study on Ageing (TILDA) of adults aged 50 + (n = 6497) who were asked to report lifetime syncope frequency and any history of childhood sexual or physical abuse. Mediation analysis was used to assess the relative importance of pathways via which childhood trauma could plausibly increase risk of later life recurrent syncope including via depression, mid-life cardiovascular disease and frequent syncope in youth.

Results: 18.2% reported a lifetime syncopal event: 4.0% frequent syncope in youth and 1.5% recurrent syncope in the last year. 10.9% reported childhood sexual or physical abuse, rising to 14.2% among those reporting any lifetime syncopal event, 21.0% with frequent syncope in youth and 20.2% with recurrent syncope in later life. In fully adjusted logistic regression models the report of childhood sexual or physical abuse was independently associated with frequent syncope in youth (OR 1.85 (CI 95% 1.27–2.71); p = 0.001; OR 2.14 (1.48–3.10); p < 0.001 respectively). A history of frequent syncope in youth and depression partially mediated the relationship between childhood sexual and physical abuse and recurrent syncope in later life, while mid-life cardiovascular disease was less important.

Conclusion: Childhood trauma may contribute to a lifelong vasovagal tendency. Early attention should be given to the potential precipitating and perpetuating psychosocial factors affecting recurrent syncope.

1. Introduction

Up to 40% of the population will experience at least one syncopal event during their lifetime – the majority of which will be attributable to the 'common faint', otherwise known as neurally mediated vasovagal syncope (VVS) [1]. In VVS, transient loss of consciousness results from cerebral hypoperfusion induced by reflex peripheral vasodilatation and/or bradycardia – although the exact mechanisms remain incompletely understood [2]. Clinical features include a typical prodrome of dizziness, unsteadiness and blurred vision, followed by brief self-limiting loss of consciousness and loss of postural tone, then complete and rapid recovery. Triggers are usually readily identifiable and may be physiological (e.g. prolonged orthostasis) and/or psychological (e.g. blood injury phobia) [3].

VVS affects all ages and may negatively impact quality of life, particularly if recurrent [4]. Childhood sexual and physical abuse are known to be associated with a broad range of poor health outcomes even into later life [5]. Although several small clinical studies have suggested higher rates of childhood maltreatment in those with syncope [6,7], a recent meta-analysis synthesizing the evidence to date on links between childhood sexual abuse and somatic outcomes specifically highlighted insufficient evidence relating to syncope [8]. Various pathways could plausibly link childhood trauma and syncope later in life including poor cardiovascular health in mid-life, poor mental health, and altered autonomic function [7–11].

Clinical history is the key to diagnosis in VVS [12]. The pattern with which syncope occurs across a lifetime can be highly indicative of a VVS tendency – e.g. the experience of frequent syncope in youth. VVS most commonly has its onset in the post-pubertal period with a female preponderance [13]. The incidence of childhood sexual and physical abuse also peak in this age group, and follows a similar sex distribution [14]. VVS is classically associated with readily identifiable triggers including highly salient emotional situations, hence 'trait faintness' has been suggested as an important stress-response in humans [15]. Across the lifespan syncope incidence has a bimodal distribution, with a second peak occurring after 65 years [16]. Those who have a history of VVS in youth are more likely to represent with events which are also attributable to VVS in later life [13]. These syncopal events, perhaps

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with an interlude lasting decades, are seen as a recurrence of the same underlying tendency and hence VVS has been likened to other chronic diseases which have a relapsing-remitting course [17].

Syncope however may also herald a more malign diagnosis particularly in older adults in whom a cardiac cause must be considered [18]. Syncope may thus pose a diagnostic dilemma and often precipitates extensive high-cost, low-yield investigations; yet even in older adults, a definitive cause will remain elusive in up to 50% [19]. Childhood trauma has been associated with elevated mid-life cardiovascular risk [9], however a cardiac cause of syncope, particularly when examined at the population level, is less likely to account for frequent syncope in youth [16].

VVS and psychiatric diagnoses commonly co-occur and may affect the course and recurrence of syncopal events [20]. Depression is more common in those with syncope [4], and an elevated risk of depression is a known sequela of exposure to childhood trauma [10,19]. Among the psychiatric diagnoses regularly encountered in syncope clinic populations is 'psychogenic pseudosyncope' [6] believed to be akin to 'non-epileptic attacks' which in the neurology literature have been consistently linked to higher rates of childhood trauma [21]. Such dissociative events may account for up to 6% of referrals to specialist tertiary care syncope units [12] although this may be a significant underestimate. Seeking a history of psychological trauma remains an important element in the psychiatric evaluation of those presenting with such dissociative phenomena, however both the etiological and diagnostic relevance of such reports are debated [22].

We sought to explore associations between a history of childhood sexual and physical abuse and lifetime syncope burden in a large population-based sample of older adults aged 50 + .

Hypotheses under investigation:

1. Given established links between childhood trauma and both mid-life cardiovascular disease and depression we expected that childhood sexual and physical abuse would be related to recurrent syncope in later life via these mediators.

2. We additionally hypothesized that similar to the effect seen in other chronic diseases, a life time tendency towards VVS or 'trait-faintness' may be precipitated by exposure to childhood trauma. We thus expected that those exposed to childhood sexual and physical abuse would report a greater lifetime burden of syncopal events - particularly in a pattern suggestive of a tendency towards VVS e.g. those with a history of recurrent syncope in youth.

3. Given the recognition that a predisposition to VVS starts early and may persist for decades, we further expected that frequent syncope in youth would mediate any relationship between childhood trauma and recurrent syncope in later life, even after accounting for other plausible pathways linking syncope to childhood trauma including cardiovascular disease and poorer mental health.

2. Methods

2.1. Sample

This analysis is based on data from the first wave of The Irish Longitudinal Study of Ageing (TILDA), conducted 2009–2011. This is a population-based, nationally representative study of community-dwelling adults aged 50 and over. The TILDA data collection process has been described in detail elsewhere [23]. Briefly, participants were assessed in their own home by means of a Computer Assisted Interview delivered by a trained interviewer. They were also invited to return a Self-Completion Questionnaire, which they completed unsupervised and which collected information on more sensitive topics. In total 8175 participants aged 50 and older enrolled in the TILDA cohort of whom 6636 returned the Self-Completion Questionnaire - which included questions on childhood sexual and physical abuse. < 2% (n = 139) of those who returned the Self-Completion Questionnaire were missing on any of the variables of interest resulting in a final sample of 6497 participants.

2.2. Ethics

Trinity College Research Ethics committee granted ethical approval for the study. Each participant provided written informed consent prior to enrolment in the study.

2.2.1. Outcome variables

2.2.1.1. Assessment of syncope burden. Three questions were used to record lifetime syncope burden:

1. Lifetime event: 'Have you ever had a blackout or fainted?' responses were coded as a binary categorical variable i.e. never = 0/ever = 1.

2. Vasovagal tendency in youth: 'Were you a frequent fainter when you were younger?' with answers coded as a binary categorical variable i.e. no = 0/yes = 1.

3. Recurrent late life syncope: 'Approximately how many times have you had a blackout or fainted in the last year?' a binary categorical variable was coded to indicate those participants with recurrent (≥ 2) reported syncopal episodes in the last twelve months i.e. recurrent syncope in the last year no = 0/yes = 1.

2.2.2. Primary predictor variables

2.2.2.1. Assessment of childhood trauma. As per the US population-based Health and Retirement Study [10], a history of childhood abuse was collected by four questions querying a history of sexual or physical abuse prior to the age of 18 by parents or others: 'Before you were 18 years old, were you ever sexually abused by either of your parents?', 'Before you were 18 years old were you ever sexually abused by anyone other than your parents?'; 'Before you were 18 years old, were you ever physically abused by either of your parents?', 'Before you were 18 years old were you ever physically abused by anyone other than your parents?'. Responses to these questions were coded to produce to two binary categorical variables: history of childhood sexual abuse no = 0/yes = 1; history of childhood physical abuse no = 0/yes = 1.

2.2.2.2. Covariates. Age, sex and education were recorded, as was smoking history (current, past, never). Co-morbid somatic conditions were recorded as the number of self-reported doctor-diagnosed conditions including: asthma, lung disease, arthritis, osteoporosis, diabetes, peptic ulcer disease, cancer and hip fracture. These were summed to give a total number of age-related chronic physical co-morbidities. Further relevant cardiovascular/cerebrovascular conditions were recorded to include: angina, myocardial infarction, heart failure, stroke, Transient Ischemic Attack, hypercholesterolemia, structural heart disease and arrhythmia. The total number of cardiovascular conditions was then summed and recoded as 0, 1, 2 or more, and was later added to regression models as a categorical variable.

The total number of prescribed medications was recorded in the participant's home and coded using the World Health Organizations Anatomical Therapeutic Chemical index [24]. Those participants who were taking 5 or more regular medications were defined as subject to 'polypharmacy'.

Levels of depressive symptoms over the previous week were recorded using The Center for Epidemiological Studies Depressions Scale (CES-D) [25]. Each question offers a four-point response scale with options ranging from, "Rarely or none of the time (less than 1 day)" to "All of the time (5–7 days)". This is a 20-item questionnaire, which produces a total score ranging from 0 to 60 and is validated for