ELSEVIER

Social Science & Medicine 64 (2007) 95–111

SOCIAL SCIENCE & MEDICINE

www.elsevier.com/locate/socscimed

The shackles of misfortune: Social adversity assessment and representation in a chronic-disease epidemiological setting

Paul G. Surtees*, Nicholas W.J. Wainwright

University of Cambridge, Cambridge, UK

Available online 25 September 2006

Abstract

Research evidence is accumulating to support an association between social adversity and the development of predisease processes and physical disease outcomes. While methodological advances have been achieved in the assessment of social adversity, significant barriers remain to their adoption in chronic disease epidemiological settings consequent upon the need to limit participant burden and restrictions imposed by cohort size and cost. A large-scale population-based cohort study, as part of the European Prospective Investigation into Cancer, Norfolk, UK, provided an opportunity to include a comprehensive postal assessment of social adversity. A total of 20,921 participants reported details of 16,031 adverse circumstances during childhood, 119,056 life events and 106,170 person-years of difficulties experienced during adulthood. Impact and adaptation indices were constructed from responses to questions regarding specific life events experienced. There was no evidence that younger participants reported more difficulties in childhood than those who were older, and no evidence of clustering of loss events involving the death of first degree relatives according to their recency. However, there was evidence of recall bias for events not involving loss with increased event rates observed in the few years immediately prior to questionnaire completion. Women reported similar events as more upsetting, and that they took longer to get over their effects, than men. Difficulties experienced in childhood, life events and difficulties in adulthood, event impact and adaptation were all associated with worse physical functional health. Reported slow adaptation to the effects of life events was associated with the largest decrement in physical functional health. These findings strengthen the rationale for including a collection of comprehensive social adversity data within chronic disease epidemiological settings and offer promise for aiding understanding of individual differences in physical disease aetiology.

Keywords: Life events; Chronic disease epidemiology; Life course; Life stress; Physical functional health; UK

Introduction

Recent work in social epidemiology, neurobiology and in behavioural medicine has underlined the significance of social adversity across the life course for predisease processes and for disease outcomes (Berkman & Kawachi, 2000; Buwalda et al., 2005; Stansfeld & Marmot, 2002). Other work, focusing upon the association between adverse experience during childhood and adult physical and psychiatric health (Felitti et al., 1998; Molnar, Berkman, & Buka, 2001; Walker et al., 1999), aided by study of rodent and primate models of adverse early experience (Sanchez, Ladd, & Plotsky, 2001), suggests that such experiences can have pervasive

*Corresponding author. Tel.: +44 1223740651; fax: +44 1223740147.

E-mail addresses: paul.surtees@srl.cam.ac.uk (P.G. Surtees), nick.wainwright@srl.cam.ac.uk (N.W.J. Wainwright).

0277-9536/$ - see front matter © 2006 Elsevier Ltd. All rights reserved.
doi:10.1016/j.socscimed.2006.08.013

and enduring effects on developmental health through 'biological embedding' (Keating & Hertzman, 1999). For example, models of early-life chronic stress in rodents, represented through maternal separation, have suggested subsequent diminished hippocampal ability to respond to adverse experience in adulthood (Mirescu, Peters, & Gould, 2004), persistent alterations in stress-responsive neurocircuits (Plotsky et al., 2005), and commentary that these findings may provide insight into the evolution of human age-related cognitive impairment (Brunson et al., 2005). Evidence now suggests that social adversity exposure may, under some circumstances, increase risk for cardiovascular disease (Bunker et al., 2003), and perhaps for some cancers (Duijts, Zeegers, & Van der Borne, 2003). For example, experiencing the unexpected death of a child (below 18 years) has been associated with an increased subsequent risk of myocardial infarction in the bereaved parents (Li, Hansen, Mortensen, & Olsen, 2002). Breast cancer risk has been shown to increase over a 15-year follow-up of 10,808 women, after their experience of divorce (or separation), death of a husband, or the death of a close relative or friend (Lillberg et al., 2003). In addition, accumulating evidence now suggests that individual differences in the capacity to adapt to life stress may be important in aiding understanding of resilience to social adversity-related health outcomes (Korte, Koolhaas, Wingfield, & McEwen, 2005; Martin & Martin, 2002).

The research needs of social science, in particular medical sociology, epidemiological psychiatry and social epidemiology served to accelerate the development of approaches for the assessment of social adversity. These evolved to include event list techniques (e.g. Holmes & Rahe, 1967; Paykel, Prusoff, & Uhlenhuth, 1971), interview-based (e.g. Brown & Harris, 1978; Dohrenwend, Raphael, Schwartz, Stueve, & Skodol, 1993; Wethington, Brown, & Kessler, 1995) and Life Chart approaches (e.g. Caspi et al., 1996; Lin, Ensel, & Lai, 1997). These assessments commonly provide measures that include the degree of adjustment to life change caused by each event, of event severity (or threat), of change-points, of event timing and (less commonly) of periods of prolonged difficulty. In addition, the research drew attention to the importance of distinguishing the extent to which adverse experiences were illness-related for clarifying their aetiological significance, particularly in relation to the onset of psychiatric disorder.

Large-scale prospective cohort studies of initially healthy populations are the ideal research design to evaluate the importance of psychosocial factors for incident chronic disease (Kuper, Marmot, & Hemingway, 2002). Interview-based assessments of social adversity exposure are impracticable within these study settings due to challenges that include cost considerations and the need to limit participant burden in the context of other (often extensive clinic-based) assessments. In consequence, assessment has been restricted mostly to the use of short event lists (Lillberg et al., 2003), to specific events (e.g. bereavement (Li, Precht, Mortensen, & Olsen, 2003)) and to the assessment of particular sources of stressful experience (e.g. work strain (Schernhammer et al., 2004)).

This paper describes an approach to the comprehensive assessment of social adversity experienced during childhood and adulthood, designed specifically for inclusion in a large-scale chronic disease epidemiology programme. The aims of this approach are to aid convergence of the conceptual paradigms underlying both stress process and life course research (Elder, 1998; Ensel & Lin, 2000; Pearlin & Skaff, 1996), and to represent individual differences in stress adaptation (Korte et al., 2005; Martin & Martin, 2002; McEwen & Seeman, 2003). In addition, this paper describes and defines indices representative of individual differences in event impact and stress adaptive capacity, and reports the association between summary measures of social adversity and physical functional health. The assessment was included in a study of over 20,000 participants in the European Prospective Investigation into Cancer in Norfolk (EPIC-Norfolk), UK (Day et al., 1999). EPIC-Norfolk is a subcohort of a collaborative research programme, involving 23 centres in 10 European countries, specifically designed to investigate the relationships between diet, metabolic and genetic factors and cancer (Bingham & Riboli, 2004; Gonzalez et al., 2006; Riboli et al., 2002).

Methods

Participants

During 1993–1997 EPIC-Norfolk recruited, through general practice age–sex registers, a total of 30,414 men and women (then) aged 40–74 years and resident in Norfolk, England (Day et al., 1999). The study was approved by the Norwich District