Social Science Research 62 (2017) 189–203

Contents lists available at ScienceDirect

Social Science Research

journal homepage: www.elsevier.com/locate/ssresearch

Losing ground, losing sleep: Local economic conditions, economic vulnerability, and sleep

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ARTICLE INFO

Article history:
Received 20 November 2015
Received in revised form 4 August 2016
Accepted 23 August 2016
Available online 26 August 2016

ABSTRACT

Medical research shows that healthy sleep has benefits for human wellbeing. We contribute to the emerging social-epidemiological literature on the social determinants of sleep by considering how living in an area with poor economic circumstances can result in sleep loss through financial worry, uncertainty and stress. We use multilevel regression models and nationally-representative data from the Household, Income and Labour Dynamics in Australia Survey (n = 9181) and find that individuals who live in areas with high unemployment rates or experience individual-level economic vulnerability sleep less than comparable individuals in areas with low unemployment rates, or who do not experience financial hardships. The negative association between local economic conditions and sleep duration is substantially stronger amongst economically vulnerable individuals. This highlights the importance of considering multiple levels in the analysis of health inequalities, as status and location can intersect to produce and reproduce disadvantage systems.

1. Introduction

Maintaining healthy sleeping habits has well-known benefits for health and wellbeing, including cognitive and behavioral functioning (Banks and Dinges, 2007), learning and memory (Diekelmann and Born, 2010) and hormonal and metabolic balance (Leproult and van Cauter, 2010), while poor sleep is related to obesity (Taheri et al., 2004), diabetes (Buxton and Marcelli, 2010) and all-cause mortality (Grandner et al., 2010). The high social and economic costs associated with ill health due to suboptimal sleep have resulted in growing academic and policy interest in its social determinants (Hillman et al., 2006; Altevogt and Colten, 2006; Rosekind et al., 2010; Plage et al., 2016).

An emerging body of literature on the associations between socio-economic status (SES) and sleep has established that healthy sleeping habits, sleep quality and the prevalence of sleep disorders are patterned by SES, with suboptimal outcomes being typically more prevalent amongst individuals with low SES (Adams, 2006; Arber et al., 2009; Krueger and Friedman, 2009; Soltani et al., 2012). Yet, there are important gaps in this literature that limit our understanding of the intersections between economic circumstances and sleep. Existing studies have largely focused on individual-level indicators of SES, such

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http://dx.doi.org/10.1016/j.ssresearch.2016.08.006
0049-089X/

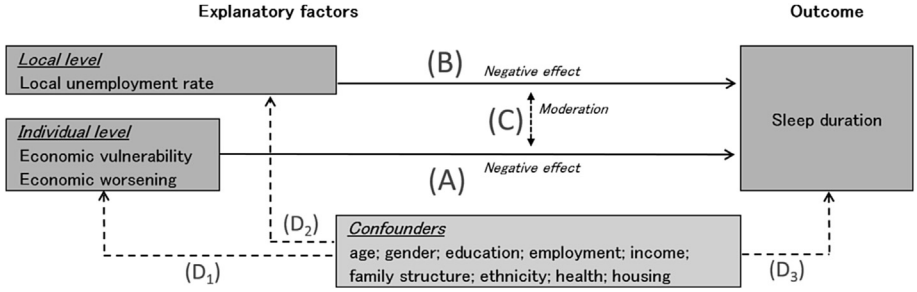

Fig. 1. Conceptual model of the association between individual-level economic vulnerability, local economic conditions and sleep duration.

as education, income and social class, and we know little about how macro-level economic circumstances influence individuals' sleep, and whether or not they do so at different rates for individuals with different levels of SES.

This paucity of evidence is surprising for at least two reasons. First, there is growing academic and policy interest in the effects of the social environment on individuals' wellbeing, with an important body of evidence developing around contextual effects on health (Ross and Mirowsky, 2001; Mirowsky and Ross, 2003; Wheaton and Clarke, 2003; Hill et al., 2005; Hill and Maimon, 2013). Second, economic contraction is likely to have been a major factor affecting individuals' health in recent years. The 2008 Global Financial Crisis (GFC) had lasting and widespread economic consequences, and a long-standing body of evidence documents negative physical and mental health effects of economic contraction (Catalano, 1991; Catalano et al., 2011; Suhrcke and Stuckler, 2012). The latter include increases in stress and anxiety (Catalano et al., 2011), which are in turn important predictors of impaired sleep (Altevogt and Colten, 2006).

This study addresses this gap in knowledge by examining how macro-level economic contraction influences individuals' sleep duration. Our argument is that exposure to poor local economic conditions should reduce individuals' sleep time through indirect-cognitive factors such as financial stress and worry, and more so for economically vulnerable individuals. We theorize and test this link using contemporary survey data from Australia and multilevel regression models.

2. Background

2.1. Socio-economic status and sleep duration

A robust literature on the effects of SES on sleep duration has emerged in recent years. In the US, studies have reported comparatively short sleep duration amongst individuals with low education (Hale, 2005; Stamatakis et al., 2007), low household income (Stamatakis et al., 2007; Stranges et al., 2008; Krueger and Friedman, 2009) and few income sources (Krueger and Friedman, 2009). In the UK, Arber and Meadows (2011) found that short sleep duration was associated with low education and low social class, and in Finland Lallukka et al. (2012a) found comparatively lower sleep duration amongst those with low education or low income. Similar patterns by SES have been reported for sleep problems in Britain (Arber et al., 2009), and for sleep quality in Australia (Soltani et al., 2012) and Germany (Anders et al., 2014). The link between individual-level SES and sleep is represented as pathway (A) in the conceptual diagram in Fig. 1.

Few contributions theorize and test the specific mechanisms underpinning the associations between SES and sleep. Such mechanisms can be split into direct-contextual and indirect-cognitive factors (Arber et al., 2009). Direct-contextual factors are those that emerge directly from exposure to impoverished material circumstances due to poor SES, such as living in a crowded household where family members disturb each other's sleep or in a house that lacks heating or air conditioning. Indirect-cognitive factors affect sleep through anxiety and worry. The language used to refer to these symptoms varies across authors and disciplines, and encompasses terms such as emotional strain, demoralization, entrapment, lack of control, powerlessness, hopelessness, and feelings of uncertainty and apprehension (Arber et al., 2009; Bassett and Moore, 2014; Burgard and Ailshire, 2009; Dávalos and French, 2011; Fryer, 2013; Goldman-Mellor et al., 2010; Hale et al., 2013; Lallukka et al., 2012b; Sargent-Cox et al., 2011). Individuals with low SES are exposed to more chronic stressors (e.g. poor housing, long-term health conditions and long-term unemployment) as well as more acute stressors (e.g. illness, relationship break-up and job loss) than individuals with high SES (Pearlin, 1989; Arber et al., 2009). Cognitive approaches to insomnia illustrate how these stressful life events and situations —particularly those perceived as being uncontrollable— can produce intrusive thoughts and give rise to states of 'perseverative cognition'. These include worry and rumination, both of which can induce prolonged psychological states of 'action preparation' which trigger (neuro)physiological body responses.[1] Such responses include high heart rate, high blood pressure and secretion of stress hormones (such as cortisol and adrenocorticotropic

[1] In this context, *worry* can be defined as *"an attempt to engage in mental problem solving on an issue whose future outcome is uncertain"* (Brosschot et al., 2006: 114) and rumination as *"passively and repetitively focusing on one's symptoms of distress and the circumstances surrounding these symptoms"* (Nolen-Hoeksema et al., 1997: 855).