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Exploring associations between state education initiatives and teachers' sleep: A social-ecological approach

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ABSTRACT

Social policies that are not specifically aimed at impacting health can still have health consequences. State education reforms, such as standardized testing and stringent accountability for schools and teachers, may affect teacher health by changing their working conditions. This study explores associations between state education initiatives and teachers' sleep, an important predictor of productivity and chronic health conditions. The Behavioral Risk Factor Surveillance System 2013 and 2014 data sets provided sleep and demographic data for 7836 teachers in 29 states in the United States. We linked the teacher data to state education reform data from the U.S. Department of Education. Logistic regression was used to estimate odds ratios (ORs) of reporting inadequate sleep (i.e., <6.5 h and <5.5 h) associated with state education policies after adjusting for demographic characteristics. Teachers had significantly higher odds of reporting inadequate sleep if their state financed professional development, sanctioned or rewarded schools based on student performance, and regulated classroom materials for state-wide common core standards (ORs ranging from 1.25 to 1.84). More strictly defined inadequate sleep (<5.5 h) had generally higher ORs than less strict definition (<6.5 h). The Race-to-the-Top award, a US federal grant designed to encourage states to implement reforms through regulations and legislations, was also associated with inadequate sleep (OR = 1.41, $p < 0.01$, for <6.5 h; OR = 1.55, $p < 0.01$, for <5.5 h). Although this exploratory study did not have district- and school-level implementation data, the results suggest that some state education policies may have impacts on teacher sleep. Consequences of education reform for teacher health deserve more attention.

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1. Introduction

Some social policies are directly aimed at impacting health and safety, such as seat belt laws and smoking bans, and thus are evaluated for their intended effects (Brownson et al., 2009). However, other policies (e.g., transportation, housing, immigration) can also have health impacts by changing social processes. Health implications of such policies are important to evaluate as well. For example, Hatzenbuehler et al. (2017) examined state-level immigration-related policies (e.g., access to driver's license, eligibility for workers' compensation) and reported that restrictive policies are associated with poor mental health among Latinos, regardless of their immigration status. Various public health institutions, including the U.S. Centers for Disease Control and Prevention (CDC), have adopted the Health Impact Assessment (HIA), or the movement to assess all public policies for their population health impacts (Dannenberg et al., 2008; Krieger et al., 2003). So far in the United States, HIAs have been conducted mainly in regards to land-use and housing-development policies (Dannenberg et al., 2008). Expanding the scope of HIA, this study explores state-level education reforms for their potential impacts on teacher health.

Recent education reforms in the United States – starting with

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the No Child Left Behind (NCLB) Act of 2001 and followed by the Common Core State Standard (CCSS) Initiative and the Race-to-the-Top (RTTT) program in 2009 – have increased attention to standardized tests and the role of teachers in improving student performance (Darling-Hammond, 2013). Setting goals for student learning, education initiatives inevitably shape working conditions for teachers. However, impacts of education reform on teacher health has rarely been discussed. It is important to recognize teachers as workers, rather than simply as a component of the education system, so that unintended consequences of education initiatives for teachers be considered. With a large national data set and publicly available education reform data, this study explores associations between state education reform and teacher well-being measured by sleep duration.

1.1. Teacher stress and health: An understudied topic

The social-ecological framework for occupational health clearly indicates the link from social policies to working conditions and ultimately to worker health (Grzywacz and Fuqua, 2000; Landsbergis et al., 2014; Lipscomb et al., 2006). One important mechanism that links working condition to health is occupational stress. In the last several decades, occupational stress research has established psychosocial work environment (e.g., job demands, job control) as important factors influencing health (De Lange et al., 2003; Ganster and Rosen, 2013). Exposure to high job demands or lack of job control triggers a cascade of endocrinological reactions ("fight or flight"), which can harm various physiological functions over time from the immune system to metabolic and cardiovascular systems (McEwen, 1998).

While the job stress literature has flourished the last several decades, it does not inform us specifically about teacher stress and health. In epidemiologic studies that include multiple occupations, teachers are typically categorized with other professionals to form the reference group. In their seminal work on the demand-control model of job stress, Karasek and Theorell (1992) showed that teachers experience high demands but also high job control, similar to physicians and bank executives. In some occupation-specific studies, teachers are recruited specifically to serve as a low-risk comparison group (e.g., compared to flight attendants, Whelan et al., 2003). These practices indicate that teachers are seen as not particularly at risk. As a result, little epidemiologic knowledge on teacher health has been accumulated thus far.

A separate line of research has developed specifically to addresses teacher stress, mainly within the field of education research and frequently conducted or commissioned by teacher associations and labor unions. Entirely focused on "unpleasant, negative emotions […] resulting from some aspect of their work as a teacher" (Kyriacou, 2001) (p. 28), this small literature has paid little attention to teacher health beyond emotional well-being. In their review, Guglielmi and Tatrow (1998) concluded that teacher stress research "is characteristically of very poor quality and that substantial improvements need to be introduced before definitive statements can be made" (p. 81). A more recent review (Van Droogenbroeck and Spruyt, 2015) came to the same conclusion. The teacher stress literature has never been integrated with the mainstream occupational stress research, which could have helped strengthen the teacher stress research by employing epidemiologic approaches. Consequently, little is known about teacher health or its link to working conditions.

1.2. Education reform, teacher working conditions, and teacher stress

Working conditions for teachers are directly and indirectly influenced by education reforms. In response to NCLB and CCSS, and spurred by RTTT, a large federal grant competition designed to "trail-blaze effective reforms" (http://www2.ed.gov/programs/racetothetop/index.html), states have enacted a wide variety of initiatives related to student and teacher performance. These initiatives include regulations and legislation regarding high-stakes standardized testing, teacher evaluation on the basis of student achievement, and general accountability models that hold teachers, schools, and districts accountable for student performance. Opponents of these reforms claim that these accountability initiatives have added demands to teachers and disproportionately impact those who serve low-income and otherwise disadvantaged student populations (Darling-Hammond, 2013). If teachers are held accountable for poor performance of students from, for example, impoverished or violent neighborhoods, teachers are likely to experience low levels of job control, which is consistently associated with poor health (De Lange et al., 2003). Accountability policies are thus likely to be associated with poor health among teachers.

Other education policies are also likely to impact teacher health. Following the passage of NCLB and its increased focus on teacher qualification, many states now encourage or mandate professional development. After adopting CCSS, some states also placed requirements on classroom materials to align with the CCSS goals. Carter and Welner (2013) caution that these practices contribute to "the present challenging conditions of public education and the lack of respect for the teaching force," (p. 225–6). The lack of respect in and of itself is a stressor associated with poor health (Fujishiro and Heaney, 2009). While the opportunity for professional development may be desirable, it can increase job demands and scrutiny for teachers. The state monitoring of instructional materials may limit teacher job control. Because high demands and low control define high job strain (Karasek and Theorell, 1992), state policies regarding professional development and CCSS material requirements may be associated with poor health.

Although several studies have addressed education policies from a teacher stress perspective (Berryhill et al., 2009; Conley et al., 2005; Smith and Kovacs, 2011), they typically relied on teachers' report on how stressful education policies are (e.g., "For me, policies to increase student academic performance overall put more stress in my job," "… overall add a lot of burdens to my job," Berryhill et al., 2009) and associated the teacher perception with outcomes such as burnout and career dissatisfaction. This approach limits the analysis at the individual level—*perceptions* of policies and job attitudes—rather than directly examining education policies and their consequences. One exception is a study by Grissom et al. (2014): using a time-series design and a large national sample of teachers, they examined time trends before and after NCLB in teachers' reports on working conditions as well as job satisfaction, an important predictor of physical and mental health (Faragher et al., 2005). Their results were largely inconclusive, however, possibly because of the lack of state-level NCLB implementation data. There is a clear paucity of research on education reform and teacher health.

1.3. Sleep as an indicator of teacher health

In this study, we focus on sleep duration as an indicator of teacher health. Sleep is sensitive to the quality of work