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The association between a living wage and subjective social status and self-rated health: A quasi-experimental study in the Dominican Republic

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ABSTRACT

Poverty, both absolute and relative, is associated with poorer health. This is of particular concern in middle- and low-income countries facing a significant and growing burden of disease. There has been limited research specifically on whether interventions that increase income may foster better health outcomes. The establishment of a "living wage" apparel factory in the Dominican Republic provided a minimum income standard for factory workers, thus creating a natural experiment through which to study the effects of increased income on health indicators. The primary component of the intervention was a 350% wage increase, but apparel workers in the intervention factory also received education and professional development and were exposed to an enhanced occupational health and safety program. Workers at the intervention factory ($n = 99$) were compared with workers at a matched apparel factory ($n = 105$). Data were collected via in-person interviews in July and August of 2011, which was 15–16 months after workers were initially hired at the intervention site. Primary analyses used employment at the intervention factory as the independent variable and examined associations with two dependent variables: subjective social status and self-rated health. Results showed that receiving a 350% higher wage was associated with substantially higher subjective social status scores, as well as higher global and comparative self-rated health scores; effects were strongest in women. Subjective social status and self-rated health are associated with future health outcomes, so these results indicate that income increases for apparel workers may have positive long-term health outcomes, particularly for women.

1. Introduction

Substantial research in industrialized countries has shown higher rates of morbidity and mortality among those of lower socioeconomic status (SES), as assessed by income, education and occupation (Adler and Newman, 2002; Adler and Rehkopf, 2008; Elo, 2009; Kitagawa, 1973; Mackenbach et al., 2008; Marmot et al., 1978). While the risk for certain conditions, notably breast cancer (Kelsey and Bernstein, 1996) and melanoma (Harrison et al., 1998) increases with SES, for most measures of health, the poor are at greatest risk in the US, England, Australia and other higher-income countries (Dalstra et al., 2005; Minkler et al., 2006).

There are fewer studies documenting the associations between SES and health outcomes in low- and middle-income (LAMI) countries, but existing research finds a similar association between SES and health as is seen in Europe and the US. An analysis of World Health Organization health surveys from 57 countries found that people in the poorest quintile in LAMI countries were twice as likely to experience bad health as those in the wealthiest quintile, and that those in the least educated quintile were three times as likely to experience bad health as those in the best educated quintile (Hosseinpoor et al., 2012). While some studies of LAMI countries have not found direct positive associations of SES and health, the majority of the evidence suggests that in these nations health improves with increasing SES (Fernald and Adler, 2008;

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Hosseinpoor et al., 2005; Van de Poel et al., 2008; Vuković et al., 2008; Wagstaff, 2002, 2000).

An individual's subjective evaluation of their overall social status, cutting across income, education and occupation, appears to play an independent role in determining health status. Subjective social status (SSS) has proven to be a useful summative measure that reflects objective SES measures and is linked to mental and physical health status. It has shown these relationships in a wide range of populations (Adler et al., 2000). In almost 200 studies over the last fifteen years, scores on this instrument consistently and strongly demonstrate a positive correlation with health outcomes across a wide range of domains, including obesity, depression, salivary cortisol levels, susceptibility to infection, functional status, and mortality (Aslund et al., 2009; Chen et al., 2012; Cohen et al., 2008; Goodman et al., 2003; Kopp et al., 2004; Wright and Steptoe, 2005). While most studies of SSS were conducted in North America and Europe, the MacArthur SSS Scale has also been utilized in low- and middle-income countries, where it has been found to share a similar positive association with health. It was associated with functional status among older Taiwanese (Hu et al., 2005); depressive symptoms and perceived stress in South Africa (Hamad, et al., 2008); physical functioning, self rated health, and nurse-rated health in Indonesia (Nobles et al., 2013); and rates of mortality at an ecological level in Hungary (Kopp et al., 2004).

SSS has several parallels with another subjective measure: self-rated health. Both ask individuals to make a global judgment about their status (socioeconomic status for the former and health status for the latter). Just as SSS is related to health status even when objective SES is controlled for, self-related health predicts mortality when controlling for income, education, and occupation (Idler and Benyamini, 1997; Burström and Fredlund, 2001; DeSalvo et al., 2006). Both provide brief measures of global status that are useful for assessing the impact of interventions or changing social conditions. Mental and physical health have been found to contribute most to self-rated health, more than factors such as age, early life factors, or family health history (Singh-Manoux et al., 2006).

SSS and self-rated health are particularly helpful as short-range outcomes measures in this study. They provide indicators that both reflect recent conditions and predict health outcomes that may not become detectable for some period of time. Many health outcomes of interest (e.g., obesity, diabetes, cardiovascular disease, cancer) develop chronically and would not be immediately evident. Subjective social status and self-rated health, which may change more quickly, could presage potential benefits of a SES intervention relatively soon after its initiation.

We attempted to elucidate the relationship between increased income and indicators of health. In this study, we measured SSS and self-rated health among apparel factory workers in the Dominican Republic who experienced a significant wage increase 15 months earlier (350% higher than the prevailing minimum wage) and compared the results with those from workers doing comparable work under usual prevailing-wage working conditions. We hypothesized that the higher wage would be associated with improved subjective social status and self-rated health.

2. Participants and methods

2.1. Demographic, economic, and health profile of the Dominican Republic

The Dominican Republic is a Caribbean nation with approximately 10.1 million inhabitants at the time of the study (2011). It is classified by the World Bank as an upper-middle-income nation, with a gross national income per capita of US$5,470 (2011). Life expectancy was 77 years, and the WHO estimates that 42% of years of life lost are due to communicable diseases, 42% are due to non-communicable diseases, and 16% are due to injuries (Boslaugh, 2013).

2.2. Description of the intervention

In April 2010, the intervention factory opened, hiring 130 employees from a small city (total population: ~50,000) in a free trade zone in the Dominican Republic. Free trade zones guarantee special taxes, export regulations, and workplace laws for manufacturers producing goods for export. The factory produces apparel for the international market, primarily in the United States. The wage increase was exogenous; upon applying for jobs in the factory, workers were not told that wages would differ from the standard prevailing minimum wage in free trade zones across the country. They learned of the higher wage after being hired and before beginning work at the factory.

This wage at the intervention factory was intended to be a 'living wage,' defined as a minimum income standard — the wage necessary to procure basic goods and services for a family of four. These goods and services include adequate food, water, housing, furniture, clothing, education, childcare, health care, and transportation, along with a margin for savings, emergencies and/or discretionary spending. The wage was calculated by an independent labor rights organization at the request of the factory. The calculation employed the validated and widely used 'basket of goods' approach, which is similar to the method used to calculate the consumer price indices worldwide (Kline, 2010). The wage at the intervention factory was US$497 per month, as compared to prevailing minimum wage of US$148 per month.

The intervention factory was opened by an American apparel company interested in piloting a new model of "sweat-free" clothing manufacturing. In addition to the higher wage experienced by the workers, the intervention also included higher labor standards and a collaborative relationship with the local labor union and an independent labor rights monitoring organization. Examples of these standards included worker and union participation in the factory's day-to-day management, production planning, occupational health and safety programs, and professional and personal development programs for employees. Upon hiring, new staff members received an orientation on workers' rights, and the factory had a 'zero tolerance' policy regarding verbal, physical, or sexual abuse. In addition, supervisors and managers received training in worker's rights. The labor rights compliance was thoroughly monitored by the independent labor rights monitoring organization, which makes unannounced site visits and regularly interviews workers offsite to identify and resolve any potential non-compliance.

2.3. Selection of comparison factory

A comparison factory was selected to match the intervention factory as closely as possible; its management supported the inclusion of its workers in the study. To assure similar economic, political, and cultural climates for the two factories, the comparison factory was matched on a number of key characteristics. Both factories manufactured apparel, employed a similar number of workers, were less than 50 miles apart, and were located in free trade zones within small cities of comparable populations.

2.4. Inclusion/exclusion criteria

Workers in both factories were only included in the study if they were paid an hourly wage, as opposed to a salary, which excluded