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Social capital, mental health and biomarkers in Chile: Assessing the effects of social capital in a middle-income country

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ABSTRACT

In high-income countries, higher social capital is associated with better health. However, there is little evidence of this association in low- and middle-income countries. We examine the association between social capital (social support and trust) and both self-rated and biologically assessed health outcomes in Chile, a middle-income country that experienced a major political transformation and welfare state expansion in the last two decades. Based on data from the Chilean National Health Survey (2009–10), we modeled self-rated health, depression, measured diabetes and hypertension as a function of social capital indicators, controlling for socio-economic status and health behavior. We used an instrumental variable approach to examine whether social capital was causally associated with health. We find that correlations between social capital and health observed in high-income countries are also observed in Chile. All social capital indicators are significantly associated with depression at all ages, and at least one social capital indicator is associated with self-rated health, hypertension and diabetes at ages 45 and above. Instrumental variable models suggest that associations for depression may reflect a causal effect from social capital indicators on mental well-being. Using aggregate social capital as instrument, we also find evidence that social capital may be causally associated with hypertension and diabetes, early markers of cardiovascular risk. Our findings highlight the potential role of social capital in the prevention of depression and early cardiovascular disease in middle-income countries.

Introduction

Social capital is usually defined as the institutions, relationships and norms that shape the quality and frequency of social interactions. Like human and economic capital, theories advocate that social capital may generate welfare benefits (Bourdieu, 1986). Studies during the last decades suggest that there is a significant association between social capital and self-reported health, mortality and life expectancy (Kawachi & Berkman, 2000; Kawachi, Kennedy, & Glass, 1999; Kawachi, Kennedy, Lochner, & Prothrowstith, 1997; Kennedy, Kawachi, & Brainerd, 1998; Kim, Subramanian, & Kawachi, 2008; Lochner, Kawachi, Brennan, & Buka, 2003; Subramanian, Kawachi, & Kennedy, 2001). However, this association may differ for various health outcomes. In addition, while most of the literature has focused on high-income countries as qualified by the World Bank (>US $ 12,615 GNI per capita), the influence of social capital on health is less well understood for low- and middle-income countries.

In low- and middle-income countries, welfare state policies and social safety net programs are weaker than in most high-income countries. As a result, access to different forms of social protection is limited and benefits a smaller part of the population (Mesa-Lago, 2007; van Ginneken, 1999). In this context, social capital may be particularly relevant to enhance collective actions within communities, becoming a potential driver of health improvements (Aye, Champagne, & Contandriopoulos, 2002; Lindstrom et al., 2006; Mohseni & Lindstrom, 2007). In support of this view, evidence suggests that cohesive communities may be more successful in protecting healthcare facilities from budget cuts (Sampson, Raudenbush, & Earls, 1997); organizing public services (Altschuler, Somkin, & Adler, 2004; Kawachi et al., 1997); reducing crime (Takagi, Ikeda, & Kawachi, 2012); and promoting economic solidarity (Aye et al., 2002). Social capital may thus allow communities in less developed countries to maintain better living standards and, in the absence of strong social safe net policies, may

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become a more important driver of population health than in high-income countries.

Most of the evidence in this domain comes from the United States, Europe and Japan (Islam et al., 2006), while few studies have explored this association in other economic and cultural contexts. A recent cross-national study used Gallup World Poll data for 139 countries and found that levels of social support were associated with levels of health satisfaction in most countries, but no association was found for volunteering in most low- and middle-income regions (Kumar, Calvo, Avendano, Sivaramakrishnan, & Berkman, 2012). The small sample sizes, the focus on health satisfaction as single outcome and the lack of many control variables however, suggest a cautious interpretation of these findings. Other studies have found evidence that social capital is associated with health in Colombia and Chile (Harpham, Grant, & Rodriguez, 2004; Hurtado, Kawachi, & Sudarsky, 2011; Kumar et al., 2012; Sapag et al., 2008), but they were based on restrictive samples, specific health outcomes, and their results may not be generalizable to national populations. Further motivation for this study is provided by studies that have found social capital to be important in low-income communities within high-income countries (Franzini, 2008; Mulvaney-Day, Alegria, & Sribney, 2007).

Chile offers an interesting case study to examine the links between social capital and health. Despite a general trend of economic growth and health improvements during recent decades, significant income and health inequalities persist (Ewig & Palmucci, 2012; Lopez & Miller, 2008). Parallel to this, studies suggest that levels of trust in others and government have substantially declined during recent decades (Gfk, 2012). Improvements in the economy and population health may have been offset by decreasing levels of social capital. In this context, social capital may have become more essential to population health, by promoting collective actions aimed at social and health protection of entire communities.

Previous studies have consistently reported an association between social capital and subjective health, but evidence of an association with objectively measured health remains more tenuous. While social capital has been found to be associated with measures of physical functioning such as grip strength (Sirven & Debrand, 2011), several studies on measured cardiovascular outcomes and markers have found either no association (Siahpush & Singh, 1999) or relatively weak associations (Holtgrave & Crosby, 2006; Kim, Subramanian, Gortmaker, & Kawachi, 2006). Distinguishing objective from subjective measures of health is important for two reasons. First, the association between self-reported health and self-reported social capital may result from a common source bias. For example, individuals experiencing depression may be more likely to report both being in poor health and perceiving lower levels of social capital in their communities, resulting in a spurious, non-causal association. Second, analyzing the association between social capital and biomarkers may provide insights on the potential biological mechanisms linking social capital and overall health.

An important concern is whether the association between social capital and health is causal. While existing studies often control for a variety of potential confounders (Blakely et al., 2006; Kennelly, O'Shea, & Garvey, 2003; Lynch et al., 2001), residual confounding and reverse causality remain a concern. An instrumental variable (IV) approach provides an alternative to examine whether this association is causal. For example, a recent study based on data for 11 European countries used the aggregate rate of associational membership to voluntary organizations in the living area as an IV and found that that higher levels of social participation were associated with better health (Sirven & Debrand, 2008). Other studies have used corruption, population density, regional citizenship rates and religious fractionalization as IVs. Some of these studies corroborated some of the observed associations between social capital and health (Kim, Baum, Ganz, Subramanian, & Kawachi, 2011; Rocco & Suhrcke, 2012). To our knowledge, no studies have used these methods to assess whether social capital is associated with both objective and subjective health in a low- or middle-income country.

In this paper, we aim to assess the association between social capital and a variety of both physical and mental health outcomes (self-reported health, depression, diabetes and hypertension) in a nationally representative sample of men and woman in Chile. We test whether the well-documented association between social capital and health in high-income countries is observed in a middle-income country that has suffered major economic and social transformations, and that has a less developed set of social protection programs compared to high-income countries. We hypothesized that in the absence of a well-developed social safety net, social capital may be more strongly associated with health, particularly for older individuals who may rely more heavily on social protection programs than their younger counterparts. Our study builds up on previous literature by using an IV approach to assess whether observed associations may reflect a causal effect from social capital to health, using a variety of instruments at the individual and community level.

Method

Sample

Data came from the Chilean National Health Survey (2009–10), a survey designed to measure individual and household health-related characteristics. Stratified sampling was used to cover both administrative regions and urban/rural locations. Following stratification, random individuals were chosen from randomly selected households in communes chosen proportionally by the number of individuals over 15 years of age. Data collection took place in two stages: the first stage comprised face-to-face interviews to collect information on self-reported health, household characteristics and living conditions; in the second stage, clinical measurements and biological samples were collected by trained nurses. The first stage included 5434 respondents and had a response rate of 85%. The second stage was restricted to the sub-sample of individuals who agreed to participate in the collection of biological samples (N = 4,956, response rate = 77%). Response rates were high compared to studies in the US and Europe collecting biological measures (usually 60% or lower). Data are representative of the whole Chilean population based on the statistics from the 2002 Chilean National Census (MINSAL, 2009). Since the objective of this study is to evaluate the effect of social capital on older adult populations we have excluded individuals under the age of 30. Particularly since the prevalence of depression, diabetes and hypertension was less than 5% in the sample for the population under 30 years old. Nevertheless, results incorporating all respondents aged 18 years and older yielded essentially the same results.

Health measures

Data on self-rated health, measured blood pressure and assessed blood sugar were used as indicators of physical health, while depressive symptom score was used as indicator of mental health. Self-reported health is a common measure in the epidemiological literature and is considered both a valid measurement of general health and a predictor of mortality (Gold, Franks, & Erickson, 1996; Idler & Benyamini, 1997). The item used was based on the 2003 *World Health Survey* of the World Health