



## Relative deprivation and child health in the USA<sup>☆</sup>

Aparna Lhila<sup>a,\*</sup>, Kosali I. Simon<sup>b</sup>

<sup>a</sup> Central Michigan University, Economics Department, Sloan Hall 321, Mt Pleasant, MI 48859, United States

<sup>b</sup> Cornell University, NY and Indiana University, Bloomington, IN, United States

### ARTICLE INFO

#### Article history:

Available online 25 May 2010

#### Keywords:

Infant health  
Birthweight  
Relative deprivation  
Prenatal tobacco use  
Maternal smoking  
Stress  
Inequality  
USA

### ABSTRACT

Some recent papers have suggested that relative deprivation could be negatively related to health through psychosocial stress and related behaviors. While there is a large literature on the association between *absolute* deprivation, i.e., income, and child health, little is known about the association between *relative* deprivation and child health. This paper asks: controlling for a measure of absolute deprivation, is a mother's relative deprivation related to infant health and maternal health behavior? There are many limitations regarding our measures and methods, and we interpret our results only as associations. Using US 2001 Natality Detail data, we find that pregnant women of lower socioeconomic status relative to other expectant mothers in their Metropolitan Statistical Area give birth to very slightly lighter babies and are more likely to smoke. A back-of-the envelope calculation shows the magnitude of the association we observe between relative deprivation and birthweight is close to what medical studies would predict if the probability of prenatal tobacco use were to increase by the amount we estimate.

© 2010 Elsevier Ltd. All rights reserved.

### Introduction

It is well accepted that income and socioeconomic status (SES) appear to protect health (Currie & Stabile, 2003; Currie, Decker, & Lin, 2008; Currie & Hyson, 1999; Case, Lubotsky, & Paxson, 2002; Newacheck, 1994; Smith, 1999). A more controversial relationship between income inequality and health has also been examined (see Subramanian & Kawachi, 2004; Wilkinson & Pickett, 2006 for reviews of the literature). However, the relationship between relative deprivation (RD, defined as one's SES or income relative to other members of society) has received much less attention and is the focus of our paper. While everyone in the community experiences the same level of income inequality, the extent of RD and its effect on health varies across individuals within the community (Eibner & Evans, 2005; Subramanian & Kawachi, 2004; Wagstaff & Doorslaer, 2000). The two concepts are related because the mean RD, particularly the Deaton RD measure, is in fact the same as the Gini coefficient, or the level of income inequality in the community.

Reagan, Salsberry, and Olsen (2007) is the only paper we are aware of that examines the RD-health association in the case of child health. Our work goes beyond that analysis in four ways. First, we examine prenatal smoking as a mechanism by which RD may be

connected to infant health, which Reagan et al. (2007) suggests may be a factor but is unable to examine because of lack of data. Second, we utilize a much larger sample of pregnant women which allows us to more precisely estimate the RD – infant health relationship. Third, we use a different reference group, i.e. other pregnant women, rather than all households in a mother's Metropolitan Statistical Area (MSA) or county of residence, because expectant mothers may come into more frequent contact with and compare themselves to other pregnant women. Finally, in addition to intrauterine growth restriction (IUGR), we consider other measures of infant health – preterm birth, birthweight, and APGAR scores.

RD has been associated with adverse health outcomes in several settings (Deaton, 2001; Eibner & Evans, 2005; Reagan et al., 2007), and psychosocial stress is posited to be the link between the two (Eibner & Evans, 2005; Deaton, 2001; Marmot, 1994; Reagan et al., 2007; Sapolsky, 1993; Yngwe, Fritzell, Lundberg, Diderichsen, & Burstrom, 2003). Some studies have tested this hypothesis empirically by examining the relationship between RD and stress-related risky behaviors (e.g. Eibner & Evans, 2005), while others have estimated the association between RD and health itself (e.g. Reagan et al., 2007; Yngwe et al., 2003).

An important indicator of infant health is birthweight, as being born below the critical cutoff of 2500 g is associated with higher likelihood of being stunted and underweight in childhood (Osmani & Sen, 2003). Many studies have found that low birthweight (LBW) is also associated with lower educational attainment and earnings into adulthood although disagreement remains about the magnitude (Almond, Chay and Lee, 2005; Behrman, Rosenzweig, &

<sup>☆</sup> We are grateful to John Cawley and George Jakubson for comments on an earlier version of this paper.

\* Corresponding author. Tel.: +1 989 774 3870.

E-mail address: [aparna.lhila@cmich.edu](mailto:aparna.lhila@cmich.edu) (A. Lhila).

Taubman, 1994; Behrman & Rosenzweig, 2004; Black, Devereux, & Salvanes, 2007; Currie & Hyson, 1999).

To understand the association between RD and infant health better, we examine the likelihood of preterm birth and IUGR because mothers' psychosocial stress could affect birthweight through these avenues. We should note that our data do not contain any direct measures of stress. As in other papers (e.g. Eibner & Evans, 2005), we only hypothesize that RD could cause stress and that in turn could affect the probability of engaging in risky behaviors such as smoking and also manifest itself in other ways related to infant health. Stress is an independent risk factor for preterm birth (Kramer, Seguin, Lydon, & Goulet, 2000; Parker and Smith 2003), and feeling stressed or anxious may make it harder for mothers to quit smoking, a risk factor for both preterm birth and IUGR (Kramer et al., 2000). We consider the 5-min APGAR score, a significant predictor of childhood health and cognition, as an additional outcome because birthweight may not be a meaningful predictor of long-term health (Almond, Chay and Lee, 2005) and because prenatal smoking and maternal anxiety are risk factors for lower APGAR scores (Berle et al., 2005; Haddow et al., 1988; Okah, Cai and Hoff, 2005).

Smoking is one of the most important risk factors for LBW (Shiono & Behrman, 1995; Wang et al., 2002), affecting birthweight by approximately 400 g on average (Evans & Ringel, 1999). Infants born to smoking mothers incur \$724 more in neonatal costs on average (Adams et al., 2002), not including costs due to complications during pregnancy and delivery, e.g. maternal bleeding, perinatal loss, and the costs later in life, e.g. LBW, sudden infant death syndrome, asthma, and other behavioral and cognitive developmental problems (Albrecht et al., 2004; US EPA, 1992). Prenatal smoking is a behavior for which data are available for almost all mothers; Natality Detail Files have been used to study prenatal smoking in several prior papers, e.g., Joyce and Grossman (1990), Evans and Ringel (1999), Ventura et al. (2003), and Lien and Evans (2005). The cost of smoking cessation, including psychological cost, and the benefits to child health gives rise to demand functions for prenatal health inputs which will vary across women, perhaps systematically related to her relative economic status in the community.

RD is a social comparison theory which argues that individuals compare themselves to those who are better-off than themselves, and pay little attention to those who are worse-off than themselves (Runciman, 1966). These negative comparisons may produce stress and anxiety which may affect individual health directly through high blood pressure, heart disease and suicide, or indirectly through participating in risky behavior such as smoking, consuming alcohol and poor eating habits (Marmot, 1994; Wilkinson, 1997; Eibner & Evans, 2005). There are two sources of biological evidence: the first comes from the relationship documented between social rank and health among baboons (Sapolsky, 1993), where higher ranked baboons used physical violence to exert their influence. Being subject to continual aggression triggered a biological stress response among the low-ranked baboons which increased their susceptibility to disease. The second evidence comes from the Whitehall studies where low-ranked British civil servants were found to be more likely to die due to coronary disease and cancers compared to higher ranked civil servants. This difference in the probability of mortality between the lowest and highest ranked civil servants has been attributed to RD (Marmot, 1986).

Living with richer neighbors could also affect infant health through the positive externalities generated by relatively well-off neighbors' activities, such as larger transfers through the tax system. Luttmer (2005), in an empirical study of U.S. households, found that although one's neighbors' earnings reduces own happiness, satisfaction with the city or town increases as neighbors'

income increases, holding one's own income constant. The author interprets this as meaning that individuals are aware of the advantages of living in an area with relatively wealthier neighbors.

There is little consensus in the RD literature regarding to whom individuals are most likely to compare themselves—coworkers, own birth cohort, residents of own state or MSA, or others who share characteristics like age, sex, race, and education. The general practice in the literature is to use geographical units of varying size, although exceptions exist. For instance, Deaton (2001) analyzed within-state RD; Deaton (1999) defined the reference group as national birth cohort; and Reagan et al. (2007) argued that mothers compare themselves to other MSA residents. The two narrowest definitions of a reference group are offered by Yngwe et al. (2003) and Eibner and Evans (2005): Yngwe et al. (2003) defined reference groups on the basis of occupation, age, geographic region of residence, and two time periods; Eibner and Evans (2005) defined an individual's reference group as those in his/her state of residence, and are same in age, education and race. Since our goal is to assess mothers' relative SES at the time of pregnancy, we define our reference group as all women in the MSA who gave birth around the same time. While this definition may be as ad hoc as the others used in this literature, we argue that expectant mothers tend to interact with and compare themselves more with like women in their MSA than other reference groups that have been used in the literature. Additionally, we consider several other reference group definitions – some that are broader, e.g., pregnant women in the state, and all women (pregnant and otherwise) in the MSA, and some that are narrower, e.g., MSA by education and MSA by race/ethnicity.

The RD – health literature has almost exclusively focused on adult health outcomes and found a negative association between the two: Deaton (2001) focused on mortality; Yngwe et al. (2003) examined self-rated health; and Eibner and Evans (2005) studied the probability of mortality especially due to tobacco-related cancers and coronary heart disease, body mass index, and risky health behaviors. As the exception, Reagan et al. (2007) study RD and prenatal health, and found that RD (defined with the Deaton and Yitzhaki measures) is associated with increased likelihood of IUGR.

## Theoretical framework

RD has long been a concept in the social science literature (Deaton, 2001; Duesenberry, 1949; Eibner & Evans, 2005; Frank, 1985; Marmot, 1986; Reagan et al., 2007; Runciman, 1966; Wilkinson, 1999; Yitzhaki, 1979). It was introduced to the economics literature by Yitzhaki (1979) and later modified by Deaton (2001).

Wilkinson (1999) notes that individuals respond to unhappiness and stress in many ways such as eating comfort foods, smoking and consuming alcohol. It is plausible that controlling for own income, being of lower SES relative to other mothers causes stress, and that stress may be greater the lower the woman's relative position. Since stress, anxiety, and emotional distress have been identified as reasons women may continue to smoke during pregnancy (see Floyd, Rimer, Giovino, Mullen, & Sullivan, 1993), we expect that relatively lower SES and the associated stress may make it more difficult for women to quit smoking in the prenatal period (Ludman et al., 2000).

Grossman (1972) conceptualized a model of health investment whereby mothers are agents who invest in the health stock of their unborn children, subject to constraints. Thus the stress that she experiences while pregnant and her prenatal investment decisions, including smoking, may be considered negative inputs into the infant health production function. Fig. 1 is a diagrammatic overview

Download English Version:

<https://daneshyari.com/en/article/953015>

Download Persian Version:

<https://daneshyari.com/article/953015>

[Daneshyari.com](https://daneshyari.com)