



Provider and patient influences on the formation of socioeconomic health behavior disparities among pregnant women

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ABSTRACT

Socially advantaged individuals are better positioned to benefit from advances in biomedicine, which frequently results in the emergence of social inequalities in health. I use survey and in-depth interviews with pregnant women and their health care providers from four Midwestern clinics in the United States, conducted in 2009 and 2010. I compare socioeconomic differences in intake of two new prenatal supplements: Vitamin D and omega-3 fatty acid. Although socioeconomic differences in omega-3 fatty acid supplementation emerged, there were no differences in the use of vitamin D. I argue that providers may have contributed to the prevention of a health disparity in vitamin D supplementation by implementing an aggressive uniform protocol. These results suggest that providers not only serve as a conduit for the dissemination of new biomedical information, the strength and uniformity of their recommendations have the potential to prevent or exacerbate socioeconomic differences in health behaviors.

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Introduction

On the heels of significant advances in longevity and quality of life, sociologist Charles Kadushin optimistically predicted that as “countries advance in their standard of living, as public sanitation improves, as mass immunization proceeds...the gross factors which intervene between social class and exposure to disease will become more and more equal for all social classes” (1964:75). This optimistic prediction not only failed to come to fruition, over the past decades health disparities in the United States have remained stable or even increased (Elo & Preston, 1996; Lauderdale, 2001; Marmot, 2004; Warren & Hernandez, 2007). These trends prompted the U.S. government to develop broad public health goals to eliminate them (U.S. DHHS 2000).

Alleviating such disparities requires that we understand them. An emerging literature (Chang & Lauderdale, 2009; Glied & Lleras-Muney, 2008; Kenkel, 1991; Link, Northridge, Phelan, & Ganz, 1998) identifies advances in biomedical information or technology as one point when health inequalities begin: Socially advantaged individuals are better positioned to take advantage of new health information. Health care providers serve as one of the main conduits for the translation of such information, which elevates their important role in disseminating information about advances in biomedicine and updating treatment protocol. Thus, what role do

providers play in the formation of socioeconomic disparities in health behaviors?

I provide empirical evidence of the formation of a health behavior disparity, while paying particular attention to the role played by health care providers. Using data from a mixed-method study that focuses on a specific case study – women who are pregnant for the first time, or *prima gravida* women – I explore women’s use of two new prenatal supplements, omega-3 fatty acid (O3FA) and vitamin D. Socioeconomic differences in consumption emerged for the first supplement, but not the second.

I argue that the strength and uniformity of providers’ recommendations, as well as individual differences between patients, may have played a role in these outcomes. Providers uniformly tested all patients’ vitamin D levels and recommended supplementation regardless of socioeconomic status (SES). In contrast, their recommendations for O3FA supplementation varied, and they were less inclined to recommend it to women with a lower SES because they perceived it to be unaffordable. Additionally, women with a higher SES were more likely to seek out and adhere to recommendations about supplements outside of their prenatal appointments. Combined, these processes may have contributed to the formation of a socioeconomic gradient in O3FA supplementation among pregnant women, but not vitamin D. These results emphasize the need to understand how the dissemination of new health information through clinic-level protocol and provider/patient behavior is associated with socioeconomic differences in health behaviors.

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Background

Advances in biomedicine and the formation or prevention of health disparities

To identify the origins of socioeconomic disparities in health, researchers are building on the notion that advances in biomedicine will disproportionately benefit socioeconomically advantaged individuals (Chang & Lauderdale, 2009; Glied & Lleras-Muney, 2008; Link & Phelan, 1995; Link et al., 1998; Gortmaker & Wise, 1997). These individuals are better situated to avoid health hazards when new health information or advances in biomedical technology become available, and over time socioeconomic differences in health behaviors develop.

The evolution of a socioeconomic gradient in smoking behavior provides a prime example. Following the U.S. Surgeon General's warning about the risks of smoking cigarettes, well-educated individuals were more likely to quit and less likely to start smoking in the ensuing decades (Kenkel, 1991; Kenkel & Liu, 2007). Individual differences in knowledge about smoking hazards account for a portion, but not all, of this gradient (Kenkel, 1991). Socioeconomic gradients in breast and cervical cancer screening also emerged as people with higher education and income levels were more inclined to utilize such preventive procedures (Link et al., 1998). Similarly, technological advances in screening and treatment have resulted in larger socioeconomic gradients in cancer mortality and survivorship for those that have a higher survival rate, compared to those that are not preventable (Glied & Lleras-Muney, 2008; Kogevinas & Porta, 1997; Miech, Pampel, Kim, & Rogers, 2011).

Observing these consequences of advances or innovations in biomedicine offers a vantage point to understand how health inequalities begin. But such advances or innovations need not always result in health inequalities, as Goldman and Lakdawalla (2005) provide evidence that two outcomes are possible. Socially advantaged people may disproportionately benefit from an innovation in health care, creating or exacerbating health disparities. Alternatively, an innovation that simplifies individual efforts, and is available to everyone, may cause health disparities to “contract” or prevent their formation. Goldman and Lakdawalla (2005), for instance, provide evidence that a simpler hypertension drug regimen was associated with a “contraction” in cardiovascular disparities.

The role of health care providers

Health care providers play a pivotal role as a conduit for the diffusion of new biomedical information when they translate it into professional recommendations (Lehoux, Denis, Rock, Hivon, & Tailliez, 2010). A separate line of inquiry has established that providers can play a role in the formation of socioeconomic and racial/ethnic disparities in health. In combination, this research suggests that health care providers may play a role in the formation or prevention of socioeconomic disparities in health behaviors based on new biomedical information.

The patient–provider interaction is often of primary importance for decisions about new health behaviors, especially those based on new health information. Providers play a key role providing health information (Hoffman et al., 2010), swaying medical decisions (Heritage & Maynard, 2006; Pescosolido, 1992), and influencing adherence to a range of medical approaches (Boyer & Lutfey, 2010; Osterberg & Blaschke, 2011). At times providers' racial/ethnic expectations or biases may also inadvertently contribute to health disparities (Smedley, Stith, & Nelson, 2002; van Ryn & Fu, 2003), as well as their moral evaluation of patient's attributes (Roth, 1972). Most pertinent for this research, providers' perceptions of their patients (van Ryn & Burke, 2000) and expectations about their patient's

probability or ability to adhere to treatment may be affected by their explicit or implicit socioeconomic biases (Lutfey & Freese, 2005).

Lutfey and Freese (2005) argue that socioeconomic status operates through proximate mechanisms at the clinic-level to contribute to differences in health behaviors. They found that physicians assessed higher SES patients to be more motivated in their diabetes treatment: Even though poorer patients more frequently skipped appointments because the personal costs were greater for them, physicians commonly ignored these external factors and inferred a lack of compliance. In turn, physicians taught a more sophisticated regimen of diabetes treatment to patients they perceived to be more compliant. Although their data and method preclude population-level assessments, their study – as well as the literature on the importance of the patient–provider interaction (i.e., van Ryn & Burke, 2000; van Ryn & Fu, 2003) – supports the notion that providers play an important role in the emergence of health-related disparities.

Health behaviors among women pregnant for the first time

I focus on a specific empirical example: consumption of two new prenatal supplements among prima gravida women, which is ideal because they encounter new pregnancy information for the first time. The supplements – vitamin D and omega-3 fatty acid (O3FA) – are also a prime example of new biomedical information and have only recently been recommended as prenatal supplements. Maternal consumption of vitamin D during pregnancy (beyond the standard prenatal supplement of 400 IU; Hollis & Wagner, 2004), promotes intrauterine bone growth, may prevent future osteoporotic fracture, and it is associated with a reduced chance of developing antibodies associated with diabetes and asthma symptoms (Holick, 2007; Javaid et al., 2006). Prenatal consumption of O3FA aids brain and eye development of the fetus (San Giovanni, Parra-Cabrera, Colditz, Berkey, & Dwyer, 2000; Sheila, 2008), but they may also be beneficial for hypertensive disorders during pregnancy (e.g., preeclampsia), metabolic concerns of children, and prevention of postpartum depression (Genuis & Schwalfenberg, 2006).

My first aim is to employ quantitative data from a new survey to test whether women's SES is associated with supplementation, while accounting for individual-level knowledge and clinic-level differences in supplement protocol. This approach merges two strands of research, one which focuses on advances in biomedicine as catalysts for the emergence of health disparities, and the other which concentrates on the role of providers in the formation of health disparities. Building on the first, I anticipate that socially advantaged women will be more likely to both understand the benefits of these supplements and consume them. Attending to the second, I then focus on clinic-level differences in supplement protocol as well as individual provider recommendations. Providers at one of the four participating clinics aggressively recommended vitamin D supplements, a difference which allows me to test whether patients were more inclined to adhere to stronger recommendations. Finally, I use qualitative data to explore how providers' individual interactions with women influenced their health decisions, in particular providers' expectations about their patient's propensity to consume the supplements. A conceptual framework of these individual, clinic, and health care provider factors is depicted in Fig. 1.

Methods

Study design

My study combines a quantitative component and two qualitative components. Women were sequentially enrolled from four

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