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Research Paper

Geo-social and health disparities among persons with disabilities living in Monterrey, Nuevo Leon and Dallas, Texas

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Abstract

Background: In low and high income countries alike, disability exacerbates social, economic, and health disparities, in spite of their differences.

Objective: This study seeks to identify factors that predict the circumstances people with disabilities face, including poverty.

Methods: A cross-sectional study design was employed using census track level data for the cities of Monterrey, Nuevo Leon, and Dallas, Texas, from Mexico 2010 and USA 2000 census data collections. Two methods, spatial autocorrelation and geographically weighted regression were used to identify spatial patterns of disability and to explore the relation between disability and context-specific socio-demographic factors.

Results: Results indicated that people with disabilities living below the poverty line experience high segregation levels in the semi-central zones of Dallas. In Monterrey, people with disabilities clustered in central areas of the city. A Geographically Weighted Regression (GWR) from both data analyses reported high goodness of fit ($R \geqslant 0.8$ for Dallas data and $R \geqslant 0.7$ for Monterrey data, respectively) and predictability of disability prevalence when social disadvantage factors such as unemployment, housing insecurity, household living conditions, and lack of education were present.

Conclusions: The divergent and sometimes conflicting trends in practices and policies addressing disability in low and high income environments renders a reexamination of the framework of disability. An understanding of local characteristics joins a grounded socio-cultural understanding of the various contexts that shape location-based social networks and political decisions in providing such an analysis.

Keywords: Disability; Geography; Disparity; Low- and high-income countries

Health is disproportionately distributed across geopolitical and social economic boundaries. Persons of lower educational levels, income, or occupational status experience worse health and die earlier than their better-off counterparts, irrespective of their country of residence.[1] In fact, some have documented that people with disabilities are among the poorest and most excluded demographic groups in the world.[2] Yet, disability report data indicate that increasing numbers of individuals are reporting disabilities in the United States.[3] Furthermore, individuals with disabilities experience a large number of barriers to health promotion and disease prevention.[3] No study to our knowledge has compared and analyzed disability prevalence profiling two different socio-economic contexts. Factors of social and economic inequity do exacerbate the risk of chronic illness and disability among people living in low and high income countries. Through a comparative analysis of health disparities and disability between two cities, this article seeks to provide insights into contemporary frameworks that attempt to understand the intersectionality between disability and health in diverse geo-social, economic, and cultural environments.

Twenty-one years after the enactment of the first disability act in history [Americans with Disabilities Act (ADA)], the World Report on Disability [WRD] (2011) revealed a chilling trend of disadvantages people with disabilities have faced in both low-income and high-income countries. These include educational, economic, and gender disparities in the distribution of resources and overall health.[4] This article reviews the connection between health disparities and contextual variables and provides several potential explanations for socio-economic-based disparities. It reveals that social, spatial, and policy health

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disparities among people with disabilities in Dallas and Monterrey have remarkably similar contours.

For example, educational completion rate is higher for people with no disabilities (7.03 years) compared to their counterparts (5.96 years). In a particularly sobering indicator, educational completion rate among women with disabilities is longer (6.26 years) than their counterparts without disabilities (4.98 years).[4] Across income levels, individuals with disabilities have limited opportunities and live in poverty at higher rates than people without disabilities. In the United States, a person with a disability is 18.6% more likely to be unemployed than person without disabilities and likelier to be a victim of housing and racial discrimination.[5,6] For people with a disability living in developing countries (where 80% of people with a disability live), the health disparities are even grimmer. In Mexico half of the people living in poverty are individuals with some type of a disability; a majority are unemployed (85%), uneducated (60%), and have no health insurance (64%).[7,8] Correspondingly, many countries in other parts of the world—Africa, Asia, Latin America, and the Caribbean face similar problems.[9] Studies have documented a vicious poverty–disability cycle in which people with disabilities are more likely to live in chronic poverty,[10,11] which in turn can lead to disabling conditions.[12–14] It is safe to conclude, therefore that disability is a problem of disproportional magnitude and inevitably leads to marginalization and spatial exclusion. Gaines (2004), for example, describes the risk of ghettoization in housing for individuals with disabilities that contributes to limited access to services and necessary resources.[15] Assessments of methodological approaches such as geomapping and spatial applications have been used to assess the level of segregation affecting people with disabilities who live in low-income environments.[16,17] Goli and colleagues (2014), for example, found evidence that the prevalence of a disability follows patterns in residential and gender distribution and these patterns reflect poverty and health inequity, causing spatial agglomeration and clustering of ''hot'' and ''cold'' spots of disability.[18]

Within this context, this paper seeks to describe and analyze disability prevalence in two distinct socio-economic geographical contexts. It postulates that factors of social and economic inequity may exacerbate health risk among populations, creating chronic illnesses and disabling situations in both low and high income countries.

Conceptual framework

Theories of disability have long recognized the importance of both the person and environment in understanding the nature and causes of disability.[19,20] To underscore the interaction between individuals with disability and their environment, the study used the person-in-environment theory, which examines the role of social structures in human development and critiques the approaches that are solely focused on individual factors.[21] An important piece of the person-environment framework is the concept of space and place. *Space* (the subjective livelihood of people) and *place* (the environmental surroundings) have a qualitatively distinguishable conceptual meaning.[22] Space can be a subjective construct that goes beyond its personalization,[22] but the meaning and usage of space can have a profound implication for disability and poverty indicators. It is within this thought and conceptualization that the social model of disability is to be re-evaluated.[23]

Empirical research has documented the etiology of many conditions that lead to disability, including environmental factors such as water, sanitation, and hygiene, pollution and other disabling environments such as political decision making, architectural factors of modernity and factors of social-cultural norms that are identifiers of geo-social and cultural environments.[24–26] Likewise, research has demonstrated a strong correlation between conditions of poor health and low levels of social and human development.[14] People with a disability who may lack access to social services, educational, and labor opportunities are more likely to be poor, marginalized, or socially excluded than their fully-able counterparts.[7,12] A reciprocal effect of enhanced vulnerability to chronic illness and impairments among people living in low socio-economic environments has also been reported.[9]

This study highlights the complex nature of individuals and their socio-environmental relations, particularly for people with a disability and their spatial and social representations.

Methods

Study area

The research explores the geographical inequities in disability in relation to census based socio-demographic factors of two cities: Monterrey, Mexico, and Dallas, Texas (Fig. 1 provides a locator map). Monterrey is the capital city of the state of Nuevo León and is the third largest metropolitan area in Mexico with a population of 4.19 million people. The Dallas-Forth Worth metropolitan area is the 9th largest metropolitan area in the United States, with a population of 6.5 million; the county considered here has 2.2 million.

Study analyses included all census tract areas considered part of the urban metropolitan area of Monterrey, and the most populated county in Dallas, Dallas county. The objective was to enhance sample parsimony and the representativeness of the population. The cities were chosen for this analysis because they have a long historical relationship in which immigrants from Monterrey settle in Dallas. Table 1 provides detailed information regarding the number of people with disabilities included in the final study.