



## Review Article

# Association between socioeconomic and physical/built neighborhoods and disability: A systematic review



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## ABSTRACT

The aim of this systematic review was to assess the association between the characteristics of the socioeconomic and physical/built neighborhoods and disability in basic activities of daily living (ADL) and/or instrumental activities of daily living (IADL). Six databases were searched. Fourteen from the 1811 identified studies were included. Neighborhoods with socioeconomic disadvantage were associated with ADL/IADL disabilities in 7 out of the 11 studies with this objective. Worst features of the physical/built neighborhoods were associated with disabilities in only 3 of the 7 studies that investigated this. Relative to the physical/built, the socioeconomic neighborhood and ADL/IADL disabilities were more consistently associated in the still scarcely available literature on the subject.

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## 1. Introduction

Disability is defined as the difficulty or loss of the individual's ability to exercise their social and daily life tasks independently (Nagi, 1976), usually classified in basic activities of daily living (ADL) and instrumental activities of daily living (IADL) (Guralnik et al., 1996).

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Global estimates indicated that in 2010, about 785 million (15.6%) of individuals had disability, of which 110 million (2.2%) experienced significant difficulties in activities of daily living (World Health Organization, 2012). Besides, it was found that the prevalence of disability ranged from 11.8% in countries with higher income to 18.0% in those with lower income. Moreover, a higher prevalence of disability was observed among women, people living in extreme poverty and elderly in developing countries (World Health Organization, 2012).

Beyond individual characteristics (Stuck et al., 1999), neighborhood factors are thought to influence disability. According to the International Classification of Functioning, Disability and Health (ICF), environmental characteristics are able to positively or negatively influence the functional capacity, affecting individuals, both in structure/function of the body and the performance of their social activities and participation in the community (World Health Organization, 2001).

Among the main characteristics observed on a contextual level, socioeconomic and those relating to physical and/or built neighborhood have been most frequently related to disability (Beard et al., 2009; Freedman et al., 2008; Philibert et al., 2013a). More affluent neighborhoods can provide better infrastructure and social cohesion, reflecting in fewer insecurity and support for maintenance of functional independence (Freedman et al., 2008). On the other hand, characteristics of the physical and/or built neighborhood, such as poor quality and connectivity of streets and sidewalks may hinder the practice of physical and social activities and contribute to the occurrence of chronic and disabling diseases (Garin et al., 2014).

Among the studies already published on this topic, there appears to be a lack of homogeneity with respect to the variables used to represent both the outcome and the context of the neighborhood. Despite the widespread use of theoretical models about the differences in concepts of impairment, limitation and disability (Nagi, 1976; World Health Organization, 2001; Verbrugge and Jette, 1994), there is a lack of standardization of the variables that represent each of these constructs and a wide variety of instruments to investigate them has been employed. In addition, the neighborhood has been assessed using different methods (objective, subjective), contexts (socioeconomic, physical, social, ethnic/racial etc.) and analysis (at one or more levels), making it difficult to compare studies, and consequently to establish cause-effect relationships between its attributes and disability.

To the authors' knowledge, no systematic review of studies investigating the association between socioeconomic and/or physical/built context variables and ADL and/or IADL disabilities has been conducted so far. Recently, a narrative literature review that investigated the environmental social factors related to disability was published, but its results were more focused on the description of the concepts, theoretical models and assessment methods employed in selected studies without evidencing the associations found with respect to their magnitudes, directions and statistical power (Philibert et al., 2015).

Considering that preserving functional independence is one of the basic requirements for the promotion of longevity with improved quality of life (Tavares and Dias, 2012), it is essential to recognize its major risk factors and in particular those that are receptive of interventions that are comprehensive and effective for the population. Health policies for active and healthy aging are already being directed by the improvement of physical spaces and accessibility of cities (World Health Organization, 2007); however, the focus on other neighborhood aspects, such as socioeconomic inequities, security and social participation, could contribute to the development of broader strategies with greater scope in (functional) health promotion.

Given the above, the objective of this systematic literature review was to assess the association between characteristics of socioeconomic and physical/built neighborhoods and ADL and/or IADL disabilities.

## 2. Methods

### 2.1. Protocol and registration

This systematic review was performed according the Preferred Reporting Items for Systematic Reviews and Meta-Analyses – PRISMA Checklist (Moher et al., 2009). The review protocol has been registered in the International Prospective Register of Systematic Reviews (PROSPERO), under the number CRD42016032914.

### 2.2. Definition of variables

Disability was classified in basic activities of daily living (ADL), which include all tasks related to self-care, and instrumental activities of daily living (IADL), which refer to the social independence (Guralnik et al., 1996). Outcomes assessed by questions that referred to the disability in the main activity of the respondent (at home and/or at work) were classified as belonging to both domains (ADL and IADL).

Socioeconomic variables were relating to individuals living in the same neighborhood, usually collected through administrative data, since individuals with disabilities tend to spend more time inside or near their residences (Glass and Balfour, 2003). The physical/built neighborhood included objective variables regarding resources, such as the supply and accessibility of services, and also regarding the problems and the design of the neighborhood, such as noise, traffic and pollution of the streets (Yen et al., 2009). Subjectively evaluated variables of socioeconomic and physical/built neighborhood were not considered. Variables related to the age or ethnic/racial distribution of the region, rural vs. urban residential location and climatic characteristics were not considered in this review.

### 2.3. Eligibility criteria

Studies that evaluated at least one task related to ADL and/or IADL disabilities as an outcome were included. Only original, observational studies, with representative samples of the study population and selected by probabilistic method, using a cross-sectional or longitudinal design were included. No restrictions were done for age group, date or publishing language. Theses, dissertations and monographs were not included.

Studies that evaluated exclusively physical and/or functional limitations as an outcome, like tasks involving mobility, force and/or balance were excluded because those outcomes precede the occurrence of disability (Nagi, 1976; Verbrugge and Jette, 1994; World Health Organization, 2001; Guralnik and Ferrucci, 2003), as well as those studies that analyzed the ADL and IADL together with other health-related issues to form a composite health indicator (e.g.: outcome “be healthy”, arising from the combination of disability and self-perceived health). Ecological studies, literature reviews, meta-analyses, case studies, charts, summaries, expert opinions and studies with qualitative analyses were also excluded. Institutionalized or individuals with illnesses were excluded because they are less exposed to the surrounding conditions that could influence the occurrence of the outcome.

### 2.4. Search strategy

The search was conducted in October 2015 in the databases PubMed, Scopus, Web of Science, CINAHL/Academic Search Premier (EBSCO) and PsycINFO. The controlled Medical Subject Headings (MeSH) were chosen, but when these could not be employed due to absence in the thesaurus or due to the excess of results inconsistent with the purpose of the study, the most common descriptors of articles with respect to the topic were used. In such cases, the search restriction was made to the descriptors, titles and abstracts (Appendix A).

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