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Review Essay

Neighborhood socioeconomic deprivation characteristics in child (0–18 years) health studies: A review

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ARTICLE INFO

Article history:

Received 10 April 2013
Received in revised form
10 March 2014
Accepted 28 May 2014

Keywords:

Residence characteristics
Neighborhood socioeconomic deprivation
Health outcome
All child

ABSTRACT

Background: Growing up in socioeconomically deprived neighborhoods has been shown to have negative health effects on children. However, the most recent review on which measures are used to investigate the association between neighborhood characteristics and child (0–18 year) health included studies only until 2004. Insight into more recent research is needed for the further development of these measures. **Objectives:** To review neighborhood socioeconomic deprivation characteristics used in recent studies investigating the relationship between neighborhood socioeconomic deprivation and child health. **Methods:** Sensitive search in MEDLINE, Embase, PsycINFO, Sociological Abstracts databases (2004–2013). **Results:** Ultimately, 19 studies were included. We found ten neighborhood socioeconomic deprivation constructs, of which income/wealth, employment, and education were most frequently used. The choice for neighborhood characteristics seemed independent of the health outcome and in most cases was not based on a specific theoretical background or earlier work. **Conclusion:** Studies vary regarding study designs, measures and outcomes. Researchers should clearly specify their choice of neighborhood socioeconomic deprivation characteristics; preferably, these should be theory-based and used consistently.

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1. Introduction

Because children and adolescents are influenced by the neighborhoods they live in, interest in the effects of neighborhood socioeconomic deprivation on child health (0–18 years) has increased in recent years. Neighborhood socioeconomic deprivation is the relatively low physical (e.g. houses for sale, graffiti), social (e.g. unemployment, non-voter) and economical position (income, education level) of a neighborhood (Galobardes et al., 2006, 2007; Krieger et al., 1997). Evidence shows that growing up in socioeconomically deprived neighborhoods has negative health effects on children and adolescents. For example, the risks of low birth weight, childhood injury, and abuse are twice as high in deprived areas compared to non-deprived areas (Earls and Carlson, 2001; Leventhal and Brooks-Gunn, 2000; Messer et al., 2006; Pickett and Pearl, 2001; Sampson et al., 2002; Sellstrom and Bremberg, 2006). According to Leventhal and Brooks-Gunn (2000), neighborhood factors explain 5% to 10% of the variation in children's development, well-being, and health. However, the validity of the studies on neighborhood effects on health (including child health) has been questioned. Studies vary with regard to outcomes, study designs, and measures of neighborhood socioeconomic deprivation (Diez Roux, 2001; Sellstrom and Bremberg, 2006; Veugeliers et al., 2008). The latter in particular may seriously affect any findings on differences in child health according to neighborhood socioeconomic deprivation, because an invalid measurement of socioeconomic deprivation may lead to spurious associations (Leventhal and Brooks-Gunn, 2000).

We previously showed that the age-composition of neighborhoods may affect the validity of the measurement of neighborhood socioeconomic deprivation. Having only primary education occurs much more frequently among elderly than among young adults. That leads to an increase of the proportion of low educated people in neighborhoods with a larger share of elderly. This may bias findings and at least affects the accuracy of the measurement of this association (Reijneveld and Gunning-Schepers, 1994).

Unfortunately, there is still no consensus on how to define and operationalize neighborhood socioeconomic deprivation. No recent review is available on neighborhood socioeconomic deprivation characteristics in child health research. Although Pickett and Pearl (2001), Leventhal and Brooks-Gunn (2000) and Sellstrom and Bremberg (2006) summarized the evidence on the effects of neighborhood context on health outcomes, they provided neither overviews nor full discussions of the neighborhood socioeconomic deprivation measures used. The only review on this topic, that of Rajaratnam et al. (2006) is rather outdated, as it included no studies published after March 2004, and did not focus specially on socioeconomic characteristics of neighborhoods. Their review concerned neighborhood effects with regard to maternal and child health, and provided an overview of the types of neighborhood constructs explored and the measures used. They found that a wide diversity of approaches was used to measure neighborhood deprivation characteristics and that the most widely utilized source of data was that of administrative records from the census or local government authorities. Few authors of their selected studies were explicit about why certain indicators were selected to measure these constructs. In addition, the authors (Rajaratnam et al., 2006) did not address individual or family-level factors that were used to adjust for possible aggregation effects, while they reviewed and summarized the studies with regard to choice and operationalization of neighborhood factors.

An overview of the neighborhood socioeconomic deprivation constructs and measures that have been used recently and which try to address the above mentioned limitation may serve as a

guideline for future studies on neighborhood socioeconomic deprivation and child health. Therefore, the aim of this study was to summarize 1) the neighborhood socioeconomic deprivation constructs and measures and 2) family level deprivation characteristics that were used in studies published after March 2004 investigating the relationship between neighborhood socioeconomic deprivation and child health.

2. Methods

2.1. Search strategies and procedures

We identified relevant quantitative studies that examined the relationship between neighborhood characteristics and child health through searches conducted in the MEDLINE, Embase, PsycINFO, and Sociological Abstracts databases. The search was limited to studies published from March 2004 through January 2013 to include all studies not covered in the previous review on this topic (Rajaratnam et al., 2006). Studies were identified by key word searches using MeSH terms. Manual reference checking was used to further reduce the likelihood of missing relevant studies. MeSH terms used to select the articles were residence characteristics, neighborhood, deprivation, area level and socioeconomic, underprivileged, poverty areas, health outcome, and all child (0–18 years) (Table 1). The search was performed by a librarian and by one of the authors (CLV), and aimed to be highly sensitive to ensure the inclusion of as many relevant studies as possible.

2.2. Inclusion/exclusion criteria

Inclusion criteria for studies were: (i) published in English in peer-reviewed journals, (ii) clear descriptions of the neighborhood socioeconomic deprivation measures used, (iii) studied the direct relationship between neighborhood socioeconomic

Table 1
Search strategy in Medline January 29, 2013.

Set	Search terms	Result
1	residence characteristics/	(17260)
2	*residence characteristics/	(5633)
3	neighbo?rhood*.ti. and 1	(1582)
4	(neighbo?rhood adj3 deprivation).ti.	(85)
5	deprivat*.ti. and 1	(152)
6	*poverty areas/ and 1	(241)
7	(neighbo?rhood adj3 disadvantage).ti.	(52)
8	(underprivileged adj3 area*).ti.	(27)
9	(deprived adj3 neighbo?rhood*).ti.	(36)
10	(area level and socio*).ti.	(29)
11	(poor adj3 neighbo?rhood*).ti.	(35)
12	(area adj3 deprivation).ti.	(93)
13	or/2–12	(6286)
14	"Outcome Assessment (Health Care)"/	(43695)
15	exp health status/	(92720)
16	health outcome.mp.	(1797)
17	exp *mental disorders/ep	(56871)
18	exp *diseases (non mesh)/ep	(480207)
19	or/14–18	(627652)
20	13 and 19	(1613)
21	limit 20 to "all child (0 to 18 years)"	(640)
22	limit 21 to yr="2000–Current"	(569)
23	("2011*" not "201101*").ed.	(878160)
24	22 and 23	(72)
25	2012* or 2013*).ed.	(1090977)
26	22 and 25	(96)

Note: The search strategies for the Embase, PsycINFO, and Sociological Abstracts databases are comparable and available upon request, from the first author.

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