Received: 23 January 2024 | Accepted: 21 March 2024

DOI: 10.1111/phn.13323

PHN PUBLIC HEALTH NURSING WILEY

REVIEW SUMMARY

The relationship between neighborhood social capital and health from a biopsychosocial perspective: A systematic review

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Abstract

Background: The Social Determinants of Health (SDH) influence the health of people throughout their lives, and can be positive, protective or risk factors for the population and, in turn, biological, psychological, or social. The social environment conditions the health status of the neighborhood, population, and social group, which can be a health asset due to its strong psychosocial and socio-cultural influence. Social capital is a community asset of the healthy neighborhood that must be known in order to promote community health.

Objectives: The objective is to determine the relationship between social capital and neighborhood biopsychosocial health.

Methods: A systematic review was conducted based on PRISMA: PubMed, Wos, Scopus, Embase, and Cochrane databases. The search was conducted from January to March 2023. Three authors independently extracted data using a structured form.

Results: Out of 527 records, 17 results passed the inclusion and exclusion criteria. The positive and statistically significant relationship between neighborhood social capital (NSC) and the physical and mental health of neighbors is confirmed, that is, the higher the NSC, the more exercise, better oral health in children and physical health in pregnant women, lower tobacco consumption and lower prevalence of human immunodeficiency virus. At the psychological level, greater NSC leads to better mental health, mental well-being, life satisfaction, quality of life, self-perceived health, higher cognitive function, and less depression.

Conclusions: In conclusion, social capital is an important SDH and health asset that influences neighborhood biopsychosocial health and should be known and researched for health promotion in community settings. More evidence is needed to support the results obtained.

KEYWORDS
neighborhood characteristics, residence characteristics, social capital

1 | INTRODUCTION

Since the World Health Organization (WHO) pointed out that the health status and well-being of the population depend on the Social Determinants of Health (SDH) (CSDH, 2008), there has been a paradigm shift that shows that people's health is not the result of their decisions or their will, but the product of their interaction with the environment in which they live. These SDH can be positive health factors that contribute to the maintenance or enhancement of health (e.g., good relationships in the community, emotionally rewarding social relationships in the neighborhood or adequate housing), protective factors that eliminate or reduce risk or facilitate resistance to disease (e.g., perceived social support) or risk factors that favor the onset of disease or the aggravation of existing disease (e.g., hygiene measures, sanitation, overcrowding, crime rates, etc.) (Dahlgren & Whitehead, 2007; Marmot & Wilkinson, 2005). In other words, SDH are circumstances in people's environment that can not only influence the onset or prevention of disease, but also shape the health patterns of a population, condition the way people experience health or disease status (Cockerham, 2021), contribute to health inequalities and inequities, and highlight the high susceptibility of health to the social environment (Marmot & Wilkinson, 2005).

From a health context, there are different models that contribute to explaining the multicausality of the state of health or illness of individuals, families, and communities. They coincide in including the population group called neighborhood as a DSS, the neighborhood being understood as a multifunctional system and social group formed by individuals from the same building, neighborhood or municipality and characterized by civic engagement, collective values, trust, and strong relationships; thus, civic engagement constitutes a potential antidote against increasing urban densification and loss of structures (Levine et al., 2018). According to Lalonde's Model, neighborhood is framed by the determinant environment, referring to psychosocial and socio-cultural influences, and is related to people's state of health or illness (Lalonde, 1974; Shmarina et al., 2021). Engel's (1977) Biopsychosocial Model of Health sustains and corroborates that the social factor neighborhood and its social interaction influence and condition the health or illness of individuals. For Bronfenbrenner's Ecological Systems Theory, the neighborhood belongs to the microsystem, that is, the first level of the theory (Lehman et al., 2017). According to the Dahlgren–Whitehead Rainbow Model, the neighborhood is included in the second layer, within the social and community networks (Dahlgren & Whitehead, 2021; Dyar et al., 2022). Finally, from Antonovsky's Salutogenic Model, neighborhoods are important health-promoting environments that are particularly effective in promoting the social processes that lead to improved health and well-being of their constituents, the neighbors (Antonovsky, 1991; Lindström & Eriksson, 2006; Vaandrager & Kennedy, 2022). However, the reality of health policy and scientific evidence shows that SHD is the most neglected and forgotten, compared to other determinants, despite their strong influence on health (Suls & Rothman, 2004). Furthermore, the neighborhood and community are the least researched within social settings despite being effective in promoting health and well-being (Mohnen et al., 2012; Suls & Rothman, 2004; Vaandrager & Kennedy, 2022, 16) because it is the environment where a large part of people's activities take place, both those that meet daily needs and leisure activities (Mohnen et al., 2012).

When the WHO relied on the salutogenic model for the search for and promotion of health, it emerged the survey and exploration of the health assets of communities that act as protective factors, that is, with the potential to improve the capacity of individuals, groups, communities, populations, social systems, and/or institutions; to preserve and improve health and well-being; and to reduce attitudes and behaviors contrary to the concept of health (Cofiño et al., 2016; Morgan & Ziglio, 2007). At the community level, family and friendship networks, intergenerational solidarity, and community cohesion within the neighborhood and other affinity groups (such as associations, religious, and/or political groups) are health assets. Social capital is considered a health asset in the salutogenic model and is one of the General Resilience Resources (GRR) (Cofiño et al., 2016; Kawachi et al., 2010) with the potential to promote health independently of the social and economic characteristics of the community (Morgan & Ziglio, 2007). It is, therefore, necessary to engage and work with the asset model in order to generate strong evidence to demonstrate why investing in the assets of individuals, communities, and organizations can help reduce the health gap between the most disadvantaged in society and those with better health and conditions (Morgan & Ziglio, 2007).

Social capital is a healthy factor at the collective level and is defined as the patterns of interpersonal commitment, trust, and obligation between individuals within social structures, representing the norms and networks that enable cooperation and social participation of people, facilitating collective help (Kawachi et al., 2002; Putnam, 1993). They are the resources available to individuals and society through social relationships, gaining benefits from cooperation in the community (Kawachi et al., 2002; Silva et al., 2016). Social capital can be cognitive, relating to the mental processes, ideas, culture, ideology, and beliefs that can influence social behavior, and also encompasses interpersonal trust, reciprocity, belonging, and cohesion. Social capital can be structural, the role or participation an individual plays in society and the rules adopted by the community, and includes the extent and intensity of ties or associational activity (Harpham et al., 2002).

Specifically, neighborhood social capital (NSC) is the access to resources that are generated by relationships in a well-connected and cohesive environment within an appropriate neighborhood community that is conducive to such an environment, benefiting people's health. It is known that NSC can lead to pro-health behaviors that also result in better overall health of neighbors, meeting needs, improving well-being or overcoming adverse situations, enabling collective action (Looman & Lindeke, 2005; Mohnen et al., 2012). It is also based on the level of social trust in a community, the degree of security people feel together, the amount of help they give each other for their own and collective benefit, and the degree of involvement in community affairs (Watt, 2002). Simply living in a neighborhood where people look out for each other is beneficial (Looman & Lindeke, 2005; Mohnen et al., 2012). NSC plays a key role in monitoring and promoting public well-being, influences the use of resources and services, provides social

support, and its lack can be a risk factor for neighborhood health and health behaviors (Cattell, 2001; Daoud et al., 2016; Tucker et al., 2021). Furthermore, it can contribute to the creation of health-friendly neighborhoods through the active participation of citizens in the creation of their daily living areas. Therefore, the study and promotion of this field of research can contribute positively to health outcomes at the individual, collective, and community levels by facilitating the development of individual psychological resources (Mohnen et al., 2012).

Social capital is considered an SDH related to better health status (Song & Jiang, 2022) and is an asset in community and neighborhood health that is of particular importance within the competencies of the family and community nurse in the area of health promotion (Kemppainen et al., 2013; Looman & Lindeke, 2005). Nurses have a particular interest in the degree of connectedness of neighborhoods and communities as there is increasing scientific evidence published from different fields or areas of knowledge and associated with positive health outcomes (D'Alessandro & Appolloni, 2020; Diez-Roux & Mair, 2010; Michael & Yen, 2014; Palumbo et al., 2019). The social capital of communities has been extensively studied in the field of gender-based violence (Benavides et al., 2018; Daoud et al., 2017; Ilabaca Baeza et al., 2022; Voith et al., 2021), alcohol consumption (Brenner et al., 2015; Jackson et al., 2014, 2016; Theall et al., 2009), cancer detection and screening (Beyer et al., 2016; Knott et al., 2020; Leader & Michael, 2013), or, in more current studies, related to the COVID-19 pandemic (Murayama et al., 2021; Ransome et al., 2021). However, most of this literature focuses on collecting negative health impacts in relation to the socio-demographic characteristics of a neighborhood. For example, the economic context of a neighborhood to explain neighborhood inequalities and the negative influence on people's health status (Ghaly & Jivraj, 2022; Hou & Myles, 2005; Kawachi et al., 1997; Wen et al., 2003-51); in relation to mortality, cardiovascular events and cancer (Choi et al., 2014), alcohol consumption and/or smoking behaviors (Jackson et al., 2014; Lindström, 2005; Murphy et al., 2014; Ng Fat et al., 2017; Thorlindsson et al., 2012), lack of physical activity (Wendel-Vos et al., 2008), sleep insufficiency and sleep disorders (Kim et al., 2022; Mayne et al., 2021); in relation to mental health, mental illnesses, and disorders caused or aggravated by NSC (De Silva et al., 2007; Ehsan & De Silva, 2015; Stafford et al., 2008); ultimately, in relation to people's self-perceived or self-assessed health status (Almeida Bentes et al., 2017; Giatti et al., 2008, 2010; Rodrigues et al., 2015, 66). Motivations for studying these relationships in the context of illness arise from the need to develop and implement health interventions in the community (Coll-Planas et al., 2017; Flores et al., 2018; Villalonga-Olives et al., 2018).

There are some previous reviews linking NSC to positive health impact. A 2013 systematic review (Vyncke et al., 2013), with eight resulting studies, to study the mediating role of NSC between neighborhood deprivation and the health and well-being of children and adolescents from disadvantaged neighborhoods. The findings were inconclusive, as some did show benefits, some did not, and some found no relationship. Another from 2014, also in children and adolescents, with 55 results, found that higher levels of NSC were associated with better mental health, others identified no relationship and the minority showed a negative relationship (McPherson et al., 2014). In 2018, NSC was associated with Diabetes Mellitus control, with only three studies finding better control of HbA1c, thus better control of the disease (Flôr et al., 2018). Finally, in 2020, 11 included studies examined how urbanization and urban living affected depression outcomes (Sampson et al., 2020). They found that urban living resulted in elevated odds or increased symptoms of depression ($n = 4$), was a protective factor ($n = 3$), was unrelated ($n = 2$), and was inversely related to depression ($n = 2$). However, these reviews, besides being inconclusive, lack a biopsychosocial and salutogenic perspective, as they are based on the health-illness binomial, that is, the Biomedical Model of health. It is, therefore, important to carry out a current review that takes into account physical, psychological, and social factors related to the NSC.

Thus, health research does not sufficiently cover interpersonal factors, reducing the study of NSC to single static measures of related constructs, rather than delving into the complexities and real effects of the integrated interpersonal relationships of individuals and communities (Lehman et al., 2017; Suls & Rothman, 2004). The study and strengthening of NSC from a salutogenic perspective can be an essential way in the reduction of socio-economic inequalities in health; an important contribution in the context of public health by making known the positive impact of social capital on health, more visible in disadvantaged groups or environments; a strategy for preventive and health-promoting action with new holistic research findings that study communities from an approach of talents and skills in the physical, psychological, and social spheres; a new area of knowledge and intervention for family, community, and public health disciplines with models of care centered on neighborhood and community relationships; and a new contribution of knowledge to improve the competencies of health professionals, urban neighborhood policies and practices, and community and community-driven health programs by adopting an approach based on social capital as an important SDH and on the connection between individuals in the same neighborhood and the benefits of the relationships between them. Therefore, this paper aims to review the existing scientific evidence on the relationship between social capital and neighborhood biopsychosocial health.

2 | METHODS

2.1 | Search strategy

This systematic review was conducted and reported using the PRISMA guidelines (Page et al., 2021). This review was preregistered in PROSPERO (CRD42023474297).

The search was carried out from July to September 2023 in the databases Medline (Pubmed), Web of Science (WOS), Scopus, Embase, and Cochrane. Descriptors in Health Sciences (DeCS) and free terms extracted from the published evidence on the subject of the study were used to elaborate and use the specific search strategy: (neighborhood OR neighbor OR "residence characteristics" OR "neighborhood characteristics") AND "Neighborhood social capital" AND (health OR "biopsychosocial health") AND "Social Capital". No temporality and

study design filters were applied in order to aggregate the most evidence on the study objective. A total of 527 records were obtained and assessed. Two independent researchers (B.M.-M and R.R.C) searched the databases simultaneously. They separately screened the records and, after applying the eligibility criteria, agreed on the records for full-text reading and independently continued the screening until the results were included in the review. A third investigator (J.A.P.-B), with 25 years' experience in public health, was involved to clarify discrepancies regarding the number of final results. Despite consulting reference lists and public health and family and community health journals, no records were obtained through other sources or additional search methods. In addition, the academic search engine Google was assessed with a view to detect possible gray literature.

2.2 | Eligibility criteria

Manuscripts were included if they were in English, Spanish, or French, as well as all publication dates due to the lack of precedents with the same study objectives. We excluded duplicate records, review, and/or meta-analysis studies, records that after reading the title, abstract, and/or full text were not related to the subject studied and/or whose objectives and results did not correspond to the purpose of this study. Likewise, studies with low methodological quality were excluded after being assessed using the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) critical reading checklist (von Elm et al., 2008). This tool assessed whether the studies included in the review describe and report adequately and transparently. It is a checklist for cross-sectional studies containing 22 essential items that relate to the title, abstract, introduction, methods, results, and discussion sections, as well as other relevant sections of the articles. One point was awarded for each item fulfilled by the study and zero points for the item not achieved. The verification process was carried out independently by both reviewers. The cutoff points were <10 points for low quality, 11–16 points for medium quality, and 17–22 points for high quality.

2.3 | Screening, extraction, and analysis of results

The exclusion criteria were applied to the total number of initial records ($N = 527$) and the following were eliminated: duplicate records ($n = 319$), those which, based on the title and abstract, did not deal with the subject matter or respond to the objectives of this work ($n = 169$), those with a review study design ($n = 10$), those which, after a complete reading, did not show findings related to the objectives of this review ($n = 10$) and low methodological quality ($n = 10$), those with a review study design ($n = 10$), those that after full reading did not show findings related to the objectives of this review ($n = 10$) and low methodological quality ($n = 2$), with the final 17 studies being the results of this systematic review (Figure 1).

One of the reviewers (N.J.-P.) was in charge of extracting the data using an ad hoc data extraction form, which was subsequently verified by another reviewer (M.P.-C). The data were presented in tables summarizing the main characteristics of the resulting studies in terms of main author of the study, country in which the study was carried out, year of publication, sample, objective of the study, study design, main variables, method of extracting the results and most relevant results. Subsequently, a qualitative analysis of the results was carried out by means of narrative and grouping by similarity and controversy of the findings according to the biopsychosocial model with its physical, psychological, and social components.

3 | RESULTS

3.1 | Main characteristics of the resulting studies

Most of the studies were conducted in a single country such as China, Japan, USA, Netherlands ($n = 3$, 17.6%, respectively), Taiwan, Norway, UK, and Belgium ($n = 1$, 5.8%, respectively) and only one multicentre study was found involving populations from China, Ghana, India, Russia, and South Africa ($n = 1$, 5.8%). Studies were published between 2010 and 2023, with no publications from 2013 and 2018. The predominant language of publication was English (100%). In terms of study design, they were all quantitative observational, mostly cross-sectional ($n = 14$, 82.4%) versus longitudinal ($n = 3$, 17.6%). The study with the largest sample had 79,210 residents and the one with the smallest sample had 472 residents. The overall mean was 17,858 persons. It is worth noting that only one study used a validated scale to measure the concept of social capital (91), called the Social Capital Questionnaire for Adolescent Students (SCQ-AS) with 12 items in three dimensions: "school trust and social cohesion," "perceived safety in school and neighborhood," and "neighborhood trust and social cohesion." The remaining studies used items obtained from different sources to measure the concept of SCN. The items ranged from 2 to 16 and most of them conducted internal consistency analyses to give validity to the items representing the main variable. Some authors studied specific areas contained in the CSN concept such as cognitive social capital, structural social capital, neighborliness, social trust, informal social control, disorder, social interaction, frequency social interaction, quality of facilities and amenities, civic engagement, trust and cooperative norms, and social cohesion. All the studies responded to the objective of this work in the physical and psychological areas of the biopsychosocial model. No studies were found whose results could be included in the social area because they contained statistically significant or nonsignificant relationships between CSN and the social health of the residents of a neighborhood.

3.2 | Relationship between NSC and the physical health of their neighbors

Four studies (Mohnen et al., 2012; Morozumi et al., 2020; Ransome et al., 2017; Reynolds et al., 2015-16, 77–79) have been found that relate the NSC to the physical health of its members (Table 1). The components related to physical health that have been studied are

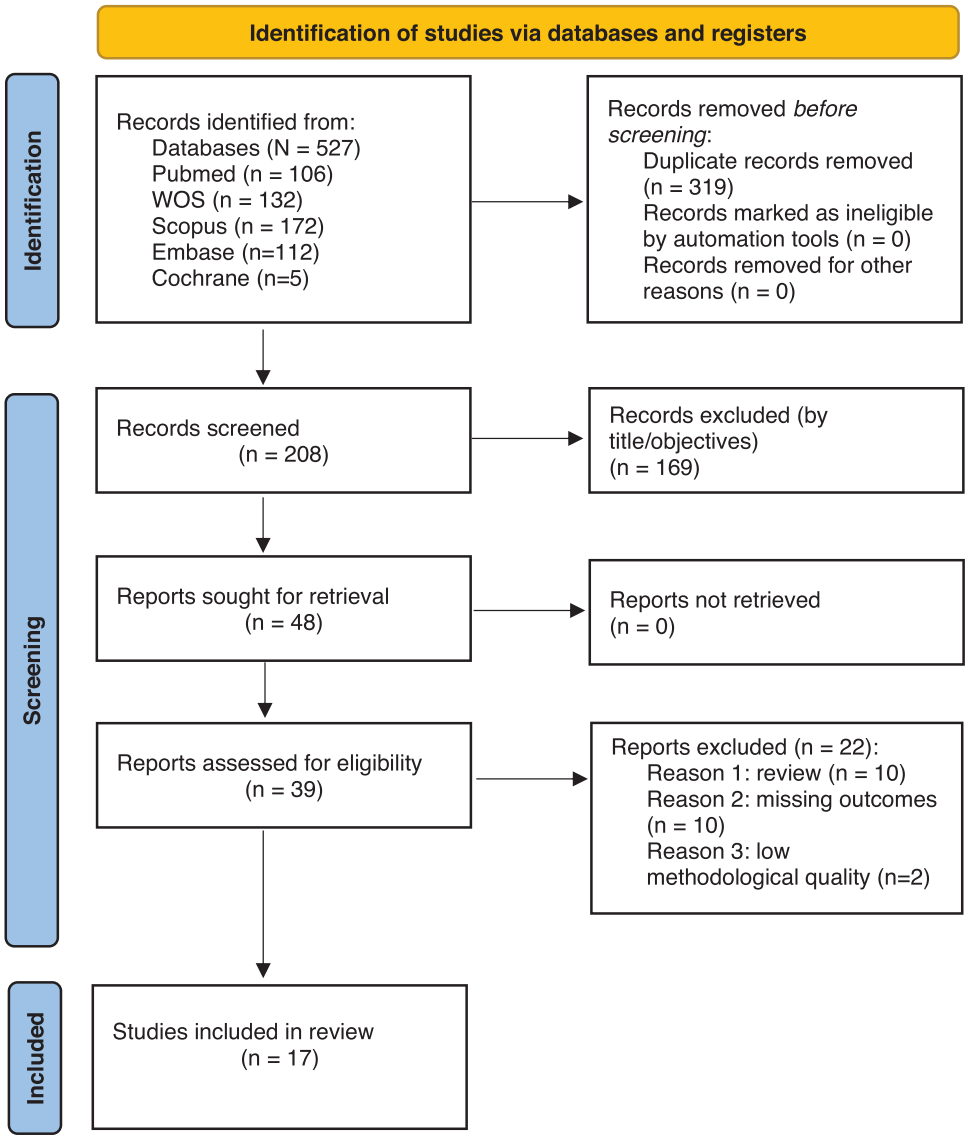

FIGURE 1 PRISMA flowchart describing the selection of articles. [Color figure can be viewed at wileyonlinelibrary.com]

smoking, alcohol consumption, sleep habits, eating habits, physical activity, and HIV disease/diagnosis in the adult population, oral health in the child population and general physical health in the pregnant women population.

The authors found statistically significant and positive relationships between NSC and being a nonsmoker and having an active life in adults, having good oral health in children and good physical health in pregnant women. In contrast, there was a negative and statistically significant relationship with HIV diagnosis, such that the more CSN the less HIV-positive diagnoses, the positive health outcome. While the positive association with later HIV diagnosis has an impact on health because it suggests that the more social involvement in the neighborhood, the later one is diagnosed with HIV. Unfortunately, studies have failed to demonstrate statistically significant relationships between CSN and sleep patterns, healthy eating habits, and alcohol consumption.

3.3 | Relationship between CSA and the psychological health of their neighbors

Fourteen studies (Dassopoulos et al., 2012; Hamano et al., 2010; Huang et al., 2021; Huang et al., 2023; Jiang et al., 2020; Jonsson et al., 2020; Lagaert et al., 2021; Maass et al., 2016; Mao et al., 2022; Mohnen et al., 2011, 2014; Mori et al., 2022; Morozumi et al., 2020; Nieuwenhuis, 2020, 87–92) have been found that address the relationship between NSC and mental health. Some studies look at the concept of mental health in general, others at self-rated health (self-rated health [SRH], life satisfaction [LS], quality of life [QoL]) and there is one specific study for the cognitive function defined in terms of memory, recall and retrieval (Jiang et al., 2020) and two for depression (Huang et al., 2023; Mao et al., 2022). The populations studied include students, adolescents, adults, elderly and pregnant women (Table 2).

TABLE 1 Summarizes characteristics of included studies. Studies linking neighborhood social capital to the physical health of neighbors.

Reference First author, year, country	Study aim	Method Design, sample (*N*), data collection, statistical analysis	Method to measure the NSC	Results
Mohnen et al., 2012 Netherlands	To study if health- related behaviors explain the association between NSC and individual health.	Cross-sectional descriptive study. *N* = 9253 residents living in 672 neighborhoods. Survey: Second Dutch national survey of general practice, Dutch housing demand survey and statistical register information. Multilevel logistic regression analysis (odds ratios, 95% confidence interval in parentheses).	Three questions (5-point Likert scale): (i) whether people in the neighborhood know each other, (ii) whether neighbors are nice to each other, (iii) whether there is a friendly and sociable atmosphere in the neighborhood.	NSC was associated positive and significant with being a nonsmoker [1.54 (1.08/2.19)]. Not associated with reduction of moderate alcohol intake [0.96 (0.93/1.00)] or the healthy sleep patterns [1.02 (1.00/1.05)] and eating habits [1.27 (0.86/1.86)]. People living in neighborhoods with a high level of NSC have a 118% greater chance of being physically active than people living in low NSC [2.18 (1.26/3.80)].
Reynolds et al., 2015 United States	To examine the relationship between two types of social capital- family and neighborhood- and the parent-reported oral health of Iowa's children.	Cross-sectional descriptive study. *N* = 2186 households with children between 2 and 17 years old. Survey: Iowa Child and Family Household Health Survey. Descriptive and mixed-effects linear regression	Four questions (4-point Likert scale) (i) People in the neighborhood help each other out, (ii) We watch out for each other's children in this community, (iii) There are people I can count on in this community, (iv) If my child was outside playing and got hurt or scared, there are adults nearby who I trust to help my child.	Significant positive associations were found between child oral health status and NSC ($\beta = .093$, $SE = .033$, $p = .005$).
Ransome et al., 2017 United States	To examine if high NSC could facilitate earlier diagnosis of HIV and higher rates of linkage and HIV care engagement.	Cross-sectional descriptive study. *N* = 8608 residents living in 332 neighborhoods. Survey: Southeastern Pennsylvania Household Health Survey. Correlations and multivariable analysis	Four questions (4-point Likert scale): (i) I feel that I belong and am a part of my neighborhood, (ii) Most people in my neighborhood can be trusted. (iii) Please rate how likely people in your neighborhood are willing to help their neighbors with routine activities such as picking up their trash cans, or helping to shovel snow. Would you say that most people in your neighborhood are always, often, sometimes, rarely, or never willing to help their neighbor?. (iv) How many local groups or organizations in your neighborhood do you currently participate in such as social, political, religious, school-related, or athletic organizations?	Late HIV diagnosis was significantly correlated with social cohesion ($r = .15$, $p = .01$) and social participation ($r = .27$, $p = .01$). Engagement in HIV care was inversely correlated with social Participation and collective efficacy ($r = -.12$, $p = .05$). Higher average neighborhood social participation was associated with higher prevalence of late HIV diagnosis ($\beta = 1.37$, $SE = .32$, $p = .001$), linked to HIV care ($\beta = 1.13$, $SE = .20$, $p = .001$) and lower prevalence of engaged in HIV care ($\beta = -1.16$, $SE = .30$, p = .001). Higher collective engagement was associated with lower prevalence of linked to HIV care ($\beta = -0.62$, $SE = .32$, $p = .05$).
Morozumi et al., 2020 Japan	To investigate the impact individual and NSC have on the physical and mental component of pregnant women.	Cross-sectional descriptive study. *N* = 79,210 pregnant women Survey: Japan Environment and Children's Study, questionnaires and medical records. Average treatment effect (ATEs) and inverse probability weighting estimator.	Two questions (4-point Likert scale): (i) Neighbors trust each other. (i) Neighbors help each other.	A positive impact of NSC on the physical health score (ATEs = 0.50 a 0.90).

TABLE 2 Summarizes characteristics of included studies. Studies linking neighborhood social capital to the psychological health of their neighbors.

Reference First author, year, country	Study aim	Method Design Sample (*N*) Data collection Statistical analysis	Method to measure the NSC	Results
Hamano et al., 2010 Japan	To investigate the association between NSC and mental health.	Cross-sectional descriptive study. *N* = 5956 residents living in 199 neighborhoods. Survey: self-reported mental health (SF-36) and demographic variables survey. Multilevel regression models.	Cognitive social capital (ranged from excellent a very poor, as well as "do not know.") (i) "Would you say that people in your neighborhood can be trusted or that you need to be very careful in dealing with them?" Structural social capital (0 for "No, I don't belong" and 1 for "Yes, I belong.") (i) number of civic associations to which respondents belonged: neighborhood associations and sports, hobby, recreation, or cultural groups.	High levels of cognitive social capital ($\beta = 9.56$, $p < .001$) and high levels of structural social capital ($\beta = 8.72$ $p < .001$), were associated with better mental health.
Mohnen et al., 2011 Netherlands	To investigate the influence of NSC on an individual's self-rated health (SRH)	Cross-sectional descriptive study. *N* = 61,235 residents living in 3273 neighborhoods. Survey: The Housing and Living Survey. Multilevel logistic regression analysis (odds ratios, 95% confidence interval in parentheses).	Five questions (5-point Likert scale): (i) contact with direct neighbors (ii) contact with other neighbors (iii) whether people in the neighborhood know each other (iv) whether neighbors are friendly to each other (v) whether there is a friendly and sociable atmosphere in the neighborhood	NSC was positively associated with individual SRH [1.06 (1.05/1.08) $p < .001$]. There was also a relationship between health and neighborhood context. For example, urbanity with SRH was on the border of significance [1.02(1.00/1.04)] and better house maintenance in a neighborhood is significantly associated with better SRH [1.17 (1.12/1.23) $p < .001$]. Higher NSC increases the chances of reporting good or very good health by 6%.
Dassopoulos et al., 2012 United States	To disentangle the mutual effects of neighborhood disorder and social cohesion on how residents evaluate their neighborhoods.	Cross-sectional descriptive study. *N* = 664 residents living in 22 neighborhoods. Survey: The variables Neighborhood Questionnaire. Multilevel regression models.	Neighborliness, five questions (ranged from strongly disagree to strongly Agree). (i) I live in a close-knit neighborhood (ii) I can trust my neighbors (iii) My neighbors do not get along (iv) My neighbors' interests and concerns are important to me (v) If there were a serious problem in my neighborhood, the residents would get together to solve it.	The neighborliness is a significant predictor of neighborhood satisfaction (R2 = 0.27, OLS = 0.52 $p < .001$) and very good neighborhood QoL ($\chi 2/df = 108.48/1$ $p < .001$). The 27% of the variation in neighborhood satisfaction is explained by neighborliness. Those with higher mean neighborliness have 5.51 times higher odds of reporting a very good QoL. After controlling for other variables, neighborliness remain significant predictors.

(Continues)

TABLE 2 (Continued)

Reference First author, year, country	Study aim	Method Design Sample (*N*) Data collection Statistical analysis	Method to measure the NSC	Results
Mohnen et al., 2014 Netherlands	To examine the influence of both individual and neighborhood social capital on individual health and analyze whether effects of one type of social capital are contingent upon the other.	Cross-sectional descriptive study. *N* = 53,260 residents living in 3273 neighborhoods. Survey: Dutch Housing and Living Survey. Logistic multilevel models.	Individual-level social capital, two questions (5-point Likert scale). (i) I have a lot of contact with my direct neighbors (ii) I have a lot of contact with my Other neighbors NSC, three questions (5-point Likert scale) (i) Whether people in the neighborhood know each other? (ii) Whether neighbors are kind to each other? (iii) Whether there is a friendly and sociable atmosphere in the neighborhood?	The neighborhood social capital is positively associated with health and that it is independent of the level of a person's individual social capital ($R2 = .31$, odds ratios = 1.354, $p < .001$). The effect of neighborhood-level social capital is independent of the two types of individual-level social capital. High level of contact with neighbors is positively associated with SRH when controlling neighborhood-level social capital ($\beta = .068$, $p < .01$). The compensation effect of neighborhood social capital for a lack of contact with family and friends holds ($\beta = .289$, $p < .05$) even if it is controlled for neighbor contact at the individual level.
Maass et al., 2016 Norway	To investigate relationships between NSC and self-rated health (SRH) and life satisfaction (LS) respectively, both directly and indirectly mediated via Sense of Coherence (SOC) and self-esteem.	Cross-sectional descriptive study. *N* = 865 residents. Survey: Sense of Coherence Scale (SOC-13). Correlations and Structural Equation Model (SEM).	Seven questions (ranged from "Strongly agree" to "strongly disagree"). (i) I feel a strong belonging with the people that live here (ii) If I move from here, I will long back to this place (iii) We have a strong sense of community here (iv) When something needs to be done, it is easy to engage people around here (v) There is always someone taking initiative to do necessary tasks (vi) I feel safe in my neighborhood (vii) Generally, people like living here	The strongest correlates of NSC were SOC and LS (Spearman's $r2 = 0.257$ and 0.237). With LS as dependent variable, NSC has a (weak) direct effect on LS and 46% of variance in LS can be explained by the factors included in the model (Chi2 = 1097.937, df = 377, $p < .001$, df/Chi2 = 2.91; RMSEA = 0.048 [CI .045, .052]; CFI = 0.902; TLI = 0.890). With RSH as dependent variable, NSC has a small, but significant direct impact on SRH and 23% of variance in SRH can be explained by the model variables (Chi2 = 1057.201, df = 377, $p < .001$, df/Chi2 = 2.80; RMSEA = 0.047 [CI .044, .050]; CFI = 0.903 TLI = 0.892). LS is impacted by NSC with a medium size total effect, and both the direct effect and the two indirect effects are significant.

(Continues)

TABLE 2 (Continued)

Reference First author, year, country	Study aim	Method Design Sample (*N*) Data collection Statistical analysis	Method to measure the NSC	Results
Jiang et al., 2020 China, Ghana, India, the Russian Federation, and Africa	To investigate which neighborhood-based social capital components are associated with a higher level of cognitive function in n low and middle-income countries (LMICs).	Cross-sectional descriptive study. *N* = 29,528 residents. Survey: World Bank's social capital questionnaire. Multivariable linear regression models.	Cognitive social capital (5-point Likert scale): (i) trust in neighbors and perceived neighborhood safety Perceived neighborhood safety (5-point Likert scale): (i) How safe from crime and violence the respondent feels when she/he is alone at home. (ii) How safe the respondent feels when walking down the street alone after dark in the neighborhood. Structural social capital (5-point Likert scale): (i) Meeting personally with a community leader (ii) Attending public meetings in which there was discussion of local or school affairs (iii) Attending any group, club, society, union, or organization meeting (iv) Attending religious services (excluding weddings and funerals) (v) Working with people in the neighborhood to fix or improve something	NSC was positively associated with cognitive function. The coefficient magnitude and significance of trust in neighbors, perceived safety in neighborhood, and community participation were strengthened ($\beta = .019$, SE = .009, $p < .05$; $\beta = .045$, SE = .004, $p < .001$; $\beta = .032$, SE = .005, $p < .001$, respectively).
Jonsson et al., 2020 United Kingdom	To investigate the NSC and neighborhood socioeconomic deprivation (SecD) and their association with psychological well-being among young adolescents.	Longitudinal descriptive study. *N* = 5201 residents living in 2392 neighborhoods. Survey: UKHLS survey, Strengths and Difficulties Questionnaire (SDQ), Townsend deprivation index, Descriptive and multilevel regression	Six questions (4 or 5-point Likert scale): (i) Worry about being affected by crime (ii) Standard of local services for primary schools, secondary schools, medical services, shopping; leisure, local transport (iii) Proportion of friends with similar age, race, level of education, income and reside in the local area (iv) Are you currently a member of any of the kinds of organizations on this card? (v) Close-knit neighborhood (vi) Belong to neighborhood, Local friends mean a lot, able to obtain advice locally, can borrow things from neighbors, willing to improve neighborhood, plan to stay in neighborhood, I am similar to others in neighborhood, Talk regularly to neighbors.	Four of the measures of NSC (quality of facilities and amenities, civic engagement, trust and cooperative norms, and social cohesion) did not have a significant influence on the well-being of adolescents. NSC attenuates some of the negative effects of deprivation on the mental health and LS. Young adolescents residing in neighborhoods with higher average friendship networks appear to enjoy better mental health and higher LS. This relationship is strongest in neighborhoods of greater deprivation.

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TABLE 2 (Continued)

Reference First author, year, country	Study aim	Method Design Sample (*N*) Data collection Statistical analysis	Method to measure the NSC	Results
Morozumi et al., 2020 Japón	To investigate the impact individual and NSC have on the physical and mental component of pregnant women.	Cross-sectional descriptive study. *N* = 79,210 pregnant women Survey: Japan Environment and Children's Study, questionnaires and medical records. Average treatment effect (ATEs) and inverse probability weighting estimator.	Two questions (4-point Likert scale): (i) Neighbors trust each other. (ii) Neighbors help each other.	Higher levels of NSC have a larger positive impact on the mental health (ATEs = 1.0 a 1.6). These results indicate that NSC has some degree of positive impact on mental health during pregnancy.
Nieuwenhuis, 2020 Taiwan	To examine health and NSC by measuring social capital on both the individual and the aggregated neighborhood level.	Longitudinal descriptive study. *N* = 2207 residents living in 39 neighborhoods. Questionnaire Correlations and multilevel regression.	Seven questions (4-point Likert scale): (i) How many of your neighbors know which family you belong to (know where you live)? (ii) Do your parents often talk about how the neighbors' children are doing at school? (iii) Do you hang out or do other activities with your neighbors? (iv) Does your family hang out or do other activities with other families in your neighborhood? (v) Do you like the environment of your neighborhood? (vi) How many people in your neighborhood do you think know each other? (vii) Do you think people in your neighborhood are willing to help others or do they only care about themselves?	The individual level NSC is positively related to the individual health status of adolescents ($\beta = .14$, $SE = .03$, $p < .001$) but neighborhood level it does not seem to be related to individual health ($\beta = -.27$, $SE = .20$, $p = .174$). Individual level NSC is negatively related to change in health status ($\beta = -.06$, $SE = .03$, $p = .045$) and neighborhood level it is positively related to change in health status ($\beta = .57$, $SE = .20$, $p = .005$).
Huang, 2021 China	To explore the NSC, measured at the individual and community levels, and its moderating effect on the association between income inequality and subjective well-being.	Longitudinal descriptive study. *N* = 15,501 residents living in 29 provinces (including 391 communities and 123 cities). Survey: China Labor-force Dynamics Survey. Multilevel analysis.	Three questions (5-point Likert scale): (i) Are you familiar with your neighbors? (ii) Do you trust neighbors? (iii) Do you help your neighbors?	The NSC at the individual level was highly correlated with subjective well-being ($\beta = .048$, $p < .001$; $\beta = .047$, $p < .001$) but at the community level on subjective well-being was negative ($\beta = -.097$, $p < .001$; $\beta = -.085$, $p < .001$).

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TABLE 2 (Continued)

Reference First author, year, country	Study aim	Method Design Sample (*N*) Data collection Statistical analysis	Method to measure the NSC	Results
Lagaert et al., 2021 Belgium	To estimate the health effects of individual and NSC.	Cross-sectional wave, descriptive study. *N* = 2730 residents living in 142 neighborhoods	16-items: three subscales (5-point Likert scale) Social trust (i) People around here are willing to help their neighbors. (ii) This is a close-knit neighborhood. (iii) People in this neighborhood can be trusted. (iv) Contacts between inhabitants in this neighborhood are generally positive. Informal social control. How likely is it that you could count on neighbors intervening when… (i) children were skipping school and hang out on a street corner (ii) children were spray-painting graffiti on a local building (iii) children were showing disrespect to an adult (iv) fight breaks out in front of their house (v) children were making too much racket (vi) children are using soft drugs (smoking weed, hasj, etc.) Disorder (i) Adolescents hanging around on street corners (ii) Groups of adolescents harassing people to obtain money or goods (iii) Men drinking alcohol in public (iv) People selling drugs (hash, weed, etc.) on the streets (v) People being threatened on the streets with weapons or knives (vi) Fights between adolescents on the streets	Social trust has a small but significant positive effect on the level of SRH ($\beta = .07$, $SE = .02$, $p < .001$). The higher levels of disorder are associated with lower levels of SRH ($\beta = -.06$, $SE = .02$, $p < .01$).

(Continues)

TABLE 2 (Continued)

Reference First author, year, country	Study aim	Method Design Sample (*N*) Data collection Statistical analysis	Method to measure the NSC	Results
Mao et al., 2022 China	To examine the association between neighborhood environment and depressive symptoms and the mediator role of social capital in this association	Cross-sectional wave, descriptive study. *N* = 472 residents living in 23 neighborhoods Survey: Center for Epidemiologic Studies Depression scale SEM	Physical neighborhood environment: Self-report (5-point Likert scale): (i) community safety (ii) community health care (iii) public transportation Social neighborhood environment: Structural social capital (binary response and range 0–10): (i) memberships in social organizations (ii) participation in organized social activities (iii) social volunteering activities (iv) citizenship activities Social neighborhood environment: Cognitive social capital (5- point Likert scale): (i) levels of trust (ii) reciprocity (iii) feelings of belongingness	Neighborhood environment was associated with depressive symptoms among older people ($\beta = -.174$, $p < .001$). Model fit was good: $\chi 2(1) = .139$, $p = .709$, RMSEA = 0.000, CFI = 1.000, TLI = 1.243, SRMR = 0.001. Depressive symptoms could be predicted by cognitive social capital ($\beta = -.130$, $p < .01$) and structural social capital ($\beta = -.086$, $p < .05$). The cognitive social capital played a mediator role in the relationship between neighborhood environment and depressive $\chi 2(75) = 92.173$, $p = .087$, RMSEA = 0.022, CFI = 0.986, TLI = 0.978, WRMR = 0.607.
Mori et al., 2022 Japón	To examine the relationship between social capital and depression and between social capital and quality of life (QoL).	Cross-sectional wave, descriptive study. *N* = 7709 students. Survey: Depression Self-Rating Scale for Children (DSRS-C), Pediatric Quality of Life Inventory (PedsQL). Multilevel mixed-effects analysis.	Social Capital Questionnaire for Adolescent Students (SCQ- AS), 12-items: three subscales (3-point Likert scale) "school trust and social cohesion" (eight items; school social capital), "perceived safety in school and neighborhood" (two items; safety), and "neighborhood trust and social cohesion" (two items; NSC).	SCQ-AS exhibited a significant main effect on DSRS-C ($R2 = .38$, $p < .001$) and PedsQL ($R2 = .26$, $p < .001$). The subscale "school trust and social cohesion" showed the stronger relationship with depression ($\beta = -.47$, $p < .001$) and QoL ($\beta = .41$, $p < .001$) than other subscales ("perceived safety in school and neighborhood" ($\beta = -.14$, $p < .001$; $\beta = .15$, $p < .001$) and "neighborhood trust and social cohesion" ($\beta = -.09$, $p < .001$).
Huang et al., 2023 China	To examine the association between NSC and the SRH of urban older people.	Cross-sectional wave, descriptive study. *N* = 6642 residents. Questionnaire. Ologit model.	Neighborhood social interaction (2-point Likert scale) (i) Have you got engaged in social activities such as play ma-jong, chess, cards, and go to the community club in the past month? Frequency of social interaction in the neighborhood (3-point Likert scale) (i) "How often did you play ma-jong, chess, cards, or go to the community club in the past month?"	The social interaction ($R2 = .041$, odds ratio = 0.083, $p < .05$) and the frequency of social interaction ($R2 = .044$, odds ratio = 0.172, $p < .001$) were significantly and positively associated with urban older adults' SRH

Overall, higher levels of NSC are related to better mental health (Hamano et al., 2010; Mohnen et al., 2014; Morozumi et al., 2020; Nieuwenhuis, 2020), better RSH (Huang et al., 2023; Lagaert et al., 2021; Maass et al., 2016; Mohnen et al., 2011, 2014), higher LS (Dassopoulos et al., 2012., Maass et al., 2016; Mohnen et al., 2011), lower depression (Mori et al., 2022), and increased individual or collective neighborhood QoL (Dassopoulos et al., 2012; Mori et al., 2022). Only significant relationships or influences between NSC and subjective health status were controversial. One study on the general population found a statistically and positively related relationship between the two (Huang & Fang, 2021) and another on the adolescent population found no relationship, although it was able to demonstrate that the negative effects of socio-economic deprivation are attenuated by the increased average network of friends provided by NSC (Jonsson et al., 2020). There are statistically significant findings when placing the NSC as a buffer, moderator or protective role in relation to individual or collective neighborhood mental health.

4 | DISCUSSION

This review compiles 17 studies that respond to the general objective by providing information on the relationship between NSC and the biopsychosocial health of the neighborhood. The studies show that there is a positive and statistically significant relationship between CSN and people's physical and mental health, but no results were found in the social sphere. On the physical level, the higher the CSN, the more exercise, better oral health in children and physical health in pregnant women, lower tobacco consumption and lower HIV prevalence. At the psychological level, higher CSN results in better mental health, mental well-being, life satisfaction, quality of life, self-perceived health, higher cognitive function, and lower depression. The findings have been demonstrated in child, adolescent, adult, elderly, and pregnant populations, independently and explained by social and demographic characteristics.

These results may appear similar to previous review studies, although the paradigm based on the Biomedical Model addresses illness as the primary condition and reduces the findings to factors that lead to the onset or aggravation of physical illness (Choi et al., 2014; De Silva et al., 2007; Ehsan & De Silva, 2015; Kim et al., 2022; Lindström, 2005; Mayne et al., 2021; Murphy et al., 2014; Ng Fat et al., 2017; Stafford et al., 2008; Thorlindsson et al., 2012; Wendel-Vos et al., 2008, 52–62). The biomedical model continues to enable knowledge and the advancement of medical science in prevention and curative treatments, but is reductionist with regard to human health (Wade et al., 2005). It is known that the environment in which people live and their own psychological processes influence the health-disease binomial. New trends place positive determinants as drivers and generators of health, thus abandoning the pessimistic conception of prevention and cure. The biopsychosocial model pays attention to emotional life, motivation, thinking, and family and community ties as a broader framework for understanding health (Havelka et al., 2009). Linked to the Salutogenic model, all those talents, skills, or resources, as well as the conditions or characteristics of the environment and the community enhance the quality of life, the creation of healthy habits, positive thoughts that give rise to healthy emotions and build positive health of the human being. In addition, it offers the possibility of a multidisciplinary approach in response to the need to promote public health (Becker et al., 2010). Therefore, the findings of this study, from a positive condition, contribute to the identification of the NSC as a health asset that must be known, motivated, encouraged, and enriched to increase the biopsychosocial health levels of neighbors.

However, there are some reviews with a positive focus, although they have inconclusive results or focus on finding specific findings for delimited populations (Flôr et al., 2018; McPherson et al., 2014; Sampson et al., 2020; Vyncke et al., 2013, 73). This review has the potential to promote that social ties and relationships with neighbors in a well-connected and cohesive environment benefit the health of individuals in the community. Health policies and strategies that foster NSC and create opportunities for neighbors to interact and build social networks can increase physical health, mental health, residential stability, investment, and neighborhood quality of life (Dassopoulos et al., 2012). Therefore, the creation of programs that can strengthen this health asset is encouraged.

With regard to the method of measuring the concept of CSN, this and previous studies reveal the need to design an instrument capable of efficiently obtaining meaningful, verbal information on perceptions, feelings, attitudes, or behaviors conveyed by the respondent. This instrument must be validated so that it can be used with confidence when accompanied by proven psychometric properties that ensure its ability to measure (Pallás & Villa, 2019). The requirements for a new instrument are feasibility, reliability, validity (content, construct, and criterion validity), and sensitivity to change. Although most of the findings compiled in this systematic review test the reliability of the questionnaire used for the NSC concept on the basis of internal consistency quotients, the lack of homogeneity in the instrument or the items used prevents generalization, and meta-analytic synthesis of the results.

The studies included in this review contain limitations identified by their authors that may have conditioned this study. The main and common ones are the diversity of divergent conceptualizations of NSC, the lack of instruments to measure the concept as well as the use of different tools, many of them without validation. On the other hand, the cross-sectional design of most of the studies makes it difficult to understand the direction of the causal relationships between the variables studied, a fact that can be remedied with a longitudinal design. This study has its own limitations: publication bias, since studies with positive results are usually published; selection bias, since it is possible that some studies have not been identified in the search; and researcher bias, since the researcher's expectations and opinions may have conditioned the conclusions.

This paper provides an updated version of the relationship between NSC and neighborhood health from a biopsychosocial, holistic, integrative, and salutogenic perspective. It contributes to the area of knowledge of family, community, and public health disciplines, with Primary Health Care being the excellent medium to work on SHD.

It evidences the future need to increase studies under this approach in order to have a better understanding of the positive impact of the NSC health asset on the biopsychosocial health of its neighbors, giving content to the social sphere that has been neglected. Exploring the positive social impact would entail knowing the opportunities offered by the NSC in the economy, family, work environment, security, identity, other social environments, culture, beliefs, religions, and so forth. Undoubtedly, statistically significant relationships in this area would be more health opportunities. To conclude, it is necessary to expand the number of research studies that can support the results obtained and contribute to the areas of management and policy so that NSC can be prioritized and included in health strategies that can guide daily practice objectives with a community and public health focus.

AUTHOR CONTRIBUTIONS

Conceptualization: Beatriz Magro-Montañés, Rocío Romero-Castillo, and Nerea Jiménez-Picón. *Data extraction*: Beatriz Magro-Montañés, Manuel Pabón-Carrasco, and Rocío Romero-Castillo. *Methodology*: Beatriz Magro-Montañés and Nerea Jiménez-Picón. *Writing—original draft*: Beatriz Magro-Montañés, Manuel Pabón-Carrasco, and Nerea Jiménez-Picón. *Writing—review and editing*: Beatriz Magro-Montañés, Manuel Pabón-Carrasco, Rocío Romero-Castillo, José Antonio Ponce-Blandón, and Nerea Jiménez-Picón.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICAL STATEMENT

This manuscript complies with all ethical principles.

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How to cite this article: Magro-Montañés, B., Pabón-Carrasco, M., Romero-Castillo, R., Ponce-Blandón, J. A., & Jiménez-Picón, N. (2024). The relationship between neighborhood social capital and health from a biopsychosocial perspective: A systematic review. *Public Health Nursing*, 1–17. https://doi.org/10.1111/phn.13323