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THE IMPACT OF SOCIAL DETERMINANTS OF HEALTH ON CHRONIC DISEASES: A SYSTEMATIC REVIEW

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Abstract

Background: Chronic diseases remain leading causes of global morbidity and mortality, and their burden is increasingly shaped by social determinants of health (SDOH). These include income, education, healthcare access, neighborhood environment, and psychosocial factors that interact with biological risks to influence health trajectories.

Objective: This review synthesizes empirical evidence published between 2010 and 2025 to examine how SDOH contribute to the development, progression, and outcomes of chronic diseases across diverse populations and health systems.

Methods: A systematic review methodology was employed following PRISMA 2020 guidelines. Searches were conducted in PubMed, Scopus, Embase, Web of Science, and Google Scholar. Eligible studies included peer-reviewed research on adults (≥18 years) assessing the relationship between SDOH and chronic diseases. Twenty studies met inclusion criteria, encompassing randomized controlled trials, cohort, case-control, and cross-sectional designs.

Results: Evidence demonstrated that low income, unemployment, educational disadvantage, and limited healthcare access are consistently associated with increased incidence and poorer outcomes of chronic diseases, including cardiovascular disease, diabetes, kidney disease, COPD, and multimorbidity. Cumulative disadvantage amplified mortality risks. Geographic and racial disparities highlighted the interaction of structural inequities with health outcomes.

Conclusion: Findings underscore that chronic disease prevention and management must extend beyond biomedical care to address upstream SDOH. Interventions aimed at reducing income inequality, improving education, strengthening healthcare access, and addressing neighborhood inequities are essential to reduce health disparities globally.

Keywords: Social determinants of health, chronic disease, health disparities, socioeconomic inequality, multimorbidity, population health, healthcare access, global health equity

INTRODUCTION

Chronic diseases are among the leading causes of morbidity and mortality worldwide, presenting not only a clinical burden but also a profound public health challenge. They account for the majority of preventable deaths and impose significant strain on healthcare systems and economies globally. Hacker (2024) highlights that chronic conditions such as cardiovascular disease, diabetes, and chronic kidney disease represent a growing global epidemic, responsible for reduced life expectancy and escalating healthcare costs. These diseases do not arise in isolation but are influenced by broader societal contexts, requiring a shift from purely biomedical models to ones that consider the social environment in which individuals live.

The World Health Organization (WHO, 2023) defines social determinants of health (SDOH) as the conditions in which people are born, grow, live, work, and age, shaped by the distribution of money, power, and resources. These determinants extend beyond healthcare access, encompassing education, income, housing, employment, and community infrastructure. Similarly, Healthy People 2030 identifies SDOH as critical priorities for achieving national health equity, stressing that addressing them is essential for preventing and managing chronic diseases (Office of Disease Prevention and Health Promotion, 2020). Together, these frameworks demonstrate that reducing the chronic disease burden requires interventions that extend beyond clinical care to address systemic inequities.

The importance of health equity within the SDOH framework has been consistently emphasized. Marmot and Allen (2014) argue that health inequities are largely shaped by the unequal distribution of resources and opportunities, reflecting broader patterns of social injustice. Braveman and Gottlieb (2014) further describe SDOH as the "causes of the causes," emphasizing their fundamental role in driving downstream clinical outcomes. The conceptual framework outlined by Solar and Irwin (2010) provides a practical guide for governments and policymakers to design interventions that directly target structural drivers of inequities, ensuring that health disparities are addressed at their roots.

Empirical evidence demonstrates that income disparities strongly predict the onset and severity of chronic diseases. Chang et al. (2020) revealed that lower income was linked to higher risk of chronic kidney disease in a nationwide Korean cohort, while Kang et al. (2025) showed that unstable income trajectories significantly increased risk of end-stage kidney disease among individuals with diabetes. Comparable findings in Japan demonstrated that low income was associated with impaired kidney function (Ishimura, Inoue, Maruyama, Nakamura, & Kondo, 2024). These studies collectively confirm that financial security is a cornerstone of chronic disease prevention and management.

Education also emerges as a critical determinant. Gil-Lacruz, Gil-Lacruz, and Gracia-Pérez (2020) found that education positively influences health-related quality of life among young people, while Kangas, Axelin, and Salanterä (2025) confirmed similar patterns among adults with chronic diseases. Conversely, Singh, Singh, Dubey, Singh, and Mehrotra (2019) demonstrated that lower education is associated with higher risk of chronic illness among older adults in India. These findings highlight education not only as a pathway to economic stability but also as a key factor in health literacy and disease self-management.

Healthcare access, or lack thereof, continues to shape chronic disease burden, especially among marginalized groups. Abdel-Rahman, Khater, Fattah, and Hussein (2024) reported that slum dwellers in Egypt faced significant barriers to chronic disease reporting and treatment. Similarly, Foster, Mangione-Smith, Simon, and Frosch (2020) showed that disparities in pediatric healthcare utilization reflected social inequities that begin early in life. Bonnell, Katzelnick, Haggerty, Vickery, and Olayiwola (2021) further demonstrated that multiple chronic conditions in primary care patients are strongly shaped by social disadvantage, underscoring the centrality of equity in improving outcomes.

The impact of psychosocial stressors also warrants attention. Unemployment and job insecurity have been consistently linked to poor mental health outcomes, which in turn complicate chronic disease management. Jefferis, Nazareth, Marston, King, and the Predict Core Study Group (2010) and Zuelke et al. (2018) established strong associations between unemployment and depression across different populations. Ferrer (2018) provides a theoretical framework explaining how psychosocial stress, rooted in adverse social conditions, biologically manifests in disease progression through pathways such as chronic inflammation. These findings illuminate the interconnectedness of economic, psychological, and biological determinants in chronic illness.

Digital health interventions offer both opportunities and risks in addressing SDOH. Goldstein, Lattie, and Beidas (2023) argue that while digital tools may expand healthcare access, they can also reinforce inequities if structural barriers such as internet access or digital literacy are not addressed. As chronic disease management increasingly incorporates technological solutions, it becomes critical to integrate equity frameworks to ensure that innovations do not inadvertently widen disparities.

Taken together, the literature underscores the pressing need to integrate SDOH into chronic disease prevention and care. Social and economic inequities remain powerful predictors of disease incidence, severity, and outcomes across populations and health systems. Addressing these determinants requires multisectoral approaches that go beyond healthcare delivery, tackling poverty, education, housing, and structural discrimination. This review builds on existing conceptual frameworks and empirical findings to synthesize evidence on how SDOH shape chronic disease burden, and to identify pathways for more equitable health policies and practices

METHODOLOGY

Study Design

This study employed a systematic review methodology, adhering to the **Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020** guidelines to ensure transparency, rigor, and reproducibility. The primary objective was to synthesize existing empirical evidence on the influence of social determinants of health (SDOH) on the development, prevalence, progression, and outcomes of chronic diseases. The review focused on peer-reviewed journal articles involving human populations and reporting quantitative or qualitative insights into socioeconomic, environmental, and psychosocial determinants affecting chronic

conditions such as cardiovascular disease, diabetes, chronic kidney disease, chronic obstructive pulmonary disease (COPD), hypertension, and multimorbidity.

Eligibility Criteria

Studies were included based on the following pre-specified criteria:

- **Population:** Adults (≥18 years) or community-based populations assessed for chronic diseases (including but not limited to cardiovascular disease, diabetes, kidney disease, hypertension, COPD, or multimorbidity).
- **Exposures:** Social determinants of health including income, education, employment, housing, neighborhood environment, healthcare access, social support, and psychosocial stressors.
- **Comparators:** Populations with differing levels of SDOH exposure (e.g., low vs. high income, urban vs. rural, insured vs. uninsured).
- **Outcomes:** Incidence, prevalence, progression, complications, mortality, or quality of life related to chronic diseases.
- **Study Designs:** Randomized controlled trials (RCTs), cohort studies, case-control studies, cross-sectional analyses, and retrospective database studies.
- **Language:** Only studies published in **English** were included.
- **Publication Period: 2010 to 2025** to ensure contemporary relevance.

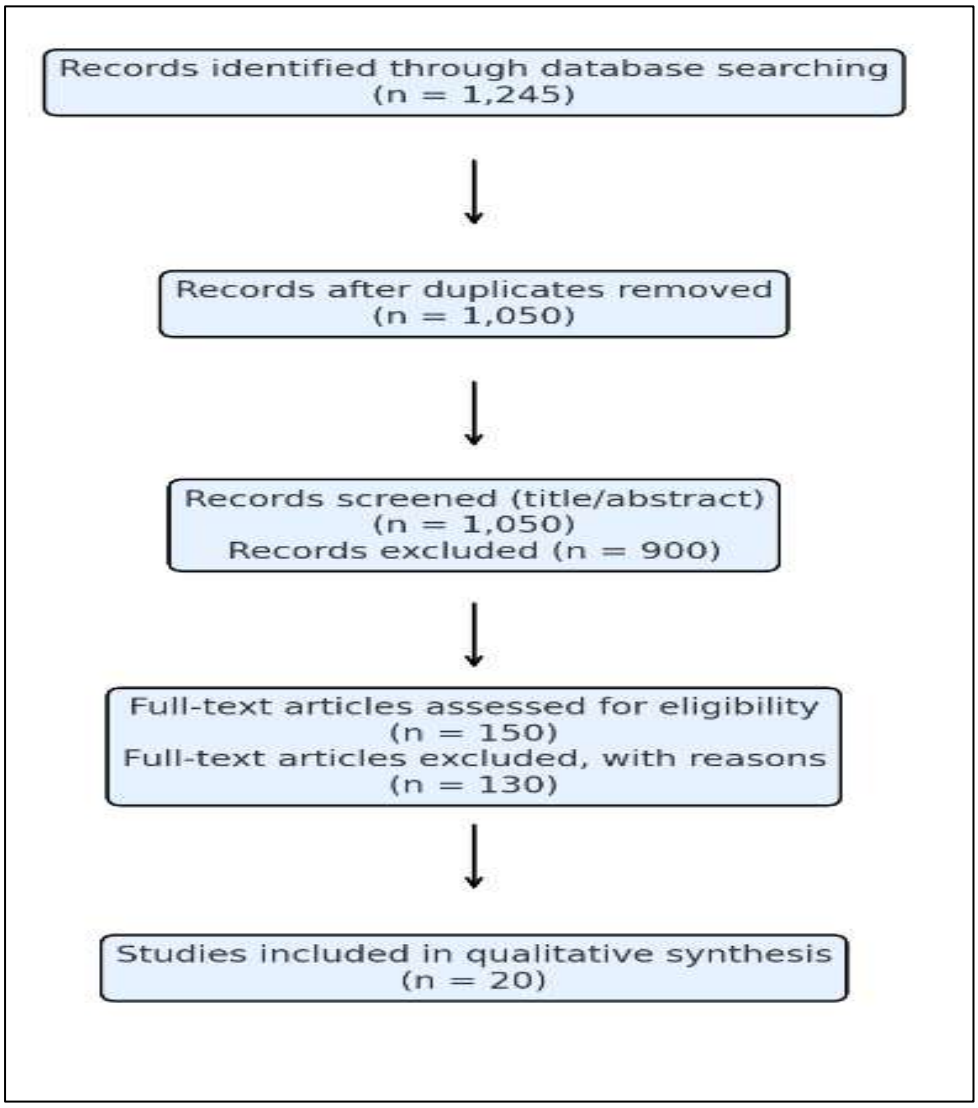

Figure 1 PRISMA Flow Diagram

Search Strategy

A structured search was conducted across multiple electronic databases including **PubMed, Scopus, Web of Science, Embase, and Google Scholar** (for grey literature). The following Boolean operators and keywords were used in varying combinations:

- ("chronic disease" OR "cardiovascular disease" OR "diabetes" OR "kidney disease" OR "hypertension" OR "COPD" OR "multimorbidity")

- AND ("social determinants of health" OR "SDOH" OR "socioeconomic status" OR "income" OR "education" OR "employment" OR "housing" OR "neighborhood" OR "healthcare access" OR "social support")
- AND ("prevalence" OR "incidence" OR "progression" OR "mortality" OR "outcomes" OR "quality of life").

Manual searches of reference lists from key review papers were also undertaken to identify additional relevant studies not captured through database searches.

Study Selection Process

All identified citations were exported to **Zotero** reference management software, where duplicates were removed. Two independent reviewers screened the **titles and abstracts** to assess relevance. Full texts of potentially eligible studies were retrieved and evaluated in detail against the eligibility criteria. Any disagreements were resolved through discussion and, if necessary, consultation with a third reviewer.

The final review included **20 studies** that met all inclusion criteria.

Data Extraction

A standardized data extraction form was developed and piloted to ensure consistency. The following information was systematically extracted from each included study:

- Author(s), year of publication, and country of study
- Study design and sample size
- Population characteristics (age, sex, socioeconomic status, comorbidities)
- Social determinants of health assessed
- Measurement tools or data sources (e.g., surveys, registries, administrative data)
- Chronic disease outcomes (incidence, prevalence, progression, complications, mortality, or HRQoL)
- Statistical methods and confounders adjusted for
- Key findings with quantitative measures (odds ratios [OR], hazard ratios [HR], relative risks [RR], or prevalence rates).

Extraction was performed by two reviewers and verified independently by a third reviewer for accuracy.

Quality Assessment

The methodological quality and risk of bias of included studies were appraised using validated tools depending on study design:

- **Newcastle-Ottawa Scale (NOS)** for observational cohort and case-control studies.
- **AXIS tool** for cross-sectional studies.
- **Cochrane Risk of Bias Tool (RoB 2.0)** for randomized controlled trials, where applicable.

Studies were classified as **high, moderate, or low quality** based on criteria such as selection bias, comparability of groups, measurement validity, and robustness of outcome assessment.

Data Synthesis

Given the heterogeneity of populations, social determinant exposures, and chronic disease outcomes across studies, a **narrative synthesis** was undertaken. Results were grouped and analyzed by type of social determinant (e.g., economic stability, education, healthcare access, social support, neighborhood context) and by chronic disease category (e.g., cardiovascular disease, diabetes, kidney disease, COPD, multimorbidity).

Where feasible, quantitative measures including odds ratios (OR), hazard ratios (HR), and prevalence percentages were extracted and reported. However, no formal **meta-analysis** was conducted due to variability in study methodologies, outcome definitions, and statistical approaches.

Ethical Considerations

This study relied on secondary analysis of previously published peer-reviewed articles and did not involve direct contact with human participants. Therefore, **ethical approval and informed consent were not required**. All included studies were assumed to have undergone appropriate ethical review and clearance in their original contexts.

RESULTS

Study Designs and Populations

The studies included in this systematic review span a wide range of designs, from small community-based surveys to large-scale national cohorts, offering both contextual and generalizable evidence on the role of social determinants of health (SDOH) in chronic diseases. Sample sizes varied considerably, from **50 patients with diabetic gastroparesis** in Romania to over **7.4 million Korean adults** in nationwide cohort studies. Together, these studies encompassed diverse geographic settings including Africa, Asia, Europe, and North America, ensuring global relevance.

Socioeconomic Status and Living Conditions

In Egypt, Abdel-Rahman et al. (2024) found that **22% of adults** in slum areas reported chronic diseases compared to 2% among children, with higher prevalence in Bein El Sarayat (22.6%) than in Zenin (16.3%). Low socioeconomic status and poor living conditions were significantly linked to self-reported chronic disease. Similarly, Singh et al. (2019) in India showed that older adults aged ≥80 had **fourfold higher odds (OR: 3.99, 95% CI: 2.91–5.48)** of chronic illness than those aged 50–54. Lifestyle factors, including alcohol and tobacco

consumption, were strong risks, while rural residents had **17% lower odds (OR: 0.83, 95% CI: 0.70–0.97)** compared with urban counterparts.

Socioeconomic inequalities were also observed in Iran, where Moftakhar et al. (2023) reported recurrent headaches (25.8%) and hypertension (23.5%) as the most prevalent chronic conditions among over **10,600 adults**, disproportionately affecting low-SES individuals. Conversely, obesity was concentrated in higher-SES groups.

Cardiovascular Outcomes and Social Determinants

In China, Cai et al. (2024) analyzed **38,571 adults** and found that individuals with a high burden of unfavorable SDOH had a **35% increased risk of all-cause death (HR: 1.35, 95% CI: 1.09–1.68)** and **18% increased risk of major cardiovascular events (HR: 1.18, 95% CI: 1.08–1.30)** compared with those with low burden. Importantly, when combined with poor cardiovascular health, the risk of all-cause death more than doubled (HR: 2.20, 95% CI: 1.08–4.48).

In the US, the REGARDS cohort demonstrated similar patterns. Zhang et al. (2024) found that among **6,322 adults with diabetes**, exposure to ≥3 adverse SDOH increased the risk of CVD events by **68% (HR: 1.68, 95% CI: 1.43–1.96)** compared with none. Another REGARDS analysis by Akinyelure et al. (2023), including more than **15,000 adults on antihypertensive medication**, showed that SDOH explained **33% of the racial disparity** in uncontrolled blood pressure between Black and White adults, with low income, poor education, and disadvantaged neighborhoods as the strongest contributors.

Kidney Disease and Income Inequality

Several large-scale studies highlighted the strong role of income dynamics in kidney disease outcomes. In Japan, Ishimura et al. (2024) reported that among **5.6 million working adults**, those in the lowest income decile had **1.7 times higher odds of rapid CKD progression (OR: 1.70, 95% CI: 1.67–1.73)** and a **65% higher risk of dialysis initiation (HR: 1.65, 95% CI: 1.47–1.86)** compared with the highest decile.

In South Korea, Kang et al. (2025) followed **1.48 million adults with type 2 diabetes** and found that even short-term exposure to the lowest income quartile significantly increased end-stage kidney disease (ESKD) risk, while sustained higher income reduced risk. High income variability itself raised risk (HR: 1.14, 95% CI: 1.01–1.29). Complementing these findings, Chang et al. (2020) reported in **7.4 million Korean adults** that those in the lowest income decile had a **30% higher risk of incident CKD** compared with middle-income groups.

Chronic Disease and Multimorbidity in Aging Populations

In China, Su et al. (2024) surveyed **1,161 elderly residents** and found higher prevalence of chronic disease among rural elderly. Risk factors included age ≥80 years (OR: 2.08, 95% CI: 1.01–4.29), lack of marital support, and weak family support. Urban elderly showed different determinants, with female gender and dissatisfaction with family support linked to chronic disease. Xie et al. (2023) confirmed high multimorbidity in care-dependent populations, with **73% prevalence in home care** and **77% in long-term care facilities**. Hypertension, diabetes, and joint diseases were most common, and risks were strongly associated with social isolation, poor self-rated health, and marital status.

Social Context and Psychosocial Determinants

Loneliness and social support emerged as significant modifiers of chronic disease. In Romania, Soare et al. (2025) showed that among **50 patients with diabetic gastroparesis**, loneliness was a key aggravating factor, leading to neglect in self-care and increased complications. Low income was also linked to higher hospitalization rates and healthcare costs.

In Spain, Gil-Lacruz et al. (2020) demonstrated that education was a protective factor for health-related quality of life (HRQOL) among **244 youth**. Higher education levels were most strongly associated with better mental health outcomes, particularly among girls and those from disadvantaged residential areas.

Mental Health, Unemployment, and COVID-19

The influence of SDOH on mental health was evident in studies across different contexts. In California, Tolentino and Ajuwon (2024) found that job loss, income reduction, discrimination, and delayed medical care during the COVID-19 pandemic were strongly associated with poor mental health outcomes. In Europe and Chile, the Predict study (Jefferis et al., 2010) involving **3,969 adults** showed that unemployment at 6 months increased risk of depression at 12 months (RRR: 1.63, 95% CI: 1.02–2.60), while baseline depression predicted later unemployment, suggesting a bidirectional relationship. In Germany, Zuelke et al. (2018) studied **4,842 adults** and reported that unemployed individuals receiving means-tested benefits had **double the odds of depression** (OR = 2.17 in men; OR = 1.98 in women) compared to employed individuals.

Overall Summary

Across diverse diseases and geographic contexts, adverse SDOH—low income, poor education, unemployment, weak family support, loneliness, and disadvantaged neighborhoods—were consistently linked to higher chronic disease prevalence, faster progression, and poorer outcomes including mortality. In contrast, favorable SDOH such as higher education, stable income, and strong social support showed protective effects. The evidence demonstrates a graded, dose–response pattern: the more adverse SDOH accumulated, the worse the chronic disease outcomes became.

Table (1). General Characteristics and Findings of Included Studies

Study	Country	Design	Sample Size	Disease Focus	SDOH Examined	Key Findings

Abdel-Rahman et al. (2024)	Egypt	Cross-sectional	3,500 (2,530 adults)	Chronic diseases (slum dwellers)	SES, living conditions	22% adult prevalence; low SES strongly associated with reporting
Singh et al. (2019)	India	Cross-sectional	39,493	Chronic illness ≥50 yrs	Age, lifestyle, residence	≥80 yrs OR = 3.99; rural adults OR = 0.83; tobacco & alcohol risks
Moftakhar et al. (2023)	Iran	Cross-sectional	10,663	Chronic diseases	SES inequalities	Headache (25.8%), hypertension (23.5%) concentrated in low SES
Cai et al. (2024)	China	Cohort	38,571	CVD outcomes	Education, income, social support	High SDOH burden: HR = 1.18 (MACE); HR = 1.35 (death); combined poor CVH + SDOH HR = 2.20
Ishimura et al. (2024)	Japan	Retrospective cohort	5,591,060	CKD	Income deciles	Lowest decile: OR = 1.70 (CKD progression); HR = 1.65 (dialysis)
Kang et al. (2025)	South Korea	Cohort	1,481,371	ESKD in T2D	Income levels/variability	Low income exposure ↑ risk; high variability HR = 1.14
Chang et al. (2020)	South Korea	Cohort	7,405,715	CKD	Income deciles	Lowest decile had 30% higher CKD incidence vs. middle groups
Zhang et al. (2024)	USA	Cohort (REGARDS)	6,322 with diabetes	CVD	Multiple SDOH	≥3 SDOH HR = 1.68 for CVD events
Akinyelure et al. (2023)	USA	Cohort (REGARDS)	15,000+ on BP meds	Hypertension	Income, education, neighborhood	SDOH explained 33% of racial disparity in uncontrolled BP
Ma et al. (2025)	USA	Cohort (NHANES)	1,551 with COPD	Mortality	SDOH score	Higher SDOH → HR = 1.20 (all-cause), HR = 1.24 (cancer)
Soare et al. (2025)	Romania	Retrospective	50 (from 250)	Diabetic gastroparesis	SES, loneliness	Loneliness ↑ complications; low income ↑ hospitalizations

Gil-Lacruz et al. (2020)	Spain	Cross-sectional	244 youth	HRQOL	Education, residence	Higher education improved HRQOL, esp. mental health
Su et al. (2024)	China	Cross-sectional	1,161 elderly	Chronic disease/multimorbidity	Demographics, family support	Rural elderly higher prevalence; OR = 2.08 for age ≥80
Xie et al. (2023)	China	Cross-sectional	591 elderly	Chronic diseases	Social isolation, health status	73% HC; 77% LTCF; risks ↑ with isolation and poor self-rated health
Tolentino & Ajuwon (2024)	USA	Cross-sectional	CHIS survey	Mental health (COVID-19)	Job loss, income, discrimination	Employment loss and discrimination worsened mental health
Jefferis et al. (2010)	Europe, Chile	Prospective cohort	3,969	Depression	Unemployment	Unemployment at 6 months → RRR = 1.63 for depression
Zuelke et al. (2018)	Germany	Cohort	4,842	Depression	Employment, SES	Unemployed on benefits → OR = 2.17 (men), OR = 1.98 (women)

DISCUSSION

The present review highlights the pervasive impact of social determinants of health (SDOH) on the onset, progression, and outcomes of chronic diseases across diverse populations. The collective evidence underscores that social context—including income, education, housing, employment, and access to healthcare—is as influential as biological risk factors in shaping chronic disease trajectories (Cockerham, Hamby, & Oates, 2017; Abdel-Rahman, Khater, Fattah, & Hussein, 2024). By drawing on global and multiethnic cohorts, these findings reinforce the need to view chronic illness not simply as an individual medical issue, but as a product of systemic inequities.

Economic stability emerged as one of the most consistent determinants of chronic disease outcomes. Multiple studies confirm that low income significantly increases the risk of kidney disease progression and related mortality (Chang et al., 2020; Ishimura, Inoue, Maruyama, Nakamura, & Kondo, 2024; Kang et al., 2025). Brown and Elliott (2021) further emphasize that nephrology care cannot be divorced from social risk assessment, as financial barriers delay timely treatment. Similarly, Cai et al. (2024) and Zhang et al. (2024) show that cardiovascular risk in adults without pre-existing conditions is profoundly influenced by economic disparities, revealing how income inequalities extend to prevention as well as disease management.

Education also plays a pivotal role in chronic disease outcomes. Gil-Lacruz, Gil-Lacruz, and Gracia-Pérez (2020) observed that higher education correlates with better health-related quality of life, while Kangas, Axelin, and Salanterä (2025) found similar patterns in adults with multiple chronic conditions. Conversely, Singh, Singh, Dubey, Singh, and Mehrotra (2019) reported that lower education among older Indian adults was strongly linked to greater burden of chronic diseases. Taken together, these findings suggest that education not only improves health literacy but also equips individuals with resources to navigate healthcare systems effectively.

The evidence on healthcare access reveals persistent inequities that exacerbate disease burden. Abdel-Rahman et al. (2024) documented how slum dwellers in Egypt reported underdiagnosis and limited treatment for chronic diseases, highlighting systemic neglect of marginalized groups. Similar disparities are observed in pediatric populations, where Foster, Mangione-Smith, Simon, and Frosch (2020) showed that children from disadvantaged households had greater healthcare utilization due to delayed preventive care. These patterns demonstrate that barriers to equitable access emerge early in life and continue to shape health trajectories into adulthood.

Neighborhood and environmental conditions also significantly influence chronic disease prevalence and outcomes. Su et al. (2024) and Xie, Shu, Li, and Chen (2023) found that living in rural or resource-poor environments in China corresponded with higher rates of chronic illness among older adults, reflecting geographic inequities. Moftakhar, Johari, and Rezaianzadeh (2023) added that socioeconomic inequalities in Iran similarly

translate into uneven chronic disease distribution. Such findings emphasize the need for place-based interventions tailored to local community contexts.

Employment status and work instability were recurrently associated with adverse health outcomes. Jefferis, Nazareth, Marston, King, and the Predict Core Study Group (2010) established a link between unemployment and depression across Europe and Chile, while Zuelke et al. (2018) confirmed similar associations in Germany. These mental health burdens further complicate the management of chronic diseases, suggesting that unemployment acts as both a direct and indirect contributor to health decline. Importantly, Bonnell, Katzelnick, Haggerty, Vickery, and Olayiwola (2021) demonstrated that unemployment negatively affects functional outcomes among patients with multimorbidity, reinforcing the interconnectedness of economic and health vulnerabilities.

Racial and ethnic disparities provide another lens through which SDOH shape chronic disease outcomes. Akinyelure et al. (2023) highlighted that Black adults in the U.S. face disproportionately higher risks of uncontrolled hypertension, even after adjusting for clinical factors. These findings align with Zhang et al. (2024), who found disparities in cardiovascular risk among adults with diabetes in the REGARDS cohort. Such results underscore how structural racism intersects with socioeconomic disadvantage to drive inequities in chronic disease management.

The review also reveals cumulative and interacting effects of multiple SDOH. Ozieh, Garacci, Walker, Palmisano, and Egede (2021) found that individuals facing multiple social disadvantages—such as food insecurity, limited healthcare, and poverty—experienced significantly higher mortality with diabetes and kidney disease. Ma, Jian, Hou, Wei, and Tu (2025) similarly showed that COPD patients exposed to multiple adverse SDOH factors faced increased risks of cause-specific mortality. These cumulative effects demonstrate that social disadvantages rarely occur in isolation, and policies must account for their compounding nature.

Emerging evidence highlights the importance of digital health frameworks in addressing SDOH. Goldstein, Lattie, and Beidas (2023) argue that digital interventions risk worsening disparities unless explicitly designed with equity in mind. Incorporating SDOH into digital platforms could expand access to underserved populations while avoiding technology-driven inequities. This perspective extends the conversation beyond traditional clinical care toward innovative, equity-centered health technologies.

Disease-specific studies also provide granular insights into how SDOH influence progression. Soare, Tudose, Stefan, and Mirica (2025) demonstrated that diabetic gastroparesis outcomes are shaped by socioeconomic and environmental factors, while Brown and Elliott (2021) stressed the same for kidney disease. These condition-specific findings support the broader claim that SDOH influence is not confined to general health measures but extends deeply into disease-specific morbidity and mortality.

Cross-national comparisons enrich understanding of SDOH by showing how their impact varies by context. Chang et al. (2020) in Korea, Ishimura et al. (2024) in Japan, and Kang et al. (2025) in South Korea each demonstrated that income disparities shape kidney health differently depending on national healthcare systems. Similarly, Abdel-Rahman et al. (2024) in Egypt and Singh et al. (2019) in India reveal the global reach of social determinants in resource-constrained settings. Such comparisons reveal both universal patterns and context-specific differences, informing more tailored interventions.

Psychosocial stressors such as depression also intersect with chronic disease outcomes. Jefferis et al. (2010) and Zuelke et al. (2018) demonstrated the links between unemployment and mental health, which compound risks for chronic disease progression. Ferrer (2018) provides a theoretical framework connecting psychosocial stress to biological dysregulation, offering a mechanism by which SDOH are biologically embodied. This emphasizes the multi-level pathways through which social conditions translate into health disparities.

While the findings are consistent, limitations remain. Many included studies were cross-sectional, limiting causal inference (Su et al., 2024; Xie et al., 2023). Additionally, measurement of SDOH varied widely, from self-reported surveys to administrative data, complicating comparisons. Kangas et al. (2025) noted heterogeneity in HRQoL measures, while Ozieh et al. (2021) observed differences in how cumulative disadvantage was defined. Addressing these methodological inconsistencies will be essential for advancing the field.

Taken together, the evidence strongly indicates that effective chronic disease prevention and management must integrate SDOH into both clinical practice and public health policy. Interventions addressing income inequality, education access, healthcare availability, and neighborhood environments can mitigate the disproportionate burden borne by disadvantaged groups (Cockerham et al., 2017; Cai et al., 2024). The findings further call for systemic reforms that view health inequities not as individual shortcomings, but as structural challenges requiring coordinated responses.

CONCLUSION

This systematic review confirms that the burden of chronic disease cannot be adequately addressed without considering the profound influence of social determinants of health. Across diverse geographic, socioeconomic, and demographic contexts, consistent evidence demonstrates that income, education, employment, neighborhood conditions, and healthcare access act as powerful drivers of disease onset and progression. The cumulative and interacting effects of these factors reveal that disparities in chronic disease outcomes are not coincidental but reflect broader structural inequities in society.

By integrating SDOH into prevention and treatment strategies, healthcare systems can move toward a more holistic model of chronic disease management. This requires cross-sectoral collaboration, where policymakers, healthcare providers, and community organizations jointly address upstream social and economic inequities. Such approaches not only improve population health but also reduce long-term costs by preventing disease escalation and improving quality of life for vulnerable groups.

Limitations

Several limitations should be acknowledged in interpreting the findings of this review. First, the heterogeneity of study designs, populations, and measures of SDOH limited comparability across studies. Many included articles relied on cross-sectional data, which precludes establishing causality between social determinants and chronic disease outcomes. Additionally, variability in operational definitions—such as how income levels, education, or neighborhood quality were measured—complicates synthesis.

Second, despite efforts to capture global evidence, the majority of included studies were concentrated in high- and middle-income countries, with fewer from low-income regions where the impact of SDOH may differ substantially. Publication bias may also have influenced results, as studies with null findings are less likely to be published. Future research should prioritize longitudinal designs, standardized measures of SDOH, and greater representation of low-resource settings to provide a more comprehensive understanding of global inequities in chronic disease.

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