



The impact of screening for social determinants of health on diabetes and hypertension end Results

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Abstract

Background

Globally, diabetes mellitus and hypertension are common chronic illnesses with high rates of morbidity and mortality. Disease outcomes are greatly influenced by social determinants of health (SDOH), which include housing, education, income, and access to healthcare. By identifying patients with unmet social needs and offering focused solutions, SDOH screening in healthcare settings may enhance illness management.

Objective

To assess how social determinants of health screening affects clinical outcomes in individuals with hypertension and diabetes mellitus.

Methods

Over the course of six months, 200 adult patients with diabetes, hypertension, or both who visited the outpatient departments of a tertiary care hospital participated in a prospective observational study. Patients were divided into SDOH-positive (having one or more adverse social factors) and SDOH-negative groups after being evaluated for social determinants using a standardised method. The SDOH-positive group received targeted interventions, such as healthcare facilitation, social support referrals, and counselling. At baseline and six months,





clinical outcomes such as HbA1c, blood pressure, medication adherence, and quality of life were evaluated. SPSS version 25 was used to analyse the data, and $p < 0.05$ was deemed significant.

Results

112 (56%) of the individuals were found to be SDOH-positive. Food insecurity (51.8%) and low income (60.7%) were the most prevalent social risk factors. Over a six-month period, hyperglycemia and blood pressure control significantly improved in both groups; however, SDOH-negative individuals had somewhat better results. In the SDOH-positive group, targeted interventions led to better overall illness management, medication adherence, and follow-up compliance.

Conclusion

By identifying high-risk individuals, social determinants of health screening facilitates treatments that enhance clinical outcomes in patients with diabetes and hypertension. Health equity is promoted and holistic, patient-centered management is supported by including SDOH screening into normal care.

Keywords

Social determinants of health, SDOH, diabetes mellitus, hypertension, screening, chronic disease management, health equity

Introduction

Among the most common non-communicable diseases in the world, diabetes mellitus and hypertension are major causes of morbidity, mortality, and healthcare costs. Cardiovascular problems, a lower quality of life, and higher healthcare costs are all strongly associated with both illnesses. Even with improvements in clinical guidelines and pharmacological management, the best possible control of these chronic illnesses is still not achieved, especially in low- and middle-income nations. The relevance of non-medical effects, especially social determinants of health (SDOH), is highlighted by growing evidence that clinical therapy alone is insufficient to address the complex interaction of factors impacting these illnesses.

The conditions under which people are born, grow, live, work, and age are referred to as social determinants of health. These conditions include things like income, education, employment, housing, food security, and access to healthcare. These factors have a major impact on overall illness outcomes, access to care, and health-related behaviours. Research has shown that SDOH have a significant role in health disparities, especially in underprivileged groups where people frequently bear a disproportionate burden of chronic conditions including diabetes and hypertension.





A paradigm shift towards the use of systematic screening to incorporate SDOH into clinical practice has occurred in recent years. In healthcare settings, screening for SDOH entails determining patients' socioeconomic requirements, such as food insecurity, lack of mobility, or unstable finances, frequently utilising standardised methods integrated into electronic health records. Through referrals, community collaborations, and focused interventions, this strategy enables healthcare clinicians to address underlying social risks. The reasoning for this is that early detection and treatment of social needs can boost self-management, increase treatment adherence, and eventually improve clinical outcomes.

Research shows that SDOH has a major effect on the onset and course of diabetes. People from poorer socioeconomic origins frequently have difficulty getting access to nutritious food, exercising, and receiving quality medical treatment, all of which lead to poor glycemic control and more problems. Social and economic disadvantages are closely linked to worse diabetes outcomes, such as poor glycemic control, greater rates of complications, and increased death, according to a comprehensive analysis. The need for thorough risk assessment that goes beyond conventional clinical indicators is highlighted by the fact that cumulative exposure to unfavourable social determinants has been connected to higher mortality among people with diabetes and concomitant illnesses.

Social variables also have an impact on hypertension, as seen by differences in prevalence, diagnosis, and control rates. It has been demonstrated that a number of factors, including neighbourhood characteristics, insurance coverage, income, and education level, have a substantial impact on blood pressure outcomes. According to a systematic review of 57 research, those with better access to healthcare services, greater economic stability, and higher levels of education were more likely to control their blood pressure and have a lower prevalence of hypertension. These results demonstrate the limitations of solely biological approaches to disease management and emphasise the crucial role that social context plays in influencing health outcomes.

One promising approach to closing this gap is screening for SDOH. Healthcare systems can implement focused interventions that address care barriers by methodically identifying social needs in clinical settings. Patients who have been diagnosed with food insecurity, for example, can be linked to nutrition assistance programmes, and those who struggle with transportation can get help getting to doctor's visits. There is growing evidence that these kinds of interventions can enhance health outcomes and disease management, especially in chronic illnesses like diabetes and hypertension.

Additionally, incorporating SDOH screening into standard clinical care is consistent with international health programmes that seek to achieve health equity. Addressing socioeconomic determinants is a crucial tactic for lowering health inequities and enhancing population health outcomes, according to initiatives like Healthy People 2030. A more comprehensive approach to patient treatment is made possible by the integration of SDOH data into clinical decision-making procedures and electronic health records, allowing doctors to customise therapies according to





unique social settings.

Even though the significance of SDOH is becoming more widely acknowledged, screening programme implementation is still uneven across healthcare systems. The absence of standardised screening instruments, a lack of resources to meet stated needs, and inadequate training for healthcare professionals are some of the obstacles. The effectiveness of therapies may also be impacted by variations in the way SDOH data are gathered, analysed, and applied in clinical practice. Additionally, research shows that although screening can reveal social needs, interdisciplinary cooperation and strong community partnerships are necessary to meet these needs.

The acceptability of SDOH screening and patient involvement are important factors to take into account. Because of stigma or privacy concerns, some patients may be reluctant to share sensitive social information. Therefore, culturally sensitive methods, transparent communication, and confidentiality guarantees are necessary for the successful implementation of screening programmes. Furthermore, healthcare systems need to make sure that screening produces results that can be put into practice because recognising social needs without offering the right kind of assistance can not result in significant changes in health outcomes.

Promising outcomes have been shown in recent studies investigating SDOH screening in clinical populations. For instance, clinic-based screening programmes for patients with metabolic risk factors, such as diabetes and hypertension, have shown promise in identifying high-risk individuals and enhancing care coordination. The potential impact of screening programmes is further increased by the more effective gathering and use of SDOH data made possible by developments in digital health technologies and data analytics.

To sum up, social determinants of health screening is a significant development in the treatment of long-term conditions like diabetes and high blood pressure. SDOH screening has the potential to improve disease outcomes, lower healthcare costs, and advance health equity by addressing the underlying causes of health disparities. To assess the efficacy of screening treatments, pinpoint best practices, and resolve implementation issues, more study is necessary. In order to add to the increasing amount of data that supports a more thorough and patient-centered approach to healthcare, this study attempts to evaluate the effect of SDOH screening on outcomes in patients with diabetes and hypertension.

Methodology

The purpose of this prospective observational study was to assess the effect of social determinants of health (SDOH) screening on clinical outcomes in patients with hypertension and diabetes mellitus. Over the course of six months, from January 2025 to June 2025, the study was conducted in the outpatient departments of a tertiary care hospital. The study comprised adult patients who were at least eighteen years old and had been diagnosed with either hypertension, diabetes mellitus, or both. Patients who were hesitant to engage, had serious comorbid diseases, or had cognitive impairments were not included.





A sequential sampling procedure was used to choose 200 participants in total. Following informed consent, baseline clinical and demographic information was gathered, including age, gender, length of illness, medication history, and baseline clinical parameters such as blood pressure, HbA1c, and fasting blood glucose levels. Social determinants of health, including income level, education, employment status, housing circumstances, food security, transportation access, and healthcare accessibility, were evaluated using a standardised and validated screening instrument.

Based on the screening results, participants were divided into two groups: those with one or more adverse social determinants (SDOH-positive group) and those without major social hazards (SDOH-negative group). Patients in the SDOH-positive group received the proper interventions, such as dietary advice, social support service referrals, counselling, and help accessing healthcare as necessary. According to institutional norms, both groups continued to receive conventional medical care.

To measure changes in clinical outcomes, follow-up evaluations were carried out at three and six months. Glycemic control (as determined by HbA1c levels) in diabetic patients and blood pressure management in hypertensive patients were the main end measures. Medication adherence, hospital visit frequency, and patient-reported quality of life were secondary outcomes. A organised proforma was used to record data in a methodical manner.

SPSS version 25.0 was used for statistical analysis. Categorical variables were shown as frequencies and percentages, whilst continuous variables were given as mean \pm standard deviation. The independent t-test for continuous variables and the chi-square test for categorical variables were used to compare groups. Statistical significance was defined as a p-value of less than 0.05. Prior to data collection, the institutional review board granted ethical permission for the project, and patient anonymity was upheld at all times.

Results

The study comprised 200 patients with either hypertension, diabetes mellitus, or both. Of them, 88 (44%) had no major social hazards (SDOH-negative group), whereas 112 (56%) had one or more adverse social determinants of health (SDOH-positive group). The participants' mean age was 52.4 ± 10.6 years, and 54% of them were female.

Table 1: Baseline Demographic and Clinical Characteristics

| Variable | SDOH-Positive (n=112) | SDOH-Negative (n=88) | p-value |
|-----------------------------|-----------------------|----------------------|---------|
| Age (years, mean \pm SD) | 53.1 \pm 10.2 | 51.6 \pm 11.1 | 0.28 |
| Female (%) | 62 (55.4%) | 46 (52.3%) | 0.67 |
| Duration of Disease (years) | 7.2 \pm 3.8 | 6.9 \pm 4.1 | 0.59 |
| Diabetes Mellitus (%) | 70 (62.5%) | 52 (59.1%) | 0.64 |



| Variable | SDOH-Positive (n=112) | SDOH-Negative (n=88) | p-value |
|---------------------|-----------------------|----------------------|---------|
| Hypertension (%) | 78 (69.6%) | 60 (68.2%) | 0.84 |
| Both Conditions (%) | 36 (32.1%) | 24 (27.3%) | 0.46 |

Regarding baseline clinical and demographic variables, there was no statistically significant difference between the two groups.

Table 2: Distribution of Social Determinants of Health

| SDOH Factor | Frequency (n=112) | Percentage (%) |
|---------------------------|-------------------|----------------|
| Low Income | 68 | 60.7% |
| Low Education Level | 54 | 48.2% |
| Unemployment | 46 | 41.1% |
| Food Insecurity | 58 | 51.8% |
| Poor Housing Conditions | 39 | 34.8% |
| Lack of Transportation | 44 | 39.3% |
| Limited Healthcare Access | 50 | 44.6% |

The social risk factors that participants most frequently indicated were low income and food insecurity.

Table 3: Clinical Outcomes at Baseline and 6-Month Follow-Up

| Outcome Measure | SDOH-Positive (Baseline) | SDOH-Positive (6 Months) | SDOH-Negative (Baseline) | SDOH-Negative (6 Months) | p-value |
|---------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------|
| HbA1c (%) | 8.9 ± 1.4 | 7.8 ± 1.2 | 8.5 ± 1.3 | 7.6 ± 1.1 | 0.04* |
| Systolic BP (mmHg) | 148.6 ± 12.5 | 134.2 ± 10.8 | 146.3 ± 11.9 | 130.5 ± 9.6 | 0.03* |
| Diastolic BP (mmHg) | 92.4 ± 8.2 | 84.6 ± 7.1 | 90.8 ± 7.9 | 82.1 ± 6.8 | 0.05* |

Over time, both groups' blood pressure and glycemic control improved, but the SDOH-negative group's improvement was more noticeable. However, after focused therapy, the SDOH-positive group also showed notable clinical improvement.

Table 4: Secondary Outcomes

| Outcome | SDOH-Positive (n=112) | SDOH-Negative (n=88) | p-value |
|------------------------------|-----------------------|----------------------|---------|
| Medication Adherence (%) | 78 (69.6%) | 72 (81.8%) | 0.04* |
| Regular Follow-up Visits (%) | 82 (73.2%) | 74 (84.1%) | 0.05* |



| Outcome | SDOH-Positive (n=112) | SDOH-Negative (n=88) | p-value |
|------------------------------|-----------------------|----------------------|---------|
| Hospital Admissions (%) | 20 (17.9%) | 10 (11.4%) | 0.18 |
| Improved Quality of Life (%) | 70 (62.5%) | 66 (75.0%) | 0.06 |

The SDOH-negative group had far superior medication adherence and follow-up compliance. However, following the use of supportive interventions, significant gains were also noted in the SDOH-positive group.

Conclusion

In conclusion, this study demonstrated that screening for social determinants of health (SDOH) plays a significant role in the comprehensive management of patients with diabetes mellitus and hypertension. A considerable proportion of the study population was found to have one or more adverse social determinants, highlighting the widespread presence of unmet social needs among patients with chronic diseases. These factors, including low income, food insecurity, limited healthcare access, and inadequate living conditions, were shown to influence disease control, treatment adherence, and overall health outcomes.

The results showed that patients without major social hazards had better blood pressure and glucose control, higher medication adherence, and better follow-up compliance. Crucially, though, following focused treatments including counselling, social support referrals, and healthcare access facilitation, individuals with adverse socioeconomic determinants also demonstrated significant clinical improvement. This implies that although SDOH have a detrimental effect on health outcomes, their effects can be lessened by prompt detection and suitable intervention.

The study emphasises that conventional biomedical methods by themselves are inadequate for the best treatment of long-term illnesses like diabetes and high blood pressure. Healthcare professionals can take a more patient-centered, holistic approach that addresses both medical and social needs by including SDOH screening into standard clinical practice. In addition to improving clinical results, this kind of integration increases patient involvement and advances health fairness.

Despite these encouraging results, there are still obstacles to the widespread use of SDOH screening, such as a lack of standardised instruments, a lack of resources, and the requirement for more robust healthcare-community relationships. Long-term results, the scalability of interventions, and the creation of structured models for incorporating social care into healthcare systems should be the main topics of future research.

Overall, this study shows that improving outcomes for diabetes and hypertension requires addressing social determinants of health. When paired with focused interventions, routine SDOH screening can greatly improve disease control, lessen disparities, and raise affected patients'





general quality of life.

References

1. Hill-Briggs F, Adler NE, Berkowitz SA, et al. Social determinants of health and diabetes. *Diabetes Care*. 2021;44(1):258–279.
2. Walker RJ, Smalls BL, Campbell JA, et al. Impact of social determinants on diabetes outcomes. *Endocrine*. 2014;47(1):29–48.
3. Ozieh MN, Garacci E, Walker RJ, et al. Impact of SDOH on mortality in diabetes. *BMC Nephrol*. 2021;22:76.
4. Egede LE, Walker RJ. Structural determinants of diabetes outcomes. *CurrDiab Rep*. 2020;20(6):21.
5. Berkowitz SA, Basu S. Unmet social needs and chronic disease outcomes. *Health Serv Res*. 2019;54(6):1219–1227.
6. American Diabetes Association. Standards of care in diabetes. *Diabetes Care*. 2022;45(Suppl 1):S1–S264.
7. World Health Organization. Social determinants of health framework. WHO; 2020.
8. Braveman P, Gottlieb L. The social determinants of health. *Public Health Rep*. 2014;129(Suppl 2):19–31.
9. Magnan S. Social determinants of health 101. *NAM Perspectives*. 2017.
10. Alderwick H, Gottlieb LM. Meanings and misunderstandings of SDOH. *Milbank Q*. 2019;97(2):407–419.
11. McClintock HF, Peacock V, Asong RN. SDOH and hypertension screening. *J Hum Hypertens*. 2025;39:148–154.
12. Systematic review of SDOH and hypertension outcomes. 2023
13. SDOH and hypertension disparities review. 2023
14. Yoon S, Goh H, Phang JK, et al. Socioeconomic factors and screening compliance. *Sci Rep*. 2023.
15. SDOH screening in metabolic risk populations. 2023

