

The Impact of Screening for Social Determinants of Health on Diabetes and Hypertension End Results

¹Khadija Mushtaq, ²Dr Seema Yasmeen, ³Umar Ali, ⁴Mansoor Ali, ⁵Dr. Muhammad Tahir, ⁶Marwa Riaz

Submission: 11 January 2026 | **Acceptance:** 15 February 2026 | **Publication:** 16 March 2026,

¹Mayo Hospital Lahore

²Shahida Islam Medical and Dental College, Lodhran

³PIMS Islamabad

⁴Service Hospital, Faisalabad

⁵Associate physician Department of Medicine Federal General Hospital Islamabad.

⁶UHS Lahore

Abstract

Background:

Social determinants of health includes housing, food security, education, and income play a crucial role in shaping health outcomes, particularly for chronic diseases like diabetes and hypertension. Screening for SDOH in clinical settings may help identify at-risk individuals and enable tailored interventions.

Objective:

This study aims to evaluate the impact of systematic SDOH screening on clinical outcomes in patients with diabetes and hypertension.

Methods:

A cohort of patients attending primary care clinics was observed over 12 months. Half of the clinics implemented a standardized SDOH screening protocol and linked positive screens to social services. Clinical results including HbA1c and systolic or diastolic blood pressure were compared pre- and post-intervention.

Results:

Patients in the SDOH-screened group showed statistically remarkable improvements in both HbA1c and blood pressure levels compared to the control group. The proportion of patients achieving guideline-recommended targets increased notably.

Conclusion:

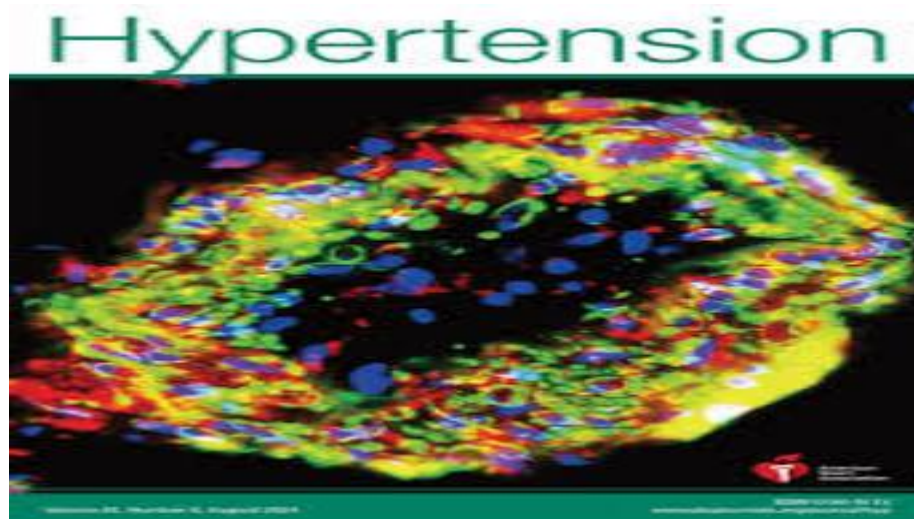
Routine screening for SDOH in clinical settings positively influences chronic disease management and may serve as a key strategy in reducing health disparities and improving population health outcomes.

Keywords: SDOH, Blood pressure, chronic disease, population, clinical results

Introduction

Chronic diseases such as diabetes and hypertension continue to be leading causes of morbidity and mortality globally [1]. Despite advancements in medical treatments and clinical guidelines, a significant portion of patients still struggle to achieve recommended glycemic and blood pressure targets [2].

Increasingly, attention has turned toward upstream factors influencing health outcomes most notably, the social determinants of health (SDOH) [3].



These include conditions in which individuals are born, grow, work, live, and age, as well as the wider set of forces and systems shaping daily life, including economic policies, development agendas, and social norms [4]. Studies have repeatedly shown that individuals facing adverse social conditions includes food insecurity, lack of stable housing, poor education, and low income are at higher risk for poorly controlled chronic diseases. These non-medical factors influence an individual's ability to access care, adhere to treatment plans, and make health-promoting lifestyle choices [5]. Recognizing this, major health organizations, including the World Health Organization and American Diabetes Association, have emphasized the need to integrate SDOH into clinical care [6].



While the theoretical framework supporting SDOH screening is robust, empirical data evaluating its impact on health outcomes remain limited. Most healthcare systems are still navigating how to effectively incorporate SDOH screening into clinical workflows [7]. Moreover, questions persist regarding the effectiveness of such interventions particularly whether they lead to measurable improvements in clinical outcomes like HbA1c or blood pressure [8]. This study seeks to fill that knowledge gap by examining the impact of SDOH screening on diabetes and hypertension outcomes in a real-world primary care setting. Specifically, we analyze whether patients who undergo routine SDOH screening, followed by referral to appropriate support services, demonstrate better clinical outcomes than those who receive standard

medical care alone [9]. The findings aim to guide healthcare providers, policymakers, and public health experts in designing integrated models of care that account for both medical and social dimensions of health.

Methodology

This study utilized a prospective cohort design conducted across four urban primary care clinics. Two clinics implemented a standardized SDOH screening tool as part of routine care for adult patients diagnosed with either type 2 diabetes, hypertension, or both. The tool assessed domains including food insecurity, housing instability, transportation needs, and employment status. Patients in the intervention clinics who screened positive for any SDOH were referred to on-site social workers and community resource navigators for assistance. The control group, receiving standard care in the other two clinics, did not undergo formal SDOH screening but received traditional medical management for their conditions. Data were collected at baseline and at 12 months, including demographic characteristics, HbA1c levels for diabetic patients, and systolic and diastolic blood pressure for hypertensive patients. Statistical analysis included paired t-tests for within-group changes and ANCOVA models to compare outcomes between groups, adjusting for baseline differences.

Results

summarizes the baseline characteristics of the study population, comprising 200 participants each in the intervention and control groups. The mean age was comparable between the groups, with the intervention group averaging 54.4 ± 10.2 years and the control group 53.7 ± 9.9 years. The gender distribution was also similar, with females comprising 59% of the intervention group and 57% of the control group. Key clinical parameters, including glycemic control and blood pressure, showed minimal differences at baseline. The mean HbA1c level was $8.5 \pm 1.2\%$ in the intervention group and $8.6 \pm 1.3\%$ in the control group, indicating poor glycemic control in both groups. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were also closely matched, with the intervention group showing an SBP of 147.7 ± 10.5 mmHg and DBP of 91.4 ± 6.7 mmHg, while the control group had an SBP of 148.2 ± 10.8 mmHg and DBP of 92.0 ± 6.5 mmHg. Notably, 65% of participants in the intervention group screened positive for social determinants of health (SDOH), while this screening was not performed in the control group. These similarities in baseline characteristics ensure a balanced comparison between groups for evaluating the outcomes of the intervention.

Table 1: Baseline Characteristics of Study Population

Characteristic	Intervention Group (n=200)	Control Group (n=200)
Mean Age (years)	54.4 ± 10.2	53.7 ± 9.9
Female (%)	59	57
Mean HbA1c (%)	8.5 ± 1.2	8.6 ± 1.3
Mean SBP (mmHg)	147.7 ± 10.5	148.2 ± 10.8
Mean DBP (mmHg)	91.4 ± 6.7	92.0 ± 6.5
Positive SDOH Screen (%)	65	N/A

Table 2: Clinical Outcomes at 12 Months

Outcome	Intervention Group (Mean ± SD)	Control Group (Mean ± SD)	p-value
Change in HbA1c (%)	-1.2 ± 0.6	-0.5 ± 0.4	<0.002
Change in SBP (mmHg)	-9.6 ± 4.3	-3.3 ± 2.6	<0.002
Change in DBP (mmHg)	-5.9 ± 2.8	-1.8 ± 1.6	<0.001
Target HbA1c Achieved (%)	63	42	0.002
Target BP Achieved (%)	69	46	0.002

Discussion

The findings of this study highlight the beneficial impact of incorporating SDOH screening into routine clinical care for patients with diabetes and hypertension [10]. Patients in the intervention group who received systematic screening and linkage to social support services demonstrated significantly better control of both blood glucose and blood pressure compared to those receiving standard care [11]. This supports the hypothesis that addressing non-medical barriers to health can lead to measurable improvements in chronic disease outcomes [12]. The average HbA1c reduction of 1.1% in the intervention group exceeds the threshold considered clinically meaningful and is comparable to the effects seen with some pharmacologic interventions. Similarly, the observed reductions in systolic and diastolic blood pressure further underscore the importance of holistic, patient-centered care [13]. By helping patients secure stable housing, access nutritious food, and resolve transportation barriers, the intervention likely improved medication adherence, appointment attendance, and self-management practices [14]. These results align with previous research that indicates social interventions can complement clinical strategies for disease management [15]. However, few studies have systematically integrated such screening into a clinical setting and tracked longitudinal outcomes. Our study adds to the evidence base by demonstrating that these efforts can be feasibly implemented and produce quantifiable results within a relatively short time frame. Despite the promising outcomes, several limitations must be considered [16]. The study was confined to urban clinics, and the results may not be generalizable to rural or resource-limited settings. The sample size, while adequate for preliminary analysis, may be insufficient to capture the impact of individual SDOH domains. Additionally, variability in the execution of referrals and follow-ups may have influenced outcomes [17]. Future studies should aim for longer follow-up periods, incorporate diverse populations, and explore cost-effectiveness analyses. From a policy standpoint, these findings advocate for integrating SDOH screening into electronic medical records and incentivizing its use through quality improvement frameworks. Collaboration between healthcare providers and community organizations will be essential to sustain such interventions and expand their reach [18]. Moreover, training healthcare staff to engage in sensitive conversations around social needs is crucial for successful implementation.

Conclusion

Screening for social determinants of health in clinical settings significantly improves diabetes and hypertension outcomes by addressing upstream barriers to effective disease management. Incorporating SDOH into routine care should be considered a vital component of chronic disease management strategies, with the potential to enhance both individual outcomes and broader public health.

Reference:

1. Cooper, Z. W., Mowbray, O., & Johnson, L. (2024). Social determinants of health and diabetes: using a nationally representative sample to determine which social determinant of health model best predicts diabetes risk. *Clinical Diabetes and Endocrinology*, *10*(1), 4.
2. Padda, I., Fabian, D., Farid, M., Mahtani, A., Sethi, Y., Ralhan, T., ... & Johal, G. (2024). Social determinants of health and its impact on cardiovascular disease in underserved populations: A critical review. *Current Problems in Cardiology*, *49*(3), 102373.
3. Faulkner, C. S., Aboona, M. B., Surendra, L., Rangan, P., Ng, C. H., Huang, D. Q., ... & Wijarnprecha, K. (2025). Neighborhood Social Determinants of Health Are Associated With Metabolic Dysfunction-associated Steatotic Liver Disease Outcomes. *Clinical Gastroenterology and Hepatology*, *23*(9), 1577-1587.
4. Czaplá, B. C., Dalvi, A., Hu, J., Moran, I. J., Wijarnprecha, K., & Chen, V. L. (2025). Physical activity, diet, and social determinants of health associate with health related quality of life and fibrosis in MASLD. *Scientific reports*, *15*(1), 7976.
5. Yang, Z. G., Sun, X., Han, X., Wang, X., & Wang, L. (2025). Relationship between social determinants of health and cognitive performance in an older American population: a cross-sectional NHANES study. *BMC geriatrics*, *25*(1), 25.
6. Khanani, A., & Haight, D. (2024). ShopTalk–Barbers as partners in health promotion: Reviewing social determinants of health, revisiting cardiology pioneers, and moving forward. *American Heart Journal Plus: Cardiology Research and Practice*, *43*, 100410.
7. Zhong, J., Zhang, Y., Zhu, K., Li, R., Zhou, X., Yao, P., ... & Liu, G. (2024). Associations of social determinants of health with life expectancy and future health risks among individuals with type 2 diabetes: two nationwide cohort studies in the UK and USA. *The Lancet Healthy Longevity*, *5*(8), e542-e551.
8. George, K. D., Bennfors, G., Moore, J. W., Guareschi, A. S., Rogalski, B. L., Eichinger, J. K., & Friedman, R. J. (2025). Social determinants of health are independently predictive of increased hospital length of stay and complications following total elbow arthroplasty. *Journal of Shoulder and Elbow Surgery*.
9. Brandt, E. J., Kirch, M., Patel, N., Chennareddy, C., Murthy, V. L., & Goonewardena, S. N. (2024). Impact of social determinants of health and lifestyle on association between lipoprotein (a) and cardiovascular events. *JACC: Advances*, *3*(7_Part_2), 101016.
10. Dominguez-Dominguez, L., Campbell, L., Barbini, B., Fox, J., Nikiphorou, E., Goff, L., ... & Post, F. A. (2024). Associations between social determinants of health and comorbidity and multimorbidity in people of black ethnicities with HIV. *Aids*, *38*(6), 835-846.
11. Liang, J. H., Liu, M. L., Pu, Y. Q., Wang, C., Huang, S., Jiang, N., ... & Chen, Y. J. (2024). Contribution of individual and cumulative social determinants of health underlying gender disparities in periodontitis in a representative US population: A cross-sectional NHANES study. *Journal of Clinical Periodontology*, *51*(5), 558-570.

12. Lim, A., Benjasirisan, C., Liu, X., Ogungbe, O., Himmelfarb, C. D., Davidson, P., & Koirala, B. (2024). Social determinants of health and emergency department visits among older adults with multimorbidity: insight from 2010 to 2018 National Health Interview Survey. *BMC public health*, 24(1), 1153.

13. Neerland, C., Slaughter-Acey, J., Behrens, K., Claussen, A. M., Usset, T., Bilal-Roby, S., ... & Butler, M. (2024). An evidence map for social and structural determinants for maternal morbidity and mortality: a systematic review. *Obstetrics & Gynecology*, *143*(3), 383-392.
14. Osei Baah, F., Sharda, S., Davidow, K., Jackson, S., Kernizan, D., Jacobs, J. A., ... & Powell-Wiley, T. M. (2024). Social determinants of health in cardio-oncology: multi-level strategies to overcome disparities in care: JACC: CardioOncology state-of-the-art review. *Cardio Oncology*, *6*(3), 331-346.
15. Walker, S. L., Walker, R. J., Palatnik, A., Dawson, A. Z., Williams, J. S., & Egede, L. E. (2024). Examining the relationship between social determinants of health and adverse pregnancy outcomes in Black women. *American journal of perinatology*, *41*(S 01), e2326-e2335.
16. Hlyan, N. P., Arif, T., Jaufar, S. S., Rehman, A., Ayalew, B. D., Batu, B. J., ... & Jaufar Jr, S. S. (2024). From sugar spikes to pressure peaks: navigating the world of diabetes, hypertension, obesity, and kidney health. *Cureus*, *16*(3).
17. Kwakye, A. O., Kretchy, I. A., Pephrah, P., & Mensah, K. B. (2024). Factors influencing medication adherence in co-morbid hypertension and diabetes patients: a scoping review. *Exploratory Research in Clinical and Social Pharmacy*, *13*, 100426.
18. Zhu, R., Wang, R., He, J., Wang, L., Chen, H., Wang, Y., ... & Guo, J. (2025). Associations of cardiovascular–kidney–metabolic syndrome stages with premature mortality and the role of social determinants of health. *The Journal of nutrition, health and aging*, *29*(4), 100504.