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PSYCHOSOCIAL ASPECTS (SS JASER, SECTION EDITOR)

Bringing Social Context into Diabetes Care: Intervening on Social Risks versus Providing Contextualized Care

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Abstract

Purpose of Review Patient social and economic risk information can guide diabetes care through social risk–targeted care (directly intervening on social risk factors) or social risk–informed care (modifying or tailoring care to accommodate social risks). We review evidence supporting these approaches and highlight critical gaps in the current evidence.

Recent Findings Literature is scarce on isolated social care interventions and the impact on glycemic control is unclear, while blended social-behavioral interventions more consistently point to reductions in HbA1c. Social risk–informed care naturally occurs at low rates, yet holds potential to improve care.

Summary Momentum is building around programs designed to intervene on social risk factors and/or to contextualize care based on social context. Future work will need to isolate the impacts of these programs, clarify the pathways through which social care programs can improve outcomes, and identify provider barriers and facilitators to using social risk information in care.

Keywords Social risk · Social determinants of health · Contextualized care · Social intervention

Introduction

Type 2 Diabetes and Social Determinants of Health Type 2 diabetes mellitus (T2DM) is a growing major public health problem in the USA; 23.1 million Americans have been diagnosed, and millions more are at risk for developing T2DM [1]. Nationally, the financial burden of diabetes is high: annual direct medical costs of diabetes-related care exceed $176 billion (CDC) [2]. The burden that diabetes poses extends far beyond financial implications, impacting health and social outcomes as well, and these burdens are inequitably distributed across the population. Rates of T2DM are higher for African American and Hispanic/Latino patients, and among those with lower education or with less income, and in rural communities [3–5]. The disproportionate prevalence of T2DM across populations has been linked with disparities in other social and economic risks, including access to and cost of health care, but also basic resource barriers like food insecurity, housing instability, and unemployment [6–13]. These social and economic risks impact daily diabetes management decisions and long-term health outcomes [14–23]. To illustrate, a systematic review of 61 T2DM studies highlighted associations between multiple areas of social and economic risks with poorer glycemic control, blood pressure,

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cholesterol, and quality of life [24]. To date, the majority of evidence on social and economic risk and diabetes risk as well as outcomes involves cross-sectional or observational studies; little data explores whether and how intervening on social context improves diabetes outcomes.

Using Social and Economic Risk Information in Health Care The increasing recognition that health is shaped by social and environmental risks underlines new recommendations from multiple leading medical professional organizations to include social and economic risk assessments and interventions in health care delivery [25–30]. The 2018 American Diabetes Association Clinical Practice Guideline recommendations include (1) assessment of social context and application of social context information to treatment decisions; (2) patient referrals to available community resources; and (3) provision of patient self-management support from health coaches, CHWs, or navigators [31]. Introducing social risk information into clinical care can be achieved by screening individual patients (e.g., assessing for food insecurity in clinical settings), and/or by integrating community-level social risk data into care contexts (e.g., importing neighborhood social deprivation index scores into electronic health records; see Fig. 1). While there is not yet adequate evidence to support a specific combination of patient and or community factors that are most important to consider in care, consensus is slowly emerging around a core set of actionable social domains, including food insecurity, housing instability, and difficulties with transportation and paying bills [28, 32] with the need for further evaluation of how these may differ by patient population (e.g., rural).

The enthusiasm for social risk assessment has been especially strong in community health centers (CHCs), driven in part by strong mission alignment and who disproportionately serve low-income, diverse populations that may benefit the most from programs designed to address patients' social and economic security [33–35]. Many CHCs are now systematizing social needs screening at the point of care. Once individual patient screening or community vital sign information is obtained, it can then be used in caring for individual patients or in directing towards community-based resources. At the individual level, information about social and economic risk can be used to guide health care decision-making in two ways: (1) It can help providers modify care recommendations to accommodate social risks and tailor clinical plans to reduce the impact of social or economic adversity without necessarily targeting the social condition itself and (2) social risk factors can serve as the target of interventions that seek to reduce or address the risk factor directly (e.g., through navigation services or linkages with community resources). These approaches are referred to as "social risk–informed" and "social risk–targeted" (see Fig. 1, [36••]). Both are likely to impact patient outcomes including quality of life, stress, adherence to treatment recommendations, and more distally, clinical outcomes. Here, we review the preliminary evidence supporting these approaches to leveraging social risk information in medical care, focusing on literature specific to diabetes. We also highlight critical gaps in the evidence that should help guide future research.

Social Risk–Targeted Care Building on prior research linking social and economic risks with health outcomes, an emerging body of research now examines health care–based interventions that target social risk factors [37•]. Some of this research shows that social risk–targeted care can reduce social needs,

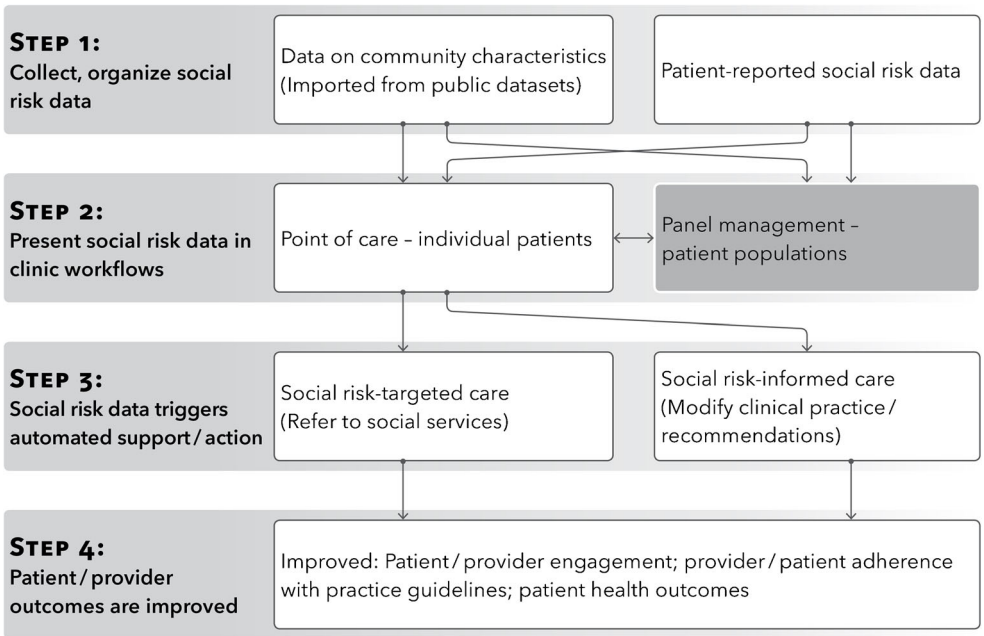

Fig. 1 Conceptual model of social risk–targeted and –informed care. (Adapted with permission from "Perspectives in primary care: a conceptual framework and path for integrating social determinants of health into primary care practice," March/April, 2016, Vol 14, No 2, *Annals of Family Medicine* Copyright © 2016 American Academy of Family Physicians, All Rights Reserved) [36••]

improve patient health, and reduce avoidable health care costs such as unnecessary visits to the emergency department [38••, 39, 40]. In adult ambulatory care and inpatient settings, navigator-led social interventions contributed to increases in social service referrals and receipt of community and government programs, decreases in patient-identified social risks, and improvements in blood pressure, lipid levels, mental health, and readmissions [38••, 39–42].

Despite these promising research findings, little is known about the impact of social risk–targeted care on patients with T2DM. One of the few existing evaluations included 774 adults with T2DM and taking part in the Health Leads program in the Boston area. Individuals as part of usual clinic care were screened for social risks. Over half (58.4%, $n = 452$, baseline HbA1c = 7.5) of individuals reported one or more unmet social risks and took part in a care navigator program staffed by undergraduate volunteers, who assisted with connecting patients to community and government resources related to identified risks, with a median of five contacts with program volunteers. While the remaining 41.6% ($n = 322$, baseline HbA1c = 7.2) screened negative and were allocated to a comparison group. At follow-up, there was no change in HbA1c levels within the intervention group or compared with usual care [38••]. A second study that used Medicare claims to assess the effects of participation in the supplemental nutrition assistance program (SNAP) found no differences in HbA1c levels on the basis of SNAP participation [43]. One interpretation of the null findings in these two studies is that impacting disease-specific outcomes may require more than targeted social risk interventions alone. In other words, social risk–targeted care may be necessary but insufficient to improve outcomes in a complex disease like diabetes on its own. For example, Seligman and colleagues [44•] partnered with community food pantries to offer diabetes-tailored food in addition to self-management support and primary care referrals. After 6 months, the intervention group reported significant improvements in food security and fruit and vegetable intake relative to controls. Significant reduction in HbA1c levels relative to the control group was also seen in participants who took part in all aspects of the intervention program (diabetes education classes, ≥ 1 primary care appointment, and picking up a minimum number of food boxes). Multi-faceted interventions combining social risk–targeted approaches with health education and active care engagement may therefore be needed to significantly impact diabetes outcomes.

While the literature is scarce on interventions for that isolate intervention programs for social care, related research on blended behavioral or medical interventions that includes a social intervention component suggests that social care is one important aspect of improving diabetes outcomes. Several studies in addition to Seligman et al. examined how blended social, medical, and behavioral health care can improve health for patients living with T2DM [42, 45–47]. Some of these studies explored the role of community health workers (CHWs), who can assist patients across social, medical, and behavioral dimensions. For example, a CHW might connect patients with social resources, provide disease-specific education, counsel around behavior change, and help them navigate the health system [42, 44, 46, 48•]. Evaluations of CHW interventions that incorporate some component of social care largely report improvement in HbA1c [46]. For example, in a study of Latinos with T2DM ($n = 300$), participants receiving CHW education and navigation assistance decreased HbA1c levels by 0.5% at 1-year follow-up [48•]. Similarly, in a randomized control intervention utilizing CHWs to provide both community resource linkages and diabetes management support, the intervention group showed greater HbA1c reductions among those with elevated baseline HbA1c [47]. Published findings often focus on diabetes-relevant clinical outcomes and rarely report on rates of uptake of resource linkages or changes in social/economic risks. This narrow focus on clinical outcomes limits our ability to disentangle the impacts of different program components.

Social Risk–Informed Care In contrast to social needs–targeted interventions, which seek to directly change aspects of an individual's social context, social needs–informed care involves using social and economic risk data to tailor medical care based on an individual's social context. For example, using information about patient food insecurity, a provider could ensure nutrition counseling involves contextually sensitive recommendations around food purchasing (e.g., food pantry, discount markets).

This rationale for collecting social risk information may be especially meaningful to clinicians working in clinical settings or communities where the capacity to provide social needs–targeted care is low [49•]. In one randomized controlled trial of a navigation program set in primary and urgent care settings, improvements in participants' health were not mediated by changes in social needs [40]. Similar findings were shown in a separate study of adult high utilizers [50]. These health and care utilization impacts may occur because discussions about social and economic risk factors enable providers and patients to weigh social risk factors in clinical decision-making, including in ways that could increase adoption of and adherence to evidence-based care [51, 52]. In addition to influencing medication choices, having data on social context could also change other care decisions (e.g., physical activity recommendations, spacing of return visits, or referrals to specialists). In one recent study, primary care clinicians in a private clinic ($n = 123$) changed clinical care in one quarter of cases where they were presented with social risk data—such as being more mindful of medication costs. In more than half of these encounters, providers reported that this information improved their interactions with and knowledge of the patient [53••]. These numbers likely underestimate the degree to which social risk information could

influence care in settings serving more vulnerable populations. In addition to patient and patient-provider relationship outcomes, related work is beginning to examine provider outcomes and benefits to collecting social risk information. Two studies, including a large national study of primary care clinicians, have now linked provider perception of their clinics' capacity to assess and respond to patient social risks to lower provider burnout [54•, 55•].

Despite our awareness that social risk data could influence clinical decisions, little research explicitly explores whether and how social risk data are used to influence care recommendations, and if any resultant changes to clinical decisions improve patient health. The limited work in this area suggests that when social risk data are provided via verbal cues, providers inconsistently incorporate this information into care decisions [53••, 56, 57]. Some of the most methodologically rigorous work in this area comes from Weiner and Schwartz [56, 58, 59, 60••] in VA settings. Treatment plans that appropriately considered patient contextual circumstances occurred in < 10% of diabetes cases, the lowest rate across the other conditions assessed in the study (asthma, hip replacement, and weight loss). Results may in part reflect a concentration on medication management and lifestyle change through information provision and/or goal setting, without exploration of or integration of patients' contextual circumstances into care planning. After patients presented a contextual cue (e.g., recent job loss) during a clinical encounter, providers failed to consider patient context in two ways: (1) provider failure to explore a patient provided contextual cue (e.g., recent job loss) to understand how context impacted the patient's diabetes management (40% of contextual errors) and (2) the other 60% of errors occurred after probing, when providers continued to deliver algorithm-based care without accounting for context [56, 60••]. For example, when a standardized patient with hypoglycemic episodes indicated poor health literacy, the clinician recommended adjusting their insulin dose without responding to the literacy issues.

Some of our own recent work in this area reinforces Schwartz and Weiner's findings. In the context of primary care appointments in six CHCs, T2DM patients were screened for self-management barriers (e.g., diet, physical activity, medication taking) and social risks. The patients then co-created behavioral action plans (e.g., plans to change diet) with members of the health care team. Reviewing program records and action plans, we observed that 67% of patients with one or more social risk factors ($n = 163$) endorsed at least one social risk that coders rated as a relevant social risk contextual cue that could impact the action plan. Yet in only 15% of those cases was there any indication that the social risk information influenced the care plan. For example, a patient who made a plan to increase physical activity but reported feeling unsafe in their neighborhood nonetheless made a plan with their provider to walk in the neighborhood at night after work. The plan did not account for concerns about neighborhood safety. In contrast, another patient with the same physical activity goal and reported social risk developed a plan with their provider to walk around the inside perimeter of a local MegaStore, deemed a safe alternative to outdoor activity (see Table 1). Based on these findings, we plan to link care plan data with clinical, social, and behavioral outcomes to explore the impacts of providing social risk–informed care in these diabetes management encounters.

When we describe social risk–informed care to medical audiences, we often hear the reaction that what we are describing is simply providing "good quality care." However, this small but growing area of research suggests that even in safety-net settings, social risk information is rarely naturally incorporated into care decisions and planning. These low rates of rates of social risk–informed care result, at least in part, from important gaps in evidence about the most effective ways to use social risk data to influence treatment decision-making. As social risk data become increasingly available to care teams, more clarity is needed on how they can be used to improve patient-centered decision-making and care planning.

Table 1 Action plan examples of social need–informed care contrasted with lack of social need–informed care

Diabetes management Action plan goal	Patient social context	Social need contextualization	Lack of social need contextualization
Increasing vegetables in diet	Food insecurity	Go to food bank or .99 cent store to buy vegetables weekly	Buy more vegetables
Increasing vegetables in diet	Housing instability	Ask navigator for space in clinic fridge to store vegetables	Eat more vegetables
Increase physical activity	Bill problems	Walk in neighborhood	Join a gym
Increase physical activity	Community safety	Walk inside perimeter of nearby Walmart for 30 min/3× week after work.	Walk in the evenings in neighborhood
Taking medications as directed	Food insecurity	Use of community food resources and specific plan for food to be available at specific times as needed	Set a reminder to take medications
Taking medications as directed	Bill problems	Examine options for medications and bill assistance resources	Clinician reminder to take medications

Key Knowledge Gaps and Next Steps Research on social risk–targeted and –informed care is limited but expanding rapidly; diabetes-focused work is developing in parallel. In their 2015 review of social interventions for diabetes, Barnard and colleagues reviewed material needs support interventions, noting the relative dearth of work in this area. They also proposed a conceptual model illustrating how social risks are likely to influence diabetes self-management directly or indirectly through distress/stress, and how diminished self-management behavior could impact glycemic control and health. While conceptually the field has matured in understanding how social interventions in diabetes care may impact health outcomes, there remains a relative dearth of knowledge regarding the impact of social interventions on health outcomes.

To better understand the potential of social risk–targeted and –informed care to improve diabetes care and outcomes, future research will need to isolate the impacts of these programs, ideally through study designs that disentangle social and behavioral intervention components. To clarify the pathways through which social care programs can improve outcomes, studies should include a wider range of diabetes-related outcomes that may also serve as mediators through which social care interventions impact clinical outcomes (e.g., diabetes distress, self-efficacy, self-management behaviors, trust), measures of change in both social risk (e.g., food security, housing stability) and clinical outcomes (e.g., HbA1c, BMI), and provision of guideline-concordant care. For any effective intervention to be sustainable, studies will also need to include health care utilization and cost outcomes. In parallel with assessing intervention program effectiveness, implementation research is needed to identify provider barriers and facilitators to using social risk information at the point of care, and the development of clinical decision-making tools to assist care teams with providing both social risk–targeted and –informed care. In addition to patient outcomes, there is an important opportunity to increase buy-in from providers and health systems, by further study of provider and staff outcomes, building on initial support of the reduced rates of burnout in clinics that are addressing social risks. Finally, there will be a critical need for work that connects the growing evidence base to policymakers and health plans to consider payment for social interventions.

Several large trials currently underway may help answer some of the outstanding questions in this field. For example, the NIDDK-funded ASCEND trial is a cluster-randomized trial examining the impact of an EHR-integrated social risk screening and referrals in 30 CHCs with a focus on diabetes outcomes. Another example is the CMS Accountable Health Communities, which is the largest national demonstration project to date on social care interventions. The demonstration's evaluation will examine the impact of social risk screening and referrals on patient-reported, health, and utilization outcomes in 31 regions across the USA, each involving > 75,000 patients annually. In parallel, multiple additional state level programs, such as the Whole Person Care Pilots in California, provide opportunities to study coordinated health, behavioral, and social services delivery. While some of these interventions are not focused on diabetes, sample sizes are large and provide important opportunities to conduct focused sub-analyses of patients with T2DM.

Conclusion Social and economic adversity negatively impacts on diabetes management and outcomes. Momentum is building around documenting the impact of programs designed to intervene or change social risk factors and/or to contextualize care based on an individual's social context. Though social risk–targeted and –informed care are not mutually exclusive—and at times they blur—distinguishing between them can highlight ways practitioners and researchers could advance work in this area [61].

Compliance with Ethical Standards

Conflict of Interest Danielle Hessler, Vicky Bowyer, Rachel Gold, Laura Shields-Zeeman, Erika Cottrell, and L.M. Gottlieb declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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