



Equity in Psychosocial Outcomes and Care for Racial and Ethnic Minorities and Socioeconomically Disadvantaged People With Diabetes

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The role of social determinants of health (SDOH) in promoting equity in diabetes prevalence, incidence, and outcomes continues to be documented in the literature. Less attention has focused on disparities in psychosocial aspects of living with diabetes and the role of SDOH in promoting equity in psychosocial outcomes and care. In this review, the authors describe racial/ethnic and socioeconomic disparities in psychosocial aspects of living with diabetes, discuss promising approaches to promote equity in psychosocial care, and provide future research directions.

The coronavirus disease 2019 pandemic's disproportionate impact on marginalized and medically underserved communities has led to renewed focus on achieving health equity for racial/ethnic minorities, socioeconomically disadvantaged individuals, and other marginalized populations. Health equity is defined as the state in which everyone has a fair and just opportunity to be as healthy as possible (1). Achieving this state involves removing obstacles to health, such as poverty and discrimination, and their consequences, such as powerlessness and lack of access to care (1). Calls to address health equity among people with diabetes have largely focused on rectifying the longstanding inequities in medical care and diabetes prevalence, incidence, and outcomes. Indeed, racial/ethnic disparities persist in gestational diabetes mellitus (GDM) and type 2 diabetes prevalence (2,3) and in diabetes-related morbidity and mortality in individuals with GDM, type 1 diabetes, and type 2 diabetes (4,5). However, the field has paid less attention to racial/ethnic or socioeconomic disparities in psychosocial aspects of living with diabetes and to equitable approaches to psychosocial care. This inattention has persisted despite ample documentation that psychological, social, and environmental factors affect diabetes self-management and medical outcomes throughout life (6). A heightened focus on psychosocial care and outcomes among marginalized groups is therefore key to achieving overall health equity for people with diabetes.

Social determinants of health (SDOH) consist of important intervention targets needed to achieve health equity. The World Health Organization defines SDOH as the conditions in which people are born, grow, work, live, and age and the wider set of forces and systems shaping the conditions of daily life, such as one's food environment (e.g., food insecurity and limited access) and social context (e.g., social support and discrimination) (7). The effects of SDOH continue to be noted in the literature, including a recently published scientific literature review by Hill-Briggs et al. (8). The goal of this literature review was to synthesize associations of SDOH with diabetes risk and outcomes and assess the impact of interventions targeting SDOH on diabetes outcomes.

Psychosocial and mental health literature makes clear that SDOH also affect psychological and mental health outcomes and can disproportionately affect individuals from marginalized backgrounds (9). For example, discrimination related to race/ethnicity, immigrant status, and occupational status contributes to poorer mental health (10–12). However, only a few published studies have focused on ways to address SDOH in the psychosocial care of people with diabetes to promote equitable psychological and mental health outcomes. Therefore, the aims of this review are to 1) describe what is currently known about inequities in social determinants and psychosocial outcomes (e.g., diabetes distress, depressive symptoms, and social support) among

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racial/ethnic minorities and socioeconomically disadvantaged people with type 2 diabetes, type 1 diabetes, and GDM; 2) discuss promising care approaches to promote equity in diabetes psychosocial care; and 3) pinpoint directions for future research.

Social Determinants, Psychological Functioning, and Mental Health

Recent SDOH frameworks emphasize the role of inequities in social conditions in the greater psychological and mental health burden found among racial/ethnic minority groups, socioeconomically disadvantaged groups, and other marginalized populations. For example, contemporary models propose that social determinants such as racism, disproportionate levels of pervasive and chronic stressors, and adverse and traumatic experiences can affect psychological and mental health burden. In people from socioeconomically disadvantaged or racial/ethnic minority backgrounds, inequities in social conditions can intersect with the challenges of adjusting to and managing diabetes and contribute to disparities in psychosocial outcomes. Yet, little research has been done to examine associations between social determinants and psychosocial outcomes among racial/ethnic minorities and socioeconomically disadvantaged individuals with diabetes.

Discrimination

Few studies have examined the role of discrimination in psychosocial functioning among African American and Hispanic adults with type 2 diabetes—specifically, the relationship of everyday discrimination (chronic and unfair treatment in everyday life) and diabetes distress and depression. Everyday discrimination because of one's race/ethnicity has been significantly associated with higher levels of diabetes distress and greater depressive symptoms for Latinos but not for African Americans with type 2 diabetes (13). Notably, such experiences contribute to higher A1C levels through higher diabetes distress levels (14), which suggests that the stress associated with everyday discrimination may compound diabetes-related emotional burden and contribute to disparate medical outcomes.

Discrimination in health care has also been examined among African Americans. Perceived discrimination in health care is also associated with higher A1C among African American men (15). Future research should examine whether health care discrimination influences poorer health outcomes by influencing psychosocial functioning.

Chronic Stress

Life stress has been examined among Black and Hispanic young adults with type 1 diabetes. Using a national sample

from the T1D Exchange clinic registry, a greater proportion of Hispanic young adults reported four or more general life stressors within the past year (17%) compared with non-Hispanic White young adults (12%) (16). No significant differences were found between African American and non-Hispanic young adults.

Among youth with type 2 diabetes, having at least one major stressful event in a year contributed to elevated depressive symptoms (17). It is important to note that families of youth with type 2 diabetes experience unique stressors, including experiencing a lack of access to health and mental health care, working multiple jobs, and caring for relatives with complications of type 2 diabetes (18).

One chronic stressor, food insecurity, has been examined among socioeconomically disadvantaged adults with type 2 diabetes. Results indicate that food insecurity is associated with higher levels of diabetes distress, depressive symptoms, and fatalism (19). Importantly, food insecurity indirectly influences A1C and self-management behavior because it increases diabetes distress, depressive symptoms, and self-efficacy (20). In addition, a relationship between self-efficacy and food insecurity has been noted (20).

Adverse Experiences and Traumatic Events

Adverse childhood experiences (ACEs) are potentially traumatic events that occur in childhood and include experiencing or witnessing violence or having a family member die (21). African American young adults with type 1 diabetes are more likely to have experienced an ACE than non-Hispanic Whites (22). A large body of research shows that ACEs can lead to poor mental health, including greater rates of depression (23).

Overall, the literature suggests that inequitable social conditions contribute to poorer psychosocial outcomes. Still, further research is needed that evaluates the relationship between SDOH—particularly discrimination, racism, and chronic and pervasive stress—and psychosocial outcomes among people with diabetes from marginalized backgrounds. This additional research is vital to developing equitable psychosocial care approaches. Below we describe the literature documenting disparities in psychosocial outcomes.

Diabetes Distress

Adults

Diabetes distress is defined as the negative feelings and emotional burden associated with the challenges and demands of living with diabetes, obtaining support, and accessing care. In a meta-analysis, significant diabetes distress was identified in one-third of adults with type 2 diabetes,

with higher diabetes distress among Black, Latino, and American Indian adults. Higher diabetes distress levels are associated with less understanding of type 2 diabetes and its management and with other psychological and social factors.

Studies have also demonstrated that African American young adults with type 1 diabetes report higher levels of diabetes distress than do non-Hispanic White young adults. Moreover, the higher distress level among African Americans compared with non-Hispanic Whites was significantly associated with disparities in A1C (4). Findings regarding inequities in diabetes distress among Hispanic young adults with type 1 diabetes have been mixed. A sample of young adults from the T1D Exchange showed more frequent diabetes-specific distress among Hispanic young adults compared with non-Hispanic White young adults with type 1 diabetes in response to a one-item questionnaire (16). However, no ethnic differences were found between Hispanic and non-Hispanic young adults in a national sample using the Diabetes Distress Scale (4).

Finally, a 2021 systematic review and meta-analysis examining GDM among racial/ethnic minority women highlighted the burden of diabetes-related psychological distress, including concerns about the baby's health, glucose monitoring, and insulin injections (24). The prevalence of elevated stress was two times higher among women with GDM than without. Women with GDM may also experience distress in the postpartum period because of fear of a type 2 diabetes diagnosis, prompting avoidance of recommended care such as postpartum glucose monitoring necessary to screen for diabetes (25) as advised by the American Diabetes Association and American College of Obstetricians and Gynecologists (26,27).

Youth

Approximately 80% of youth-onset type 2 diabetes occurs among African American, Hispanic, and Native American youth (3), and type 2 diabetes disproportionately affects youth from families with low socioeconomic status (3,28). A significant proportion of people with youth-onset type 2 diabetes (24%) report clinically significant diabetes distress in early adulthood, and those who are uninsured have higher levels of diabetes distress (29). Higher levels of diabetes distress in young adults with youth-onset type 2 diabetes are associated with elevated depression and anxiety symptoms (29).

Diabetes distress has also been examined among youth with type 1 diabetes. Children and adolescents with type 1 diabetes from socioeconomically disadvantaged and

racial/ethnic minority backgrounds report elevated diabetes distress levels. Specifically, non-Hispanic Black and Hispanic youth have demonstrated higher diabetes distress levels than their non-Hispanic White peers with type 1 diabetes (30).

Overall, the research on disparities in diabetes distress shows pervasive inequities for African American and Hispanic adults, young adults, and youth with either type 1 or type 2 diabetes and significant diabetes-related distress among racial/ethnic minority women with GDM. Higher distress levels are associated with more depression and anxiety symptoms as well as lower psychological functioning and elevated A1C.

Depression and Anxiety Symptoms

Adults

Depression and anxiety are often simultaneously examined among people with type 2 diabetes, and studies have produced mixed findings about racial/ethnic differences in rates of depression (31). Nonetheless, across diverse racial/ethnic groups with type 2 diabetes, depression has been associated with negative medical outcomes and suboptimal engagement in self-care (31).

Research has shown that GDM is significantly more prevalent among women who had depression prior to pregnancy compared with those who did not (24). Considering racial/ethnic inequities in GDM prevalence (2), we urgently need effective strategies to identify mental health and emotional concerns in diverse populations with GDM.

Youth

A recent review concluded that ~20% of youth with type 2 diabetes have elevated depression symptoms (32). Among youth with type 2 diabetes in the TODAY (Treatment Options for Type 2 Diabetes in Adolescents and Youth) study, youth who demonstrated less oral medication-taking during a 2-year period reported more depression symptoms at baseline compared with youth with higher medication-taking rates (17).

The paucity of research available that evaluates depression in racial/ethnic minority youth with type 1 diabetes has demonstrated greater depressive symptoms in this population than among their non-Hispanic White counterparts (33). While Black and Hispanic youth with type 1 diabetes endorse higher levels of depressive symptoms than their non-Hispanic White counterparts, they have also been found to engage in fewer coping behaviors (attempts to change a problem/one's response to a problem

or attempts to adapt to a stressor) and have demonstrated greater engagement in disengagement coping (e.g., avoidance) (34). Engagement in coping strategies for youth with type 1 diabetes has been linked to quality of life, self-management, and glycemic outcomes.

Other Psychosocial Factors

Although research on psychosocial outcomes among marginalized groups with diabetes has most consistently focused on diabetes distress and depressive symptoms, social support, self-efficacy, and parental factors have also been explored.

Social Support

Strom and Egede's 2012 systematic review (35) discussed the utility of social support in promoting healthy behaviors such as self-care among adults with type 2 diabetes. Although social support can be used to advocate, boost coping skills, and provide a safe space to express one's feelings, for Black, Latino, and Native Indian individuals, it can also be a barrier to healthy behaviors. It can also be a source of isolation and stigmatization when one's engagement in self-management strategies are incongruent with the health beliefs or behaviors of the source of support.

Social support has also been examined among socioeconomically diverse families of youth with type 1 diabetes. Results indicate inequalities in social support systems for families with lower socioeconomic status. Specifically, youth from socioeconomically disadvantaged families have fewer diabetes contacts, diabetes coping activities, and extracurricular activities (36).

Self-Efficacy

Self-efficacy relates to one's level of confidence and ability to successfully engage in diabetes self-management tasks such as taking medication as prescribed, eating healthful foods, engaging in physical activity, and monitoring blood glucose. In a study by Kim et al. (37), non-Hispanic White adults with type 2 diabetes reported statistically significant higher diabetes self-efficacy levels than non-Hispanic Black and Hispanic individuals. Specifically, the literature suggests that non-Hispanic Black individuals have lower self-efficacy than Hispanics, which was also found to mediate the relationship with self-care activities (38). This finding is especially important because low self-efficacy has also been associated with increased type 2 diabetes-related health care utilization in the past 12 months (e.g., emergency

department visits and hospital admissions for one night or more) (20).

Parental Factors

As with many pediatric chronic illnesses, parents play a major role in their children's diabetes management and health outcomes. At the family level, most youth with type 2 diabetes have at least one immediate family member with type 2 diabetes (39). Thus, type 2 diabetes often has an intergenerational burden of complications and barriers to adherence that both adult relatives and youth with type 2 diabetes may face (40). The TODAY study indicated that elevated depressive symptoms in parents were associated with elevated depressive symptoms in youth. Finally, similar to Black and Hispanic youth with type 1 diabetes, Black and Hispanic mothers of youth with type 1 diabetes have reported more disengagement as a diabetes-related coping strategy than non-Hispanic White mothers (41).

Promising Approaches to Promote Equity in Psychosocial Care

Evidence-based psychosocial care guidelines recommend collaborative team-based care and routine screening and monitoring of psychosocial functioning—all with an eye toward developmental considerations, disease course, and context. Positive psychology- and mindfulness-based interventions, problem-solving interventions, and cognitive behavioral therapy reduce depressive and anxiety symptoms among adults with diabetes (42–44). Motivational interviewing has also been found to reduce diabetes distress among adults with diabetes (45). Among women with GDM, a completed trial found improvements in symptoms of depression, anxiety, and stress following an intervention focused on teaching diaphragmatic breathing (46). To our knowledge, no other evidence-based psychological interventions targeting mental health or psychosocial well-being currently exist for women with GDM (47,48). Examination of psychosocial interventions for youth with diabetes indicate that family-based and multisystem-based approaches, as well as intervention components that include coping skills training, motivational interviewing, cognitive restructuring, goal-setting, and problem-solving, can improve diabetes distress and depressive symptoms for youth with diabetes (49,50).

Given SDOH, barriers to maximizing psychosocial care disproportionately affect marginalized populations and should be addressed in intervention approaches with such groups. These barriers also include stigma associated with behavioral and mental health care and insufficient behavioral and

mental health providers who are familiar with diabetes and themselves come from marginalized racial/ethnic or sociodemographic backgrounds. Below, we describe considerations for promoting equity in screening and intervention delivery targeting diverse psychosocial outcomes.

Storytelling to Screen for Psychosocial Functioning

Scholars have noted the potential of storytelling as a culturally appropriate strategy to explore psychological health, including diabetes distress, during clinic visits among people of color with diabetes (51). Specifically, stories can be used to introduce or illustrate a psychosocial topic or culturally based coping strategy (e.g., spiritual or faith-based coping), stressors (e.g., discrimination), or barriers to psychosocial care (e.g., stigma) to facilitate discussion (51). This approach may help to overcome barriers to psychosocial care among families of children with diabetes or among people with diabetes because of behavioral health stigma in racial/ethnic minority communities.

Personalized mHealth Technology

Racial/ethnic minority and socioeconomically disadvantaged populations face greater access barriers to psychosocial care, including stigma, language, cost, and inflexible employment schedules (52). Psychosocial care that is personalized and delivered via mobile applications could help to reduce these barriers. At the time of this writing, Aguilera et al. (53) are examining the effect of a text-messaging smartphone application that targets physical activity to reduce symptoms of depression among people with diabetes who have elevated depressive symptoms and are from low-income racial/ethnic minority backgrounds. The text messages are personalized and based on individuals' previous behaviors and characteristics (53).

Integration of Social Needs Screening and Navigation

Social needs screening and service navigation delivered by nonprofessionals has proven to be acceptable, feasible, and effective at meeting social needs and improving psychosocial outcomes (54,55). Indeed, providing service navigation effectively reduces social needs and improves health outcomes 3 months later compared with simply providing a list of community resources (54). Emerging evidence also demonstrates that social needs screening and navigation is acceptable, feasible, and effective at linking individuals with other chronic conditions to community resources (56). Review of social needs interventions among adults with type 2 diabetes indicates that combined social care plus behavioral interventions

improve diabetes health outcomes over social care interventions alone (57).

Author A.M.B. and her colleagues are currently performing a proof-of-concept study to evaluate a social needs screening and navigation program. This is an evidence-based approach in which parents of children with type 1 diabetes complete a screening with a navigator to identify social needs. After screening, the navigator provides targeted information related to community, hospital, or government resources available to address parents' most pressing needs using standard algorithms. Resources may include information about child care providers, utility bill assistance, food pantries, or food assistance programs. The navigator contacts parents weekly to further assist with navigation until their needs are resolved. This study will provide preliminary information about the feasibility and acceptability of navigator services to address social needs among socioeconomically disadvantaged racial/ethnic minority youth with type 1 diabetes and their families.

Peer Support and Community Health Worker Models

Given that socioeconomically disadvantaged youth and racial/ethnic minorities may face more barriers to obtaining diabetes management-specific support, we need strategies to expand family education and provide supportive resources. Studies have shown that lay or community health workers can provide facilitative social support for African American adults with type 2 diabetes and address stress management for people with type 1 diabetes who are medically underserved and living in socioeconomically disadvantaged communities (31,58).

The literature also suggests that the most effective mode of social support delivery (e.g., telephone, group medical visits, or internet-based services) differs by race/ethnicity. Peer support models are also proving promising for increasing social support and psychological well-being for racial/ethnic minorities with diabetes. For example, research suggests that tailored support for African Americans is important. In a study of peer support for adults with type 2 diabetes, African Americans showed less improvement in diabetes distress compared with non-Hispanic Whites (59). The authors concluded that more research is needed to better understand how to better target diabetes distress among African Americans with type 2 diabetes (59).

Diabetes care providers can advocate for integrating community health worker and peer support models into clinical settings and provide resource information about existing community health worker or peer support programs to people with diabetes. In addition, author B.L.S. is currently

working on a proof-of-concept intervention that uses social network analysis to identify existing members of individuals' social network who can provide positive support for people with diabetes living in low-resourced communities. The premise of this intervention is that not all social support is positive; thus, identifying and leveraging positive social support for self-care activities in socioeconomically disadvantaged communities can help mitigate poor health outcomes.

Future Research

A research agenda to identify evidence-based approaches that address the psychosocial needs of diverse and marginalized groups with diabetes requires a collaborative, interdisciplinary, life course approach and an understanding of the role of SDOH in psychological well-being and mental health. It is important to note that unique strengths and resilience factors have also not been well studied or identified for this population. Previous research has indicated that resilience may be associated with diabetes-related psychosocial and health outcomes (60,61). For example, greater resiliency in African American women with type 2 diabetes was found to be associated with lower A1C levels (61). Although some models of diabetes resilience exist (62), greater attention and more research are needed to identify strengths and protective factors for people with diabetes from racial/ethnic minority, socioeconomically disadvantaged, and other marginalized backgrounds. Identifying protective factors is vital to guide development of individual-, community-, and health systems-based preventive interventions focused on building and strengthening skills and processes around health-related resilience and positive health/mental health outcomes. Evaluating and promoting strengths at the community and health-systems levels is needed to address systemic social determinants.

For future approaches and interventions, stakeholder engagement must include patients, their families and social supports, clinical care providers, community agencies, and health delivery systems. Sponsors and research institutions have key roles to play in advancing this agenda and establishing the necessary research infrastructure for high-quality, equity-focused research.

The National Institute of Diabetes and Digestive and Kidney Diseases Centers for Diabetes Translational Research (CDTRs) offer one example of strategic efforts to catalyze diabetes research. Focused on promoting health equity, CDTRs offer a platform for collaboration and consultation. CDTRs' member investigators offer expertise in areas ranging from the links between emotional distress, depression, and diabetes treatment engagement (63,64), to mobile health behavioral

interventions designed for people with comorbid diabetes and depression (53). Shared access to specialized expertise in psychosocial factors and SDOH is critical to identifying, developing, testing, and disseminating novel psychosocial interventions to establish diabetes health equity.

Conclusion

The literature on psychological well-being and mental health among racial/ethnic minority and socioeconomically disadvantaged people with diabetes indicates that disparities exist in diabetes distress, depressive symptoms, and other areas of psychological and social well-being, including self-efficacy and social support. While most of the research in this area has focused on describing disparate outcomes, very little research has examined the mechanisms that contribute to these disparities. Nonetheless, the SDOH framework can help guide future research, identify contributors to disparities in psychological well-being and mental health, and develop promising care delivery approaches. Achieving equity will require strategies that target social needs and resources and increase beneficial diabetes-related emotional and hands-on support among marginalized groups.

DUALITY OF INTEREST

No potential conflicts of interest relevant to this article were reported.

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AUTHOR CONTRIBUTIONS

All authors research data and wrote and reviewed/edited the manuscript and researched data. A.M.B. is the guarantor of this work and, as such, takes responsibility for the integrity of the review.

REFERENCES

1. Braveman P, Arkin E, Orleans T, Proctor D, Plough A. *What Is Health Equity? And What Difference Does a Definition Make?* Princeton, NJ, Robert Wood Johnson Foundation, 2017
2. Shah NS, Wang MC, Freaney PM, et al. Trends in gestational diabetes at first live birth by race and ethnicity in the US, 2011–2019. *JAMA* 2021;326:660–669
3. Klingensmith GJ, Connor CG, Ruedy KJ, et al.; Pediatric Diabetes Consortium. Presentation of youth with type 2 diabetes in the Pediatric Diabetes Consortium. *Pediatr Diabetes* 2016;17:266–273

4. Agarwal S, Hilliard M, Butler A. Disparities in care delivery and outcomes in young adults with diabetes. *Curr Diab Rep* 2018;18:65
5. Yuen L, Wong VW, Simmons D. Ethnic disparities in gestational diabetes. *Curr Diab Rep* 2018;18:68
6. Young-Hyman D, de Groot M, Hill-Briggs F, Gonzalez JS, Hood K, Peyrot M. Psychosocial care for people with diabetes: a position statement of the American Diabetes Association. *Diabetes Care* 2016;39:2126–2140
7. Solar O, Irwin A. A Conceptual Framework for Action on the Social Determinants of Health: Social Determinants of Health Discussion Paper 2 (Policy and Practice). Geneva, Switzerland, World Health Organization, 2010
8. Hill-Briggs F, Adler NE, Berkowitz SA, et al. Social determinants of health and diabetes: a scientific review. *Diabetes Care* 2020;44:258–279
9. Alegría M, NeMoyer A, Falgàs Bagué I, Wang Y, Alvarez K. Social determinants of mental health: where we are and where we need to go. *Curr Psychiatry Rep* 2018;20:95
10. Pachter LM, Caldwell CH, Jackson JS, Bernstein BA. Discrimination and mental health in a representative sample of African-American and Afro-Caribbean youth. *J Racial Ethn Health Disparities* 2018;5:831–837
11. Blanquet M, Labbe-Lobertreau E, Sass C, Berger D, Gerbaud L. Occupational status as a determinant of mental health inequities in French young people: is fairness needed? Results of a cross-sectional multicentre observational survey. *Int J Equity Health* 2017;16:142
12. Hynie M. The social determinants of refugee mental health in the post-migration context: a critical review. *Can J Psychiatry* 2018;63:297–303
13. LeBron AM, Valerio MA, Kieffer E, et al. Everyday discrimination, diabetes-related distress, and depressive symptoms among African Americans and Latinos with diabetes. *J Immigr Minor Health* 2014;16:1208–1216
14. LeBrón AMW, Spencer M, Kieffer E, Sinco B, Palmisano G. Racial/ethnic discrimination and diabetes-related outcomes among Latinos with type 2 diabetes. *J Immigr Minor Health* 2019;21:105–114
15. Assari S, Lee DB, Nicklett EJ, Moghani Lankarani M, Piette JD, Aikens JE. Racial discrimination in health care is associated with worse glycemic control among Black men but not Black women with type 2 diabetes. *Front Public Health* 2017;5:235
16. Butler AM, Weller BE, Yi-Frazier JP, et al. Diabetes-specific and general life stress and glycemic outcomes in emerging adults with type 1 diabetes: is race/ethnicity a moderator? *J Pediatr Psychol* 2017;42:933–940
17. Walders-Abramson N, Venditti EM, Ievers-Landis CE, et al.; Treatment Options for Type 2 Diabetes in Adolescents and Youth (TODAY) Study Group. Relationships among stressful life events and physiological markers, treatment adherence, and psychosocial functioning among youth with type 2 diabetes. *J Pediatr* 2014;165:504–508.e1
18. Anderson BJ, McKay SV. Psychosocial issues in youth with type 2 diabetes mellitus. *Curr Diab Rep* 2009;9:147–153
19. Walker RJ, Campbell JA, Egede LE. Differential impact of food insecurity, distress, and stress on self-care behaviors and glycemic control using path analysis. *J Gen Intern Med* 2019;34:2779–2785
20. Becerra MB, Allen NL, Becerra BJ. Food insecurity and low self-efficacy are associated with increased healthcare utilization among adults with type II diabetes mellitus. *J Diabetes Complications* 2016;30:1488–1493
21. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the Adverse Childhood Experiences (ACE) study. *Am J Prev Med* 1998;14:245–258
22. Agarwal S, Kanapka LG, Raymond JK, et al. Racial-ethnic inequity in young adults with type 1 diabetes. *J Clin Endocrinol Metab* 2020;105:e2960–e2969
23. Hughes K, Bellis MA, Hardcastle KA, et al. The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *Lancet Public Health* 2017;2:e356–e366
24. Delanerolle G, Phiri P, Zeng Y, et al. A systematic review and meta-analysis of gestational diabetes mellitus and mental health among BAME populations. *EClinicalMedicine* 2021;38:101016
25. Bennett WL, Ennen CS, Carrese JA, et al. Barriers to and facilitators of postpartum follow-up care in women with recent gestational diabetes mellitus: a qualitative study. *J Womens Health (Larchmt)* 2011;20:239–245
26. American Diabetes Association Professional Practice Committee. 15. Management of diabetes in pregnancy: *Standards of Medical Care in Diabetes—2022*. *Diabetes Care* 2022;45(Suppl. 1):S232–S243
27. ACOG Practice Bulletin No. 190: gestational diabetes mellitus. *Obstet Gynecol* 2018;131:e49–e64
28. Copeland KC, Zeitler P, Geffner M, et al.; TODAY Study Group. Characteristics of adolescents and youth with recent-onset type 2 diabetes: the TODAY cohort at baseline. *J Clin Endocrinol Metab* 2011;96:159–167
29. Trief PM, Uschner D, Tung M, et al. Diabetes distress in young adults with youth-onset type 2 diabetes: TODAY2 study results. *Diabetes Care* 2022;45:529–537
30. Fegan-Bohm K, Minard CG, Anderson BJ, et al. Diabetes distress and HbA1c in racially/ethnically and socioeconomically diverse youth with type 1 diabetes. *Pediatr Diabetes* 2020;21:1362–1369
31. Naranjo D, Hessler DM, Deol R, Chesla CA. Health and psychosocial outcomes in U.S. adult patients with diabetes from diverse ethnicities. *Curr Diab Rep* 2012;12:729–738
32. Gulley LD, Shomaker LB. Depression in youth-onset type 2 diabetes. *Curr Diab Rep* 2020;20:51
33. Lawrence JM, Standiford DA, Loots B, et al.; SEARCH for Diabetes in Youth Study. Prevalence and correlates of depressed mood among youth with diabetes: the SEARCH for Diabetes in Youth study. *Pediatrics* 2006;117:1348–1358
34. Jaser SS, Faulkner MS, Whittemore R, et al. Coping, self-management, and adaptation in adolescents with type 1 diabetes. *Ann Behav Med* 2012;43:311–319
35. Strom JL, Egede LE. The impact of social support on outcomes in adult patients with type 2 diabetes: a systematic review. *Curr Diab Rep* 2012;12:769–781
36. Walker AF, Schatz DA, Johnson C, Silverstein JH, Rohrs HJ. Disparities in social support systems for youths with type 1 diabetes. *Clin Diabetes* 2015;33:62–69
37. Kim G, Shim R, Ford KL, Baker TA. The relation between diabetes self-efficacy and psychological distress among older adults: do racial and ethnic differences exist? *J Aging Health* 2015;27:320–333
38. Hernandez R, Ruggiero L, Prohaska TR, et al. A cross-sectional study of depressive symptoms and diabetes self-care in African Americans and Hispanics/Latinos with diabetes: the role of self-efficacy. *Diabetes Educ* 2016;42:452–461
39. Pinhas-Hamiel O, Standiford D, Hamiel D, Dolan LM, Cohen R, Zeitler PS. The type 2 family: a setting for development and treatment of adolescent type 2 diabetes mellitus. *Arch Pediatr Adolesc Med* 1999;153:1063–1067

40. Rothman RL, Mulvaney S, Elasy TA, et al. Self-management behaviors, racial disparities, and glycemic control among adolescents with type 2 diabetes. *Pediatrics* 2008;121:e912–e919
41. Jaser SS, Linsky R, Grey M. Coping and psychological distress in mothers of adolescents with type 1 diabetes. *Matern Child Health J* 2014;18:101–108
42. Markowitz SM, Gonzalez JS, Wilkinson JL, Safren SA. A review of treating depression in diabetes: emerging findings. *Psychosomatics* 2011;52:1–18
43. Fitzpatrick SL, Schumann KP, Hill-Briggs F. Problem solving interventions for diabetes self-management and control: a systematic review of the literature. *Diabetes Res Clin Pract* 2013;100:145–161
44. Massey CN, Feig EH, Duque-Serrano L, Wexler D, Moskowitz JT, Huffman JC. Well-being interventions for individuals with diabetes: a systematic review. *Diabetes Res Clin Pract* 2019;147:118–133
45. Mathiesen AS, Egerod I, Jensen T, Kaldan G, Langberg H, Thomsen T. Psychosocial interventions for reducing diabetes distress in vulnerable people with type 2 diabetes mellitus: a systematic review and meta-analysis. *Diabetes Metab Syndr Obes* 2018;12:19–33
46. Fiskin G, Sahin NH. Effect of diaphragmatic breathing exercise on psychological parameters in gestational diabetes: a randomised controlled trial. *Eur J Integr Med* 2018;23:50–56
47. Horsch A, Gilbert L, Lanzi S, et al.; MySweetHeart Research Group. Improving cardiometabolic and mental health in women with gestational diabetes mellitus and their offspring: study protocol for MySweetHeart trial, a randomised controlled trial. *BMJ Open* 2018;8:e020462
48. Gilbert L, Gross J, Lanzi S, Quansah DY, Puder J, Horsch A. How diet, physical activity and psychosocial well-being interact in women with gestational diabetes mellitus: an integrative review. *BMC Pregnancy Childbirth* 2019;19:60
49. Hagger V, Hendriekx C, Sturt J, Skinner TC, Speight J. Diabetes distress among adolescents with type 1 diabetes: a systematic review. *Curr Diab Rep* 2016;16:9
50. Grey M, Whittemore R, Jaser S, et al. Effects of coping skills training in school-age children with type 1 diabetes. *Res Nurs Health* 2009;32:405–418
51. Akindana A, Owens-Gary M, Williams A. When it all gets to be too much: addressing diabetes distress in African Americans. *AADE Pract* 2016;4:44–49
52. Vázquez MY, Sexto CF, Rocha Á, Aguilera A. Mobile phones and psychosocial therapies with vulnerable people: a first state of the art. *J Med Syst* 2016;40:157
53. Aguilera A, Figueroa CA, Hernandez-Ramos R, et al. mHealth app using machine learning to increase physical activity in diabetes and depression: clinical trial protocol for the DIAMANTE study. *BMJ Open* 2020;10:e034723
54. Gottlieb LM, Hessler D, Long D, et al. Effects of social needs screening and in-person service navigation on child health: a randomized clinical trial. *JAMA Pediatr* 2016;170:e162521
55. Garg A, Toy S, Tripodis Y, Silverstein M, Freeman E. Addressing social determinants of health at well child care visits: a cluster RCT. *Pediatrics* 2015;135:e296–e304
56. Power-Hays A, Li S, Mensah A, Sobota A. Universal screening for social determinants of health in pediatric sickle cell disease: a quality-improvement initiative. *Pediatr Blood Cancer* 2020;67:e28006
57. Hessler D, Bowyer V, Gold R, Shields-Zeeman L, Cottrell E, Gottlieb LM. Bringing social context into diabetes care: intervening on social risks versus providing contextualized care. *Curr Diab Rep* 2019;19:30
58. Walker AF, Cuttriss N, Haller MJ, et al. Democratizing type 1 diabetes specialty care in the primary care setting to reduce health disparities: project extension for community healthcare outcomes (ECHO) T1D. *BMJ Open Diabetes Res Care* 2021;9:e002262
59. Mizokami-Stout K, Choi H, Richardson CR, Piatt G, Heisler M. Diabetes distress and glycemic control in type 2 diabetes: mediator and moderator analysis of a peer support intervention. *JMIR Diabetes* 2021;6:e21400
60. Yi-Frazier JP, Yaptangco M, Semana S, et al. The association of personal resilience with stress, coping, and diabetes outcomes in adolescents with type 1 diabetes: variable- and person-focused approaches. *J Health Psychol* 2015;20:1196–1206
61. DeNisco S. Exploring the relationship between resilience and diabetes outcomes in African Americans. *J Am Acad Nurse Pract* 2011;23:602–610
62. Hilliard ME, Harris MA, Weissberg-Benchell J. Diabetes resilience: a model of risk and protection in type 1 diabetes. *Curr Diab Rep* 2012;12:739–748
63. Gonzalez JS, Kane NS, Binko DH, Shapira A, Hoogendoorn CJ. Tangled up in blue: unraveling the links between emotional distress and treatment adherence in type 2 diabetes. *Diabetes Care* 2016;39:2182–2189
64. Cherrington AL, Krause-Steinrauf H, Bebu I, et al.; GRADE Research Group. Study of emotional distress in a comparative effectiveness trial of diabetes treatments: rationale and design. *Contemp Clin Trials* 2021;107:106366