



# Here for You: A Review of Social Support Research in Young Adults With Diabetes

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Living with and managing diabetes is challenging during young adulthood, and social support may help relieve or minimize the burdens young adults with diabetes experience. This article reviews the types and sources of support young adults with diabetes receive and their associations with behavioral, psychosocial, and glycemic outcomes. Intervention research integrating social support and future directions for care are discussed.

In the United States, about 5% of adults, including those between the ages of 18 and 44 years, have type 1 diabetes or type 2 diabetes (1), and about one in four young adults have prediabetes, putting them at increased risk of type 2 diabetes (2). As noted in the preface to this special issue (p. 324), young adults with diabetes manage their chronic medical condition while also experiencing social, financial, vocational, educational, residential, and health system changes and transitions (3–5). Given all of these changes, many young adults experience difficulties with consistent engagement in diabetes self-management recommendations (4,6), have A1C values that exceed clinical recommendations (i.e., A1C  $\geq 7\%$ ) (6,7), and face higher risks for a host of other problems, including loss to follow-up care, frequent hospitalizations, diabetes complications, and mortality (5,8–10). People with diabetes are more likely than the general population to be diagnosed with depression, anxiety, and eating disorders (11,12). Moreover, nearly one-third of young adults with type 1 diabetes experience psychological distress, which is linked to greater self-management difficulties and higher A1C levels (13,14), whereas young adults with type 2 diabetes endorse elevated mood concerns that are greater than older adults with type 2 diabetes and similar to those of young adults with type 1 diabetes (15).

Young adulthood is notable for changes in relationships and social support systems. For many young adults, parental involvement in everyday life declines, while peer and romantic relationships may increase (16). The role of family and friends is important as young adults navigate many new expe-

riences (3,4). However, these changes in social support can also be unique sources of stress for young adults with diabetes, particularly the decrease in family support related to diabetes management and the potential increase in emotional support from romantic partners during this period (4).

Social support has been demonstrated to serve as a protective factor across the life span (17), shielding against stress and distress and buffering the negative impact of stress on mental health among young adults (18,19). It is also an important factor related to psychosocial and clinical outcomes in people with health conditions. A meta-analysis summarizing research with various disease groups, patient ages, treatment regimens, and measurement strategies found strong associations between social support and treatment adherence (20). Understanding the role of social support in the context of diabetes and young adulthood and intervening to enhance social support during this developmental period are important because negative health behaviors in young adulthood may persist through adulthood and have long-term negative health effects (21).

The purpose of this review is to provide an overview of research on social support in young adults with diabetes. We describe the theoretical foundations for the importance of social support, types and sources of social support in young adulthood, associations with diabetes outcomes, disparities in social support, and clinical applications for young adults with diabetes. Although much of the existing research on social support in young adulthood focuses on type 1 diabetes, we include research from type 2 diabetes as well, where available.

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## Social Support and Theories of Health Behavior

Many theories of health behavior acknowledge the importance of social factors, including social support, across the life span. Social Ecological Models emphasize multiple levels of influence (e.g., individual, interpersonal, community, and public policy) on health behavior change, with a central component being recognition of bidirectional associations between individuals and their social environment (22). Social Cognitive Theory posits that learning and engagement in health behaviors occur in a social context with interactions among the person, environment, and behavior (23). Specifically, people learn through their own experiences and by observing the actions of others. Self-Determination Theory identifies social relatedness as one of three basic psychological needs that are essential for engagement in health behaviors (24). These health behavior theories highlight that receiving support is conceptually and pragmatically associated with health outcomes across the life span, including positive diabetes-related outcomes in young adulthood (16,25).

## Types and Sources of Social Support

Social support can be diabetes-specific or general, both of which can be emotional, tangible/instrumental (i.e., concrete assistance, including financial support), and informational. In a qualitative study characterizing protective factors and strengths, young adults with type 1 diabetes reported receiving both tangible and emotional support from a wide range of sources, including family, friends, health care professionals, and people in the community; they consistently emphasized the benefits of receiving both types of support (26). Social support occurs both in person and online, including via personal friendships and interactions, support or socialization groups, video chats, text messaging, social media platforms, and online community forums. Communication methods for young adults with diabetes echo the modes of communication used by the broader young adult population (27).

## Parents and Family

Parental and family support play an important role in psychosocial well-being (25) and diabetes management during young adulthood. Although young adulthood is characterized by growing independence, and young adults become increasingly responsible for diabetes self-management, parents remain an important source of support (25,28,29). While some health care professionals (HCPs) may view independence from parents/caregivers and transition to adult care during this developmental period as a “natural process” that young

adults are “ready” for (30), it has also been argued that the “myth of independence” inappropriately expects autonomy and fails to capture the helpful role that parents continue to play during young adulthood (31). Specific forms of parental support (e.g., financial, practical, and emotional assistance) are beneficial and highlight the importance of parents’ ongoing involvement into young adulthood (26). Parents often continue to provide tangible support, assisting with diabetes-related tasks such as ordering supplies, making appointments, and providing financial assistance for medications or medical copayments (28,29). Young adults with type 1 diabetes have reported that parents were more likely than peers or romantic partners to provide diabetes-related assistance (32).

## Friends and Romantic Partners

Findings are mixed regarding support from friends for young adults and its impact on diabetes-related outcomes. Although friend support has been found to be of high importance for young adults with type 1 diabetes in college (33), young adults with type 1 diabetes have reported less friendship support than have peers without diabetes (34). Different aspects of relationships with friends may predict the functioning of young adults with type 1 diabetes. A longitudinal study found that friendship conflict was a stronger predictor of changes in health behavior and psychological well-being than friend support. Specifically, young adults who reported more friend conflict had more alcohol use, binge drinking, depressive symptoms, and perceived stress (25).

Young adults with type 1 diabetes have described difficulty entering new relationships related to deciding how and when to involve a new partner in diabetes management (35). In a longitudinal study, young adults with type 1 diabetes were equally likely to have a romantic partner as young adults without diabetes. However, they reported less trust and sense of an intimate friendship in romantic relationships than peers without diabetes (36). In a qualitative study about young adults with type 1 diabetes and their romantic partners, emotional and instrumental support were described as the most common supportive behaviors, and worry about diabetes was described as the most unsupportive behavior (37). There is some evidence for sex differences in romantic relationships: young adult men with and without type 1 diabetes perceived their partners as equally supportive, but young adult women with type 1 diabetes perceived their romantic partners as less supportive than did their female peers without diabetes (34). In another study, young adults with type 1 diabetes described romantic partners as concerned about their diabetes management but not capable of assisting with management (38). Similar to the literature on friendships, conflict with

romantic partners has been associated with greater psychological distress and decreased engagement in diabetes self-management (36).

### Community Supports

Support from others in the diabetes community is another important source of social support for young adults with diabetes (35) and may occur in person or online. As defined by the World Health Organization (WHO), a “peer supporter” either has diabetes or is affected by diabetes and is formally recognized (but not compensated) (39). The WHO reported that peer support appears to be a promising approach to improve diabetes self-management behaviors (39).

A review of the Peers for Progress program studying the adoption of peer support for diabetes self-management found that peer support fills an important role in “humanizing” health care, and the program was determined to be sustainable and feasible (40). Peer support has been found to enhance diabetes-specific social support and provide emotional support for diabetes self-management (41). However, not all peer supporters are trained or recognized through formal programs, as peer support may also occur organically through friendships or online communities (42). Although there is not research on the impact of diabetes community peer support in young adults specifically, adults with type 1 diabetes have found diabetes-specific peer support helpful in reducing feelings of diabetes-specific loneliness and have also benefited from sharing experiences and providing support in addition to receiving support (43).

Support from peers with diabetes may be particularly relevant for navigating diabetes-specific challenges during young adulthood. A qualitative study characterizing what adolescents with type 1 diabetes felt were important aspects of transition to adult care programs, identified social support (“interconnection”), including from peers or “near peers” (44) with diabetes, as particularly useful (45). Young adults with type 1 diabetes have also expressed interest in peer support and mentoring related to diabetes self-management (46). In a longitudinal study evaluating the role of peers in diabetes management in adolescents and young adults with type 1 diabetes, females reported more diabetes-related distress and more peer support, whereas males reported more extreme peer orientation (i.e., the degree to which fitting in with peers is valued more than other needs) (47), which was linked with higher A1C levels. In contrast, greater general emotional peer support was predictive of less diabetes-related distress but did not predict engagement in diabetes self-management behaviors or A1C (47).

Peer support is an important aspect of the “diabetes online community” (42). The Internet provides opportunities for

people with diabetes to connect with one another to address challenges associated with diabetes management. Online community support has been shown to have a positive impact on emotional experiences, attitudes toward diabetes, and engagement in diabetes management behaviors (42). A qualitative study found that online activities of young adults with diabetes and mental health diagnoses ranged from no engagement to regular engagement with health-related online content. Young adults who described having low offline (in-person) support were more likely to regularly create and consume online content (48), suggesting that diabetes online community engagement may fill gaps in social support for some young adults. People with diabetes may use websites and online resources as sources of support and information (35), and young adults benefit from social networks and forums, which allow people to share their experiences and engage with others with diabetes (49). Engagement with others with diabetes offers opportunities for young adults to access other people’s experiences that may positively affect their own experiences (48).

Young adults with diabetes may also participate in diabetes communities tailored to this developmental stage, such as the College Diabetes Network, Students with Diabetes, and local or national programming specifically for young adults through larger diabetes organizations (e.g., JDRF, the American Diabetes Association, Children with Diabetes, and Taking Control of Your Diabetes). Although there is little research about participation in these peer support organizations, the College Diabetes Network has published on the experiences of its members; young adults who participated as affiliated members (i.e., those who actively participated in student-led, registered chapters on their college campuses that hold meetings and events compared with a general online membership without local chapter involvement) were less likely to report increased levels of isolation, depressive symptoms, and anxiety related to diabetes than members without local chapter affiliation (33). Affiliated members were also less likely to experience hypoglycemic events and diabetic ketoacidosis while in college than peers with type 1 diabetes who did not participate (33). There are also online communities for young adults with diabetes from specific demographic groups, such as women or ethnically and racially diverse backgrounds (e.g., DiabetesSisters, tuDiabetes, Dope Diabetic Girls Club, Diversity in Diabetes, and Women of Color With Diabetes); however, there is no research about specific outcomes associated with participation in these important community groups.

### HCPs

The social context of diabetes management for young adults with diabetes may also include HCPs. Many young

adults with diabetes transition from receiving health care in multidisciplinary pediatric settings to adult settings, which vary in composition. The relationships they previously had with pediatric providers often existed as a triad (parent, patient, and provider) and, with the transition to adult health care, may shift to a dyad (patient-provider), which has implications for relationships, communication, and support (16,50). Results of a systematic review suggested that HCPs often provide primarily informational support to young adults and older adults with type 2 diabetes as a strategy to increase knowledge and encourage behavioral change (51). Qualitative research has highlighted the complexity of these relationships; young adults with type 1 diabetes perceive HCPs as a helpful source of social support (26), and social isolation has been connected to negative relationships with diabetes care providers (52).

Research with individuals with a range of chronic illnesses has demonstrated that patient-provider communication is related to health care satisfaction and adherence (53). Patient-provider communication also appears to play a role in self-management behaviors and successful transition to adult diabetes care for young adults with type 1 diabetes (53). These issues have not yet been studied in young adults with type 2 diabetes, possibly because the vast majority of this group (~90%) receives care in the primary care setting; given the complex nature of diabetes treatment and the potentially limited time for appointments (54), factors related to social support may not be frequently discussed.

### Social Support and Diabetes Outcomes

For young adults and adults with type 2 diabetes, greater support is related to lower A1C (55) and higher engagement in diabetes self-management behaviors (e.g., diet, exercise, and blood glucose monitoring) (56). In a systematic review examining the relationships between social support and diabetes self-management in adults with type 1 or type 2 diabetes, greater perceived social support was significantly associated with greater diabetes self-management, with the strongest effect for blood glucose monitoring (57). The review concluded that the relationship between social support and diabetes self-management was stronger in people with type 2 diabetes than those with type 1 diabetes (57). In young adults with type 1 diabetes, higher parental support is associated with greater adherence, lower depressive symptoms, and fewer risk behaviors, and it buffered an association between peer conflict and higher A1C (25). Moreover, longitudinal studies in type 1 diabetes have shown that family support during adolescence is predictive of psychosocial well-being and A1C in young adulthood (58,59).

Social support is also correlated with important psychosocial outcomes in adults with diabetes. Social support from friends is a predictor of health-related quality of life in adults with type 1 diabetes (60). Additionally, social support has been shown to buffer the negative effects of diabetes distress and depressive symptoms on self-management in individuals with type 1 or type 2 diabetes (61). In a qualitative study characterizing self-management in adults with type 1 diabetes, strong social support was described as vital to diabetes self-management, whereas low social support was linked to greater difficulty with intensive diabetes management (52).

### Disparities in Social Support Systems

There are relatively few studies on racial, ethnic, or socioeconomic disparities in social support in relation to psychosocial functioning and diabetes outcomes in young adults. Significant inequalities in social support systems have been demonstrated in adolescents with type 1 diabetes and their parents. For example, families from lower-income households engaged in few coping activities and rarely identified a primary care provider as a main point of contact when facing diabetes-related problems (62). This finding may have implications for young adults and their parents. Increasing autonomy and reduced reliance on others may limit opportunities for young adults from racially and ethnically diverse backgrounds to access social supports that buffer the impact of stress on diabetes outcomes (63). A study of the impact of social support on non-Hispanic White, Black, and Hispanic adults with type 2 diabetes found no differences in social support by race/ethnicity, but it did find that social support for Black adults was linked to weight, exercise, and lower diastolic blood pressure, whereas social support was associated with lower LDL cholesterol for non-Hispanic White participants, and there were no significant effects of social support noted for Hispanic adults in the study (64).

Furthermore, there is some evidence demonstrating differences in social support for individuals from various racial and ethnic backgrounds (65–68). Therefore, more research is needed evaluating potential differences in social support and related outcomes for young adults from diverse backgrounds with diabetes. There may be differences in associations of social relationships and outcomes based on race, ethnicity, and SES. These differences are important, as young adults from minoritized backgrounds disproportionately experience more general and diabetes-specific stress along with unique stressors and challenges (69) such as discrimination and institutional racism in health care (70–72).



## Clinical Applications of Social Support for Young Adults With Diabetes

As reviewed, various aspects of social support can play important roles in the lives of young adults with diabetes. Given the association between social support and diabetes self-management, social support interventions for people with diabetes have high potential to affect key glycemic and psychosocial outcomes.

Most social support intervention research has focused on adults with type 2 diabetes (73,74), with little attention to the unique needs of young adults. For example, a randomized controlled trial evaluating the effects of family-delivered social support on the clinical and glycemic outcomes of adults with type 2 diabetes found that the intervention resulted in lower A1C levels (75). A systematic review evaluating social support interventions in individuals with type 2 diabetes reviewed six controlled trials and identified various benefits of social support. These interventions targeted romantic partners/spouses, friends, and/or peers. Patient group consultations with diabetes care professionals were associated with lower A1C, Internet- or telephone-based peer support was associated with improved perceived support and increased physical activity, and social support groups were associated with improved diabetes knowledge and psychosocial functioning (53). Diabetes management was not related to support from spouses, family, or friends (53). Additionally, a meta-analysis of glycemic outcomes in peer support interventions for adults with diabetes found that interventions delivered by people with diabetes were associated with a significant reduction in A1C (76). These findings highlight the potential benefits related to social support in adults with diabetes; therefore, more research creating and testing specific social support interventions for young adults with type 2 diabetes is warranted to determine whether they experience similar benefits.

Few behavioral interventions exist that are focused on the unique social contexts of young adults with type 1 diabetes, and fewer still involve social support. There is some evidence to suggest that interventions to promote support from other young adults with type 1 diabetes may be beneficial. In a pilot study of an HCP-led group therapy intervention for young adults with type 1 diabetes that focused on problem-solving and support related to diabetes-specific stress, participants had improvements in A1C, self-management behaviors, and diabetes distress (77).

Based the literature and current gaps in social support-based interventions for young adults, our research team is currently conducting a randomized controlled trial testing DiaBetter Together, a peer-mentorship intervention for young adults

with type 1 diabetes as they transition from pediatric diabetes care to adult care (ClinicalTrials.gov registration ID NCT-04247620). Shortly after leaving pediatric care, young adults (age 17–25 years) with type 1 diabetes enroll in the study and are randomized to either the standard care or intervention group. Those in the intervention group are paired with peer mentors, who are experienced young adults with type 1 diabetes age 20–35 years (i.e., near peers [44]) who have successfully established adult diabetes care, for 12 months. The peer mentors are trained to provide relevant information about successful transition from pediatric to adult care, share personal experiences, encourage young adults to access their social support network, serve as a source of accountability and encouragement, and act as a positive role model. They also teach strengths-based skills, including gratitude, identifying and building on young adults' personal strengths, goal-setting, and stress management to help young adults manage the challenges of both transitioning to adult care and living with and managing type 1 diabetes in young adulthood. Pairing young adults with a peer mentor and implementing the strengths-based intervention components aim to reduce isolation, increase access to relevant information, and facilitate engagement with self-management and type 1 diabetes health care.

Our first cohort of peer mentors includes 10 young adults ranging in age from 21 to 34 years (mean age 26.1, 70% female, 60% non-Hispanic White, 30% Hispanic, 10% Asian American). Peer mentors connect with young adult participants using various remote methods dependent on the participant's preference, including phone calls, video chats, and/or text messaging. Primary outcomes are glycemic control and follow-up with adult care, and secondary outcomes include engagement in diabetes self-management behaviors and quality of life. If findings are promising, this intervention has great potential for scalability and implementation, as it engages peer mentors and supplements clinical care without adding significant resource or time burdens for young adults, the health care team, or the health care system.

## Conclusion

Social support in people with diabetes has been a construct of interest for decades, with a growing interest in examining the role of social support in health behaviors and outcomes during critical developmental periods such as young adulthood (78,79). Based on the existing literature, young adults with type 1 or type 2 diabetes receive support from various sources, including parents and family, friends, romantic partners, HCPs, and the community of peers with diabetes. Despite the higher risk for elevated A1C and emerging diabetes complications, young adults with diabetes demonstrate

more positive psychosocial and diabetes clinical outcomes with supportive relationships. Importantly, social support for young adults with diabetes—particularly from parents—is associated with lower blood glucose levels, lower A1C (80), greater engagement in diabetes self-management behaviors (56), and fewer diabetes distress and depressive symptoms (61).

Some limitations of the research evaluating social support in young adults with diabetes include its use of cross-sectional study designs or reports of mixed findings. In contrast, qualitative reports of the experiences of young adults with type 1 diabetes are an area of strength, and these studies suggest that social support is an important target for interventions that promote diabetes self-management as well as positive psychosocial and clinical outcomes for young adults with diabetes. Thus, additional targeted observational research and intervention trials are needed to better understand various types and sources of social support for young adults with diabetes and their relation to psychosocial and diabetes clinical outcomes.

Future research is also warranted to better understand the impact of interventions to enhance diabetes-specific peer and romantic partner support on psychosocial and clinical outcomes among young adults with diabetes. To enhance this area of research, increased funding opportunities would be valuable, as well as new research tailored for marginalized young adults, who may benefit most from increased support around living with diabetes, as one strategy to reduce health disparities. From this research, the evidence may suggest potential social support interventions to optimize psychosocial and health outcomes in diverse populations of young adults with diabetes.

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#### DUALITY OF INTEREST

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

#### AUTHOR CONTRIBUTIONS

S.A.C., B.D., and M.E.H. wrote the manuscript and researched data. T.S.T., R.S., B.J.A., S.K.L., S.M., and M.E.H. contributed to discussion and reviewed/edited the manuscript. M.E.H. is the guarantor of this work and, as such, had full access to all the data reported and takes responsibility for the integrity of the data and the accuracy of the analysis.

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