

Resources, Roadblocks and Turning Points: A Qualitative Study of American Indian/ Alaska Native Adults with Type 2 Diabetes

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Abstract Type 2 diabetes is a worldwide health problem that has reached epidemic proportions in some communities. Alaska Native and American Indian (AN/AI) people are disproportionately diagnosed with type 2 diabetes and incidence is increasing in many Alaska communities. Developing effective interventions requires understanding the social and psychological factors that impact effective management of diabetes, yet little is known about these factors in AN/AI communities. The objective of this study was to explore perceived psychosocial needs and barriers to management of diabetes among AN/AI adults with type 2 diabetes receiving care at the Alaska Native Primary Care Center (ANPCC) to inform programmatic efforts and potential future research. We conducted three focus groups and five interviews with 13 AN/AI adults with type 2 diabetes. Interview and focus group questions elicited perceived factors that affect management of diabetes, with a focus on the psychological, social and spiritual impacts of diabetes. Data were transcribed, coded and analyzed using thematic analysis. Key themes that emerged from these data included *resources and roadblocks*, as well as *turning*

points in the trajectory of diabetes. *Resources* are factors with a perceived positive impact on management of diabetes, including: (1) *knowledge and education about diabetes*, (2) *social support from other people with diabetes*, (3) *spirituality*, and (4) *self-efficacy*. *Roadblocks* are factors with a perceived negative impact on management of diabetes and include: (1) *self-reported lack of knowledge about nutrition and diet*, (2) *social difficulties caused by dietary restrictions*, and (3) *co-morbid medical conditions*. Finally, *turning points* are experiences described by participants as having transformed roadblocks in resources and thus facilitating improvement in the management of diabetes. Future programmatic interventions to improve management of diabetes with this population should focus on improving dietary education and social support opportunities for newly-diagnosed individuals. Also, educational and support opportunities for family members and friends of individuals with diabetes should also be offered to facilitate understanding and support of their loved ones' management of diabetes, especially with regard to dietary restrictions in social settings. Efforts should also focus on strengthening newly-diagnosed individuals' self-efficacy and providing ongoing support as individuals progressively adjust to the illness over time and make behavioral changes. Future research with this population should explore the effects of family support groups and the possibility of Web-based or other alternative interventions for improving psychosocial health and management of diabetes efforts.

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Introduction

Type 2 diabetes¹ affects nearly 3 percent of the world population. In the United States alone, more than 17 million people have been diagnosed with this chronic illness, and that number is expected to nearly double in the next 20 years [1]. Diabetes disproportionately affects the Alaska Native/American Indian (AN/AI) community, with more than twice the rate than the US white population. Diabetes incidence in the Alaska Native community, while lower than in the AN/AI community generally, is rising and, therefore, commanding the concern and attention of health care providers and administrators.

Previous research has established significant relationships between diabetes outcomes and numerous psychosocial factors,² such as the presence or absence of depression. For example, the presence of social and psychological support and active participation in self-care are consistently found to improve health outcomes in the general diabetic population [11–15]. Conversely, lower health status has been associated with the presence of social and emotional difficulties related to diagnosis and complicated dietary and medication regimens [11, 12].

Individuals with chronic illnesses are significantly more likely to experience, for example, depression than the general population [2]. People with diabetes, specifically, are two to three times more likely to suffer from depression than those without diabetes [3–5]. Depression among people with diabetes, in turn, is associated with poor nutrition, decreased glycemic control, difficulty with medication management, and decreased physical functionality [6–11]. All of these challenges put individuals with diabetes at greater risk for disease-related complications and poor health outcomes. Understanding the correlates and precursors of depression in this population is, therefore, critically important for managing the disease on both individual and population levels.

While the disproportionate burden of diabetes on the AN/AI community is well-known, little is known about how health care systems can better facilitate the optimal health and wellness of AN/AI individuals living with diabetes. This paucity of information is particularly salient and concerning in the Alaska Native community, where the incidence of diabetes is steadily rising in some areas and putting increasing demands on primary and tertiary care systems. With an eye toward filling this gap in the literature

and aiding design of effective health services, we undertook this qualitative study to explore the psychosocial needs and barriers to care of Alaska Native and American Indian adults receiving care for diabetes at the Alaska Native Primary Care Center (ANPCC). This study was conducted in conjunction with a quantitative study examining the co-occurrence of diabetes and depression in the ANPCC service population.

Methods

Setting

Located in Anchorage, the Alaska Native Primary Care Center (ANPCC) is operated by the tribally-owned Southcentral Foundation (SCF) and provides comprehensive health services for more than 50,000 AN/AI people. The ANPCC health care system, known as the SCF Nuka System of Care, is managed by the Alaska Native people for AN/AI people of Southcentral Alaska, covering more than 100,000 square miles. The Nuka system delivers care through a pre-paid, patient-centered medical home model in which integrated teams provide primary care and referrals to specialty care and health education services co-located on the adjacent campus.

Recruitment

We set out to conduct two focus groups with a total of 18 individuals to elicit views on the psychosocial needs and barriers to care experienced by these individuals. While this study does not meet the criteria for a community-based participatory research (CBPR) project, the study follows a CBPR approach by asking research questions that align with tribally-determined health priorities and corporate objectives established by the SCF Board of Directors. With approval from the Alaska Area Institutional Review Board, as well as SCF and Alaska Native Tribal Health Consortium tribal approval, we (JB) placed recruitment posters in the ANPCC and SCF Health Education Department. Second, we distributed recruitment flyers at the weekly SCF Diabetes Wellness Gathering. Third, we recruited through a published announcement in the Alaska Native News, a community newspaper produced by SCF.

These initial recruitment efforts yielded eight participants in three focus groups, resulting in the decision to supplement focus group data with individual interviews. We (BK) distributed recruitment letters to medical case managers working in the ANPCC to mail to potential participants receiving care for type 2 diabetes in the clinic. This yielded five individual interviews, resulting in total recruitment of 13 AN/AI adults with a self-reported

¹ All references to *diabetes* are specific type 2 diabetes, or non-insulin dependent diabetes mellitus, and do not include type 1 diabetes.

² Following the definition in Mosby's Medical Dictionary, the term *psychosocial factors* refers herein to anything that study participants reported to impact their experience and management of diabetes "pertaining to a combination of psychological and social factors."

diagnosis of type 2 diabetes. This sample is lower than the expected recruitment of 18 adults. The physically and emotionally demanding self-care regimens that individuals with diabetes must follow may have precluded potential participants from taking part in the study.

All recruitment materials stated that study participation was voluntary and not related to receipt of medical care. No identifying or medical information about individuals to whom case managers mailed recruitment letters was disclosed to the researchers. Interested individuals contacted the researchers directly to schedule interviews.

Data Collection and Analysis

Between November 2009 to April 2010, we (DD and JB) conducted three focus groups at the ANPCC. Participants completed a short demographic form. Names were not used by either the moderator or participants in the discussion, and participants were identified only by self-selected colors. Six questions and follow-up probes were asked in each focus group. Questions focused on the perceived social, psychological and spiritual impacts of having diabetes (Table 1).

We (DD) collected additional data through individual interviews in which participants the same questions and probes. Each participant received a \$30 gift card incentive.

Table 1 Focus group and interview questions and targeted probes

Question	Targeted probes
How has having type 2 diabetes affected your life?	Obviously type 2 diabetes has a lot of impact on your physical health. How about your emotional, spiritual, and social life?
What do you need in order to stay as healthy or well as you can be as a person with type 2 diabetes?	How are these needs being met? What type of help have you found particularly useful? What is missing? What prevents you from being well?
Are there emotional needs that you think many people with type 2 diabetes have?	How are these needs being met? What type of help do you think is particularly useful? What is missing? What prevents people with type 2 diabetes from being emotionally well?
When you hear the word depression what does that mean to you?	No probe
What kind of help do you think people with depression and type 2 diabetes need?	What are the signs of depression?
What would get in the way of people with depression getting help?	What could be done to remove these barriers?

All focus groups and interviews were audio recorded and transcribed. We developed a coding scheme through an iterative process, in which initial independent readings of transcripts by two team members (JS and BK) yielded a list of possible codes. Emergent codes were consolidated and one focus group was independently coded and compared by two members of the research team, then discussed with the rest of the team. The coding scheme was refined until agreement was reached and then all data were coded using Atlas.ti.

Results

Thematic analysis of the data indicated three key themes in the psychosocial experience of AN/AI adults with type 2 diabetes, including: (1) *resources for managing diabetes*, (2) *roadblocks to managing diabetes* and (3) *turning points* in the illness trajectory. These are discussed in detail below.

Resources for Managing Diabetes

Participants reported a wide range of resources that help them manage diabetes. In particular, four aspects of these resources stood out as common themes in participant narratives, including: (1) *knowledge and education about diabetes*, (2) *social support from other people with diabetes*, (3) *spirituality*, and (4) *self-efficacy*.

Knowledge and Education About Diabetes

Participants focused heavily on the role that knowledge and education about diabetes has in their ability to manage the illness. They spoke of a range of resources that gave them this knowledge, focusing in particular on the diabetes support groups and health education they received through SCF Health Education programs. Some participants reported using the internet for information before other resources became available to them. Regardless of the method, however, participants' uniformly described knowledge and education about diabetes as one of the central resources that helped them manage the illness. One participant put this quite succinctly:

I've embraced it and I can live with this. And the knowledge is what's actually changed everything, is knowing more and more about it.

Some participants emphasized the importance of diabetes-specific education in learning nutritional principles and dietary skills. They described these educational experiences as meeting needs that primary providers alone could not satisfy. For example:

... diabetic education really...filled the gaps. It... grounded me in that I didn't have to guess about anything. I think a lot of people who don't have education guess.. There are things that you need to learn that you won't learn unless somebody... teaches you. We need education.

I think the biggest thing for me was just talking to somebody about what to eat and what a portion was and carbs, because I had no idea....carbs had sugar... and I'd just eat what I wanted, thinking if I didn't eat candy, I'm good.

It is important to note that education about diabetes encompasses information ranging from broad concepts, such as the role of insulin in regulating blood sugar, to specific information, such as how to select fresh produce at the grocery store. The latter information seemed particularly useful to participants who grew up in areas where availability to fresh produce was limited. In Alaska, where many Anchorage residents have migrated from rural villages, this information may be particularly important for both prevention and management of diabetes.

Social Support from Other People With Diabetes

A common theme among participants in focus groups and interviews was the role of social support from other people with diabetes. This support facilitates management of diabetes in several ways. For example, support groups provided encouragement to follow dietary and nutritional recommendations.

... being a nurse...you know [I thought], "What can I get out of that?" But what you get out of it is friends who share the same kind of battles that you're going through....the wellness group really is a good place to start because then you're going to hear [someone] say, Well, yeah, I worked out today." And then you think, Well...I'd better go work out." And so it really is that support that you otherwise didn't have.

Participation in groups of individuals with diabetes was also reported to be an important resource for coping with situations and experiences related to having diabetes.

...if you don't have someone that actually supports you and is there and you can talk to, and how do you handle this situation, what do you say when somebody asks you these questions...I think support groups are really, really important...

I like that everybody there is in the same shoes as you are, so you find out you're not the only one going through [this]....it makes you more comfortable to get out what you need to get out. Or, if you

have...family that doesn't understand....until you live with it, you don't understand it truly. So I feel more comfortable going to the groups that are going through it, too.

While most participants reported seeking support from others with diabetes in group settings, some had sought support in one-on-one or individual settings, such as the internet, and found this to be a useful alternative or complement to support groups.

...they have these forums...of other people that are sharing the same problems... You get to read whatever you want and look up different symptoms or someone that...has had that experience and is doing this along with you....classes are fine, but you're limited and you don't really absorb...as much as if you have a tool in front of you.

Whether participants to seek support in a group or a one-on-one setting, they commonly expressed the importance of speaking and listening to other people with diabetes and having the opportunity to share experiences related to having diabetes.

Spirituality

Spirituality serves as an important resource for some individuals in our sample. Spirituality is a diverse resource that can serve to guide personal behavior, provide emotional assurance or give comfort to others. One participant's comments reflected a common theme, stating that her spirituality enabled her to make difficult changes in her dietary habits:

I tried numbers of times to quit eating the way I was eating, and I never could....I relied more on God to help me to make those right choices. And I have consistently lost a pound a week for the past several months because of that – yay! – and the support I get. But I know, for me, my spiritual life, it's been-that's helped me a lot because I don't think I could've done it.

For some, spirituality provides a source of emotional support to help them cope with the challenges of managing diabetes, as well as for offering hope to others living with the illness.

... [the doctor]...looked at me and says, "I just lost two patients from diabetes this week." And that...really scared me. And that's when I really started using my spiritual [sic].

...you draw upon your faith and ask God to help out in those trying situations and just in the everyday challenge that [diabetes] creates.

If more people could talk others out of being depressed and tell them there is a Lord out there, there's hope. You don't have to feel like you're alone. A lot of people are going through this. You know? It's good for encouraging.

Finally, one person articulated that spirituality provides a constant source of support that may not reliably be found in social relationships.

...rather than be depressed, I just turned to the Lord. He's my best friend.... family could turn their back on you....But never the Lord, you know. It gives me peace.

Thus, spirituality provides an important resource for individuals managing diabetes, both as a tool for making practical choice and behavioral changes, as well as for finding positive means of facing the emotional challenges of diabetes.

Self-Efficacy

As reflected in the above discussion on spirituality, one of the most dominant resources participants reported was a sense of competence in managing diabetes and influencing health outcomes associated with the illness. Knowledge and education about diabetes and acceptance of the illness were common sub-themes in participants' discussion of their perceived self-efficacy in managing diabetes.

...I started learning more and more and accepting it and dealing with it, going to my doctor, my dietician, and learning more and more

The more you learn about it, the more you can accept it. Like I said, I went in denial because I wasn't accepting it, and I didn't see—I didn't want to be different from everybody else, and that was another part of the process, is you have to accept and embrace it.

Several participants reported that the emotional challenges of diabetes actually helped facilitate their sense of self-efficacy about managing the illness.

...I felt it was death. I felt like, "Well, I've got diabetes. I'm going to die, and there's not a whole lot I can do about that." And then I found out that there really is, and it ended up being a very life-changing experience.

I was depressed but it got me motivated, too—don't want to be a diabetic, so I changed it. It's changed my life.

It's a scary thought to be diabetic...at first, I just ...wanted to cry, but I was thinking...I could change it. I could change how this is so I'm changing now.

At the beginning it was frustrating and sad a little, but now it's..."when could I really be off all the medicine and...get back into shape and get back into me." I think some people feel helpless about it, that they can't control it. So why try? I took the other tack. I'm going to control it, or it's going to control me.

Thus, emotional challenges of the illness intersected with useful knowledge and information resulted in participants' perception of being competent to manage diabetes. This sense of self-efficacy, couple with knowledge and education about diabetes, support from other people with diabetes and spirituality were the key resources participants reported to help them manage diabetes.

Roadblocks to Managing Diabetes

In addition to the resources described above, participants described a wide range of roadblocks encountered in managing diabetes, with particular emphasis on several oft-cited factors, including: *lack of knowledge about nutrition and diet, social difficulties caused by dietary restrictions, and comorbid medical conditions*. These themes and illustrative quotes are described in more details in ensuing paragraphs.

Lack of Diabetes-Related Knowledge/Education

While every participant in the study could access diabetes education classes at the time of data collection, some had previously lived in regions where this resource was not available. This lack of information affected participants in a variety of ways, including fear and even physical decline. For example:

I was afraid of going into a coma....And I thought it was because if I ate this certain food, so...when I first found out, I actually lost about 20 pounds because I was afraid to eat.

Another aspect of this roadblock emerged in stories about family members and friends who participants perceive do not appreciate the significance of their dietary needs.

...your family sees you take these pills, and they see you in your daily life. But I don't think any of them think past that...They're always saying, "Have a second cup of soup," or, "It's a small brownie. You can have a small brownie." What they don't understand is when you have that small brownie, it triggers something...

...some of my relatives...would say, "Come on, you can have some. Come on. It's a special occasion. It's my birthday." But they don't realize that I eat—cake

and ice cream—that’s going to shoot my sugar up real high, and it’s not good for me.

Dietary factors also factored into the next major roadblock to managing diabetes, detailed below.

Social Difficulties Related to Dietary Restrictions

Most participants described changes in their social habits and relationships due to the dietary restrictions imposed on them by diabetes.

...my social life...really took a plunge when I was first diagnosed because everything my friends and I did was around food....And so things really changed as far as socially.

I have several friends that I don’t go around with...anymore just simply because the change [in diet] that I had to make was something that—it irritated them.

Co-morbid Medical Conditions

Co-morbidities related to diabetes and other complicating medical problems were also reported by participants as roadblocks to managing diabetes. Medical co-morbidities experienced by participants in the study include epilepsy, head injuries, heart disease, hypertension, degenerative joint disease and infections. These conditions can intensify the need to watch dietary intake or interfere with diabetes management by further complicating medication regimens, upsetting glycemic control, and introducing emotional challenges, such as depression, for example.

Well, I don’t know if it’s so much the diabetes as the other health issues also. I have four new stents in my heart. I take a bolus of medication in the morning and a bolus in the evening. It’s almost all related...to my heart problem. So that sometimes eclipses the diabetic problem. The diabetic problem is there all the time, and I have to be aware of that.

I’m epileptic too, and that’s really scary....I have to watch what I’m eating...when I fall off, I don’t feel nothing...my blood sugar goes too high, or if I get too warm. So I do have to watch what I eat still.

The central emphasis is that co-morbidities can complicate the physical management of diabetes during episodes of illness, as well as creating a need for greater diligence about self-care even during times of general health and wellness.

Thus, the resources and roadblocks described above give insight into the perceptions of AN/AI individuals with type

2 diabetes about the illness, its impact on their lives and key factors they perceive to help or hinder their efforts to achieve optimal health and minimize the negative consequences of the disease. These data indicate factors the AN/AI individuals who participated in this study find most supportive as well as those that impede their ability to manage diabetes effectively. Additionally, the data demonstrated that the presence or absence of resources and roadblocks are not constants along the illness trajectory. That is, the factors that help or hinder managing diabetes are subject to change and certain experiences, or *turning points*, can transform roadblocks into resources.

Turning Points in the Illness Trajectory

Most study participants described moments in which their experience of diabetes shifted and the illness became easier to manage. These transformative experiences occurred at “turning points” in the illness trajectory in which individuals developed the ability to make necessary changes to achieve desired health outcomes.

Sometimes turning points involved confrontation with others. For example, several participants described interactions with concerned health care providers that resulted in their self-reported acceptance of the illness and a decision to strive for positive outcomes.

...the real wake-up for me was when one of the doctors said to me, “... what do you want to be doing in five years?...You may not be here if you don’t change the way you’re eating...”...that was a wake-up call for me...Now I was madder than heck that he said it, but it was a wake-up call because I looked around, and I saw my grandkids, and I thought, ‘I want to be there when they get married.

Participants almost uniformly described turning points as having been preceded by a challenging emotional experience that caused them to think differently about their capacity to manage diabetes differently.

I went through the [diabetes education] class with [a friend] because she didn’t want to go alone. And we got through the class...and in a matter of about four or five months, four of them died. And it was such an eye-opener for me. It was like, “Now, how could they have died?” And I noticed in the paper, it said, “Due to complications of diabetes.” And it was just like, “That’s what yours is going to read if you don’t stop.” You realize that this is a disease that can kill you if you don’t do what you need to do.

In turn, diabetes-related health education and support from other individuals with diabetes sometimes led to

awareness of healthy choices and development of self-efficacy. As individuals became aware of how they could manage the illness through diet, exercise and individualized medication management, they also developed a belief in their ability to manage their illness and achieve positive health outcomes.

Thus, roadblocks have the potential to become resources when individuals can acquire needed awareness, support and skills for managing diabetes.

Depression as a Barrier to Managing Diabetes?

As mentioned earlier, we designed this qualitative study to complement a quantitative investigation on the association between diabetes and depression in AN/AI people at the ANPCC. For this reason, we asked participants about their experiences with depression, particularly as related to living with diabetes. However, experiences with depression did not emerge in these data as a dominant narrative or roadblock to managing diabetes. Rather, study participants described brief episodes of depression related to specific experiences, such as being diagnosed with diabetes or when co-morbid conditions complicated diabetes management. These challenges were consistently described as being overcome with resources such as support from other people with diabetes, assistance from health providers and perceived self-efficacy to positively affect health status. Some participants, in fact, described depression as a precursor to a turning point in the illness trajectory that actually resulted in positive health outcomes. These resources may be particularly important for health care providers, health educators and health managers seeking to address or prevent the economically and emotionally costly problem of depression in the population of people they serve who are living with type 2 diabetes. This will be discussed further below.

Discussion

These data show that the AN/AI adults who participated in this study encounter a wide range of resources and roadblocks in managing diabetes, as well as important turning points in the illness trajectory that result in a greater commitment to achieving positive health outcomes. Four sub-themes emerged as key resources for managing diabetes, including: knowledge and education about diabetes, support from other people with diabetes, spirituality and self-efficacy. Three sub-themes emerged as dominant roadblocks, including: self-reported lack of knowledge about nutrition and diet, social difficulties caused by dietary restrictions, and co-morbid medical conditions. Turning points are characterized by an emotional experience, such as a challenging encounter with a health care provider

or the death of a friend, resulting in acceptance of the illness and an increased sense of perceived efficacy for successfully managing the illness.

Several factors limit the generalizability of these findings. First, a self-selection bias in this sample may have produced an over-representation of individuals with a proactive stance toward diabetes management and health-care in general. In other words, our sample may favor health care users and under-represent the non-user. It is reasonable to assume that the pre-paid nature of the ANPCC health system would result in fewer under-served individuals than in the general population. However, despite the lack of this barrier to care, it is likely that there is still a segment of the population that, for other reasons, does not seek health care or participate in health education classes even when diagnosed with diabetes. Second, this sample includes only adults with diabetes by self-report and therefore cannot be considered a representative sample of the ANPCC service users. Finally, the limited number of participants in the study presents obvious limitations to the generalizability of the findings. Despite these limitations, however, we believe the findings to be an important first step in exploring and understanding the barriers and facilitators to diabetes management experienced in this under-represented population of AN/AI adults with diabetes. Despite the overall low incidence of diabetes in the Alaska Native community, as Alaska's "largest village" and a center of rural-to-urban migration, Anchorage offers a unique opportunity to sample a diverse group of individuals representing many different experiences and backgrounds. This, coupled with the fact that every person in the sample has access to comprehensive primary and specialty health care services leads us to conclude that the data discussed here may, in fact, be more representative than they might appear at first glance.

Several of the findings described above have particularly important implications for programmatic interventions and future research. First, participants in our study universally have utilized some form of diabetes education or support group. However, these resources are clearly not sufficient for meeting their psychosocial needs and supporting them in successfully managing diabetes. One of the strongest findings of this study was the difficulty experienced by participants in finding support among family and friends for their dietary needs. These difficulties resulted in avoidance of social situations or ending unsupportive relationships, thereby increasing social isolation. This finding is particularly concerning given the widely-cited role of social support in successfully managing chronic illness [16] and the fact that social gatherings, especially holidays celebrations and community events, often center around food.

Participants uniformly expressed the wish for family and friends to have similar opportunities as they do for gaining

knowledge and education about diabetes. This appears to be the greatest unmet psychosocial need of our study participants—the need to increase awareness and sensitivity among members of their natural support networks. It follows from this finding that primary care providers should assess their patients' social support and determine with patient input if additional support for family members is needed. This finding also has implications for health service managers and health advocates. One participant eloquently summarized this, saying that we need

...more public awareness. Awareness in the non-diabetic community that we have a large portion of our population that has this problem, and they're going to continue to have this problem. It's really a community problem. It's something that we all need to deal with.

Thus, expansion of health education classes and initiatives to include family members and friends of individuals with diabetes, as well as public service campaigns to increase community awareness and acceptance of diabetes in the general public is warranted.

Second, while some of the participants in our study reported previously having experienced a lack of access to health care or health education, every person had financial access to comprehensive health care at the time of data collection. While the uniformity of this group's access to health care and diabetes education constitutes a limitation study, by virtue of decreasing overall sample diversity, it may also serve to protect the AN/AI persons receiving care at the ANPCC from experiencing higher levels of depression and emotional distress, such as those observed in the general US population of adults with diabetes. Future research should explore this question as well as consider if the developmental aspects of diabetes management, such as accepting the illness and committing to achieving positive outcomes, are facilitated by the continuity of integrated, patient-centered care, such as that provided at the ANPCC.

Third, primary care providers should allow adequate time for patients to ask questions and provide diabetes education, as well as formal depression screening. Even in the absence of clinical depression, primary care providers should carefully assess newly- and previously-diagnosed patients for perceived social support and fear related to diabetes, as well as perceived self-efficacy for managing dietary needs (e.g., in social gatherings). Finally, providers should refer individuals to diabetes-related health education classes and support groups and assess for barriers that individuals with diabetes may face in utilizing these resources.

Finally, as research conducted with an under-represented population using a CBPR approach, this study contributes important information to the dearth of knowledge on the psychosocial needs and experiences of AN/AI

individuals with diabetes. However, this study includes only individuals who were actively seeking health care and/or health education related to their diabetes. As such, it does not represent the perceptions and experiences of AN/AI people with diabetes who are *not* seeking health care, education or support related to the illness. Future research should focus on this group and seek to identify barriers to utilization of available resources.

Alaska Native and American Indian (AN/AI) persons are more likely than other Americans to use primary care providers as their de facto behavioral health service providers [17]. Tools to understand and appropriately address the psychosocial needs of primary care patients are, therefore, critical for providers working with this population. By designing programs and services to meet these needs, health service managers could potentially reduce psychosocial burdens on individuals with diabetes and help them achieve optimal health outcomes.

References

1. Wild, S., et al. (2004). Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. *Diabetes Care*, 27(5), 1047–1053.
2. Coventry, P., et al. (2011). Talking about depression: A qualitative study of barriers to managing depression in people with long term conditions in primary care. *BMC Family Practice*, 12(10).
3. Anderson, R. J., et al. (2001). The prevalence of comorbid depression in adults with diabetes: A meta-analysis. *Diabetes Care*, 24(6), 1069–1078.
4. Peyrot, M., & Rubin, R. R. (1997). Levels and risks of depression and anxiety symptomatology among diabetic adults. *Diabetes Care*, 20(4), 585–590.
5. Warnock, J. K., & Mutzig, E. M. (1998). Diabetes mellitus and major depression: Considerations for treatment of Native Americans. *Journal Oklahoma State Medical Association*, 91(9), 488–493.
6. Ciechanowski, P. S., Katon, W. J., & Russo, J. E. (2000). Depression and diabetes: Impact of depressive symptoms on adherence, function, and costs. *Archives of Internal Medicine*, 160(21), 3278–3285.
7. Ciechanowski, P. S., et al. (2003). The relationship of depressive symptoms to symptom reporting, self-care and glucose control in diabetes. *General Hospital Psychiatry*, 25(4), 246–252.
8. Egede, L. E. (2004). Diabetes, major depression, and functional disability among U.S. adults. *Diabetes Care*, 27(2), 421–428.
9. Egede, L. E., Zheng, D., & Simpson, K. (2002). Comorbid depression is associated with increased health care use and expenditures in individuals with diabetes. *Diabetes Care*, 25(3), 464–470.
10. Lustman, P. J., et al. (2000). Depression and poor glycemic control: A meta-analytic review of the literature. *Diabetes Care*, 23(7), 934–942.
11. Odegard, P.S., & K. Capoccia. (2007). Medication taking and diabetes: A systematic review of the literature. *Diabetes Education*, 33(6): 1014–1029; discussion 1030–1031.
12. Auslander, W.F., et al. Psychosocial resources and barriers to self-management in African American adolescents with type 2

- diabetes: A qualitative analysis. *Diabetes Education*, 36(4): 613–622.
13. Dovey-Pearce, G., Doherty, Y., & May, C. (2007). The influence of diabetes upon adolescent and young adult development: A qualitative study. *British Journal of Health Psychology*, 12(Pt 1), 75–91.
 14. Gee, L., et al. (2007). The clinical, psychosocial, and socioeconomic concerns of urban youth living with diabetes. *Public Health Nursing*, 24(4), 318–328.
 15. Gallant, M. P., Spitze, G. D., & Prohaska, T. R. (2007). Help or hindrance? How family and friends influence chronic illness self-management among older adults. *Research on Aging*, 29(5), 375–409.
 16. van Dam, H. A., van der Horst, F. G., Knoop, L., Ryckman, R. M., Crebolder, H. F., van den Borne, B. H. (2005). Social support in diabetes: A systematic review of controlled intervention studies. *Patient Education and Counseling*, 59(1), 1–12.
 17. Brady D. D. (1994). Use of mental health services by American Indian and Alaska Native elders. *American Indian and Alaska Native Mental Health Research*, 5(3), 1–14.