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Regular Paper

Breathing Fresh Air into Diabetes Education: A Qualitative Study

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Abstract

Type 1 diabetes (T1D) is an endocrine and metabolic disorder affecting approximately 1.4 million adults living in the United States. Psychosocial factors have been identified as key barriers to improvements in self-care among T1D adults, including emotional well-being, social support and self-efficacy, and personal motivation. It is posited that nonclinical approaches, such as peer-based outdoor adventure education programs, could assist T1D adults with their individual psychosocial needs. However, very little research exists to support this unique approach to care. The purpose of this study was to explore the meaning that adults living with T1D ascribe to participation in a wilderness backpacking trip. Eighteen participants with T1D completed a 5-day backpacking trip on the Chilkoot Trail in Alaska and British Columbia. Once on the trip, participants were invited to participate in two semi-structured interviews within 48 hours of the trip start and end date. Using a phenomenological approach, three themes were constructed: a) seeking and finding a diabetes community, b) revealing capabilities to yourself and the world, and c) enhancing diabetes management and self-care on the trail and in life. A common thread across the three constructed themes was the sense of belonging to the diabetes community, which was described by the participants as paramount to their positive overall trip experience. This finding extends assertions that peer relationships during OAE programs may play a central role in improving psychosocial functioning for individuals living with T1D. This provides evidence on the power of using outdoor recreation to positively impact the community of individuals with T1D.

KEYWORDS: *Backpacking, diversity, type 1 diabetes (TID), leadership, partnerships*

Introduction

Type 1 diabetes (T1D) is an endocrine and metabolic disorder affecting approximately 1.4 million adults living in the United States (CDC, 2020). This number is expected to grow in future decades, given the absence of a cure and rising incidences of T1D among youth (CDC, 2020; Siminerio et al., 2014). Avoiding disease risk factors and complications is largely incumbent upon T1D patients, who are tasked with self-regulating glucose levels using at-home insulin therapy (ADA, 2020). A recent study showed that 60.1% of T1D patients over 14 years of age considered it difficult to follow treatment recommendations (Alvarado-Martel et al., 2019), while less than a third of adults with T1D in the U.S. may be meeting the American Diabetes Association long-term blood glucose level (i.e., HbA1c) of less than 7%, the non-diabetic HbA1c level is less than 6% (Beck et al., 2012).

Psychosocial factors have been identified as key barriers to improvements in self-care among T1D adults, including emotional well-being (Collins et al., 2009; Peyrot et al., 2005), social support and self-efficacy (Pyatak et al., 2013), and personal motivation (Alvarado-Martel et al., 2019). While some believe psychologists should play a central role in addressing these challenges (Gonzalez et al., 2016), Fischer and colleagues (2015) consider diabetes distress "as an expected part of having T1D and not … requiring referral or specialized care" (p. 8). Given that many providers are not equipped to offer professional psychological support (Peyrot et al, 2005), it is encouraging to consider the possibility that nonclinical resources could assist T1D adults with their individual psychosocial needs, such as peer-based outdoor adventure education (OAE) programs.

There are limited outdoor recreation programs serving the community of adults with T1D. Past research has shown that OAE programs can help youth with T1D overcome self-management barriers through peer mentoring and support (Hill & Sibthorp, 2006; Hill et al., 2019; Nabors et al., 2014; Santiprabhob et al., 2008). Highlighting this, a meta-analysis of youth diabetes camp literature from 1952-2007 by Maslow and Lobato (2009) found evidence of improvements in self-concept, internal locus of control, attitude toward illness, diabetes skills and knowledge, and self-care adherence. However, to date, little empirical research has investigated the psychosocial impact of OAE programs for T1D adults. Herzkowitz (1990) used a battery of psychological measures to explore the long-term impact of young T1D adults (ages 14-42) who participated in a 10-day OAE program, featuring 3-4 day sailing expeditions, and found participants experienced a heightened sense of empowerment, self-confidence and determination, and diabetes self-management skills. Similarly, Alt (2009) used a mixed-method design to measure the impact of a 10-day surfing and hiking expedition to Costa Rica for 10 T1D adults (ages 22-47), and revealed deep connections and bonding among participants, increased confidence, and increased knowledge with respect to themselves and diabetes. Finally, Hanson (2010) interviewed six T1D adults (ages 18-30) participating in weekend residential diabetes camps, who reported personal growth, evolution of self-management, and feeling supported by the community. Collectively, these studies support the use of OAE as a promising intervention to enhance psychosocial constructs for your adults with T1D. These insights, along with an obvious gap in the OAE literature for T1D adult populations, warrants additional research exploring motivation and OAE programs for T1D adults. Therefore, the purpose of this study was to explore the meaning that T1D adults ascribe to participation in a wilderness backpacking trip.

Theoretical Framework: Self-determination and Relationships Motivation

This study was conceptually underpinned using the relationships motivation theory (RMT), a mini-theory of self-determination theory (SDT). SDT seeks to understand "what humans really need from their psychological and social environments to be fully functioning and to thrive"

(Ryan & Deci, 2018, p. 4). Ryan and Deci consider thriving to be a function of three basic psychological needs: autonomy (defined as volition or choice), competence (mastery in personal life contexts), and relatedness (sense of belonging and feeling cared for). In T1D research, positive perceptions of autonomy and/or competence have been shown to predict long-term improvements in glycemic control (Williams et al., 2004), better dietary self-care (Austin et al., 2011), and competence for self-management (Hill & Sibthorp, 2006). RMT, a mini-theory of SDT, emphasizes the role of close and elective relationships in providing autonomy-supportive environments (Ryan & Deci, 2018). RMT is supported by seven propositions that have developed from SDT studies, including key findings that relatedness is a direct and independent predictor of wellness (La Guardia & Patrick, 2008). The model highlights how "mutuality of autonomy support especially facilitates satisfaction of basic needs," (Ryan & Deci, 2018, p. 293), suggesting relatedness can be compromised in relationships in which individuals are unwilling participants. RMT provides a unique framework for research pertaining to T1D adults in OAE programs, since their participation can be viewed as an act of personal volition (as compared to youth at diabetes camps or patients receiving clinical care).

Methods

This study takes an interpretivist approach, where the researchers attempted to make sense of the participants' interpretations of their lived experiences. Given the inextricable link between researchers' personal beliefs, values, and inclinations and the interpretative process, we deemed it critical to expose our personal and professional positionalities so others can consider how it may have shaped methodological decisions and interpretations of data. Each member of the research team identifies as white, heterosexual, cisgender men. The lead researcher identifies as a person living with T1D, whereas the other two researchers do not. Collectively, our personal and professional interests are tied to a desire to gain an understanding of how T1D adults experience outdoor recreation programs.

Aligned with an interpretivist ontology, we adopted a phenomenological approach. Phenomenological studies focus on exploring how individuals make sense of the world around them from their own perspectives, and aim to provide insight into a person's lived, embodied experiences (Reeves et al., 2008; Smith et al., 2009). This approach allows participants to reflect on their personal experiences and develop personal meaning related to those experiences. In this study, the phenomenon of interest was a backpacking expedition as experienced by T1D adults. This methodology was chosen as it allowed for a deep exploration of the participants' experiences and the meaning they ascribed to those experiences in an open and systematic way (Patton, 2002).

Participants

A convenience sample of 18 adult ($\bar{x}$=35, $\tilde{x}$=31) T1D participants took part in research interviews, including five males and 13 females (see Table 1). Participants were recruited from an existing backpacking trip that was offered for adults with T1D. Their average time since diagnosis was 15.33 years. Seventeen participants identified as white/Caucasian/European descent, and one as Latino, representing either the United States (n=7) or Canada (n=11). Participants applied for the program with a diverse range of backpacking experience, ranging from no experience (n=1), to limited experience (n=9), and very experienced (n=8). Each individual considered themselves either generally fit (n=13) or extremely fit (n=5).

Table 1
Participant Demographics

Name	Age	Years with T1D	Gender
Alfred	30	10	Male
Amanda	45	24	Female
Bev	36	15	Female
Brenda	42	15	Female
Catherine	62	5	Female
Christy	29	15	Female
Darlene	30	29	Female
Frankie	44	17	Male
Ginny	30	7	Female
Jennifer	37	30	Female
John	27	12	Male
Kelly	28	19	Female
Laura	29	22	Female
Martha	26	14	Female
Nolan	31	24	Male
Paula	29	21	Female
Roger	33	8	Male
Suzanne	35	20	Female

Note. T1D refers to type 1 Diabetes.

The Program

Participants completed a 33-mile backpacking trip on the Chilkoot Trail in Alaska and British Columbia. Besides some interaction with a small number of hikers from other groups, the environment could be described as a wilderness setting. The trek itself was moderately difficult in intensity. There were some rugged trail sections, including 1,000 feet of vertical altitude gain within a half-mile section midway through the trek. Alpine weather (wind, rain, and sleet) offered periodic challenges to the groups as well. Participants worked together to carry all the groups' food and equipment. Designated camping areas along the trail provided tent platforms and cooking areas with limited shelter.

Individuals were split into two groups of nine individuals, who completed roughly the same itinerary in back-to-back sessions. Trips lasted eight days in total, including five trail days, two days of group preparation, and one day of group bonding following their experience on the trail. A researcher involved with the present study served as one of two professional guides on the trip. A third trip leader was tasked with media collection. Each of these individuals was also a T1D adult and brought past experiences leading experiential, diabetes education programs. While there was no intentional education or clinical curriculum, the leaders worked together to provide a safe and encouraging space for participant dialogue as it pertained to diabetes management.

Data Collection

Once on the trip, participants were invited to participate in two one-on-one, semi-structured interviews within 48 hours of the trip start and end date. The lead researcher disclosed to each participant his desire to analyze their responses as part of a research project, which might

help shape future studies looking at outdoor education programs for adults living with diabetes. Each participant provided verbal approval to move forward with a live interview recording. Interviews lasted between 5-15 minutes. During the pre-trip interview, participants were asked to share their story ("Who are you? What's your story?"), talk about how they got involved with the program, and describe what the trip meant to them ("What does being part of this adventure mean to you?"). During the post-trip interview, participants were asked what happened on the trip and were again asked to tell their story ("How has your story changed now that the trip is over?"). Interview recordings were transcribed and shared with individual participants within three months of the trip in order to check for accuracy. Each transcript was attached to a pseudonym to protect individuals' privacy. Participants were asked if they would allow second and third researchers to review their responses in case there was a chance that their data warranted a formal research inquiry. All participants provided written consented to participate in the study. This study was reviewed and approved by the Human Subjects Review Committee according to federal regulations (exemption category 6.2).

Data Analysis

Following the completion of the data collection process, audio files were transcribed verbatim to obtain a semantic, written record of the interview. One research team member, the analyst, thematically analyzed the transcriptions using a three-step analytical process that was both iterative and interpretative in nature. The first step of the analytical process involved data immersion, where the analyst read and reread each participant's individual transcript multiple times to gain a deep understanding of and develop an intimate relationship with the data. In alignment with recommendations from Howard and colleagues (2019), the analyst noted descriptive and exploratory commentary pertaining to meaningful pieces of data during this step. Second, the analyst compiled documents (i.e., transcripts, descriptive and exploratory comments) into constructed themes. At this stage, the themes reflected both the participants' original words as well as the analyst's interpretation of those words. Steps one and two were each completed at the case level. After themes were constructed at the case level, the final step involved the analyst searching for patterns across participants through a constant comparative process. Those that were present across cases were shared with one co-author and discussed to ensure they were congruent with the purpose of the study. Agreed-upon themes were summarized and presented as findings.

To support trustworthiness, detailed notes in the form of an audit trail were maintained on each step of the coding process, and the interviewer was exposed to prolonged engagement with the participant corpus. It is also important to note that the analysis was conducted by one research team member, as it is recognized that the background knowledge of the analyst inescapably influences data coding (Smith & McGannon, 2018), with a second research team member acting as a critical friend who provided feedback on the analysis. In addition, the research team was mindful about including an abundance of verbatim quotations to ensure that participants' voices were exposed in the data, which allows for readers to check interpretations and safeguard against themes echoing existing findings (Smith et al., 2009). Furthermore, transparency and coherence were supported by thoroughly describing critical elements of the research process, including participant recruitment, interview, and analytic procedures.

Findings

Findings are presented as three constructed themes that depict the meaning that participants ascribed to their experiences with a backpacking expedition: a) seeking and finding a diabetes community, b) revealing capabilities to yourself and the world, and c) enhancing diabetes management and self-care on the trail and in life.

Seeking and Finding a Diabetes Community

The first theme depicts the meaning that the participants ascribed to what was considered by many to be the most important outcome of the trek, the development of a diabetes community among the participants. When reflecting about their experiences, several participants began by talking about the lack of friendships and connection they had to other individuals with diabetes prior to joining the trek, and how engaging with this experience helped build that social network. For example, Kelly reflected that "community was just something that I never had. I've never had any friends with diabetes," and Frankie noted that "there's definitely a loneliness to [diabetes] as well. I needed not to feel so alone in this journey." Similarly, Amanda recalled that:

> I don't have any friends at home who has diabetes, so no one else understands what we do every minute of every day. It's so rare not to be thinking about diabetes with every decision you're going to make. Now, all of my friends with diabetes are from this. I'm surprised with how close we became in so little time.

For many of the participants, like Kelly and Amanda, the development of relationships among the group was a surprisingly important outcome. That is, while participants expected relationships to grow throughout the duration of the program, they were surprised with how central it was to the meaning that the trek took on for them. Alfred reflected that:

> I'm sure if you had asked me about it before, I would have said, "Oh yeah, of course we'll be building relationships," but it wasn't like a critical outcome for me. But, as the takeaway from the experience, I can now say that it's definitely the thing that I'll be looking at most fondly. The thing I will be able to remember most is the people.

Similar to Alfred, each participant in this study described the critical importance that community and friendship building had in informing the meaning of this trek. Highlighting this, when asked about what he will take away from this experience, Nolan stated that "the amazing relationships that were formed. I mean, I'll remember everybody from this adventure team for the rest of my life." Just one participant, Bev, recalled experiences inconsistent with her fellow participants, reporting that:

> At this point in my life…I've [already] made these amazing connections…so this feels kind of selfish…being with a group of diabetics, or having the experience of diabetes being normal…none of that feels new to me…I'm excited to go home.

Having participated in similar experiences in the past, and having already been immersed in this community, Bev did not appear to receive the same community-based benefits as the rest of the group.

When reflecting upon the importance of community-building throughout the trek, the concepts of acceptance and belonging were central to the participants' narratives. For John, the aspect of acceptance and belonging had to do with not feeling judged by other participants, which he related to commonalities among the members of the tribe. He explained:

> The biggest thing would be the group coming together, that's what stands out most for me. It's a trip of diabetics, but I feel like I kind of forgot that I even had diabetes in a way, because it wasn't a burden anymore. Everyone's doing it at the same time, and we're just kind of getting through it together. So for me, it was like a getaway from diabetes, even though you were immersed in it. Like, I don't feel judged, and am not worried about that judgement. It's been nothing but acceptance.

According to John, being within an insular group of people with T1D provided a sense of belonging and acceptance while also removing any social awkwardness that may accompany navigating and managing diabetes with non-diabetic friends. Ginny recalled similarly valuing being within a group of "people who get it," because she did "not have to explain every nuance of why

you might be anxious about something [tearing up]. I just like being around people who get it." According to the participants, being with other people with T1D while sharing common goals and experiencing similar challenges were linchpins for this growing sense of acceptance and belonging, and they were surprised with the immediacy in which they experienced acceptance, belonging, and friendship among the group. For example, participants noted that they "just felt like I fit in" [Roger], "felt an immediate bond, which I don't think typically happens when you bring groups of people together" [Laura], and that "as soon as I got here, I feel like I've known everybody forever" [Martha]. Martha continued:

> My main thing was, I came here searching for a sense of belonging, community. And, within like 5 minutes, I found it [laughter]. Like it was right away. There was no need to get to know each other, and as the trip went on, it was shockingly easy to get to know everyone.

As described by Martha, the participants found their bond with others within the group immediately, which was the highlight of the trek for most of the participants. Supporting this, Christy noted that "a lot of it [the meaning of the trek] was just discovering everybody, which was super cool."

While completing the trek introduced the participants to a new sense of acceptance and community in this particular group, it also provided encouragement for them to continue to pursue involvement in the diabetes community outside of this group. When describing their need to become further engaged in the diabetes community, participants reflected that "If I ever feel alone in my diabetes, I don't have to feel that way, you know? This is a strong, capable, smart group" [Catherine], and "the more I'm involved in the community, the better" [Paula]. Perhaps this sentiment was best summarized by Ginny, who reflected on the experience as a whole while also speaking about community in the future. She explained that:

> It was kind of that moment where I was like, 'now is the time to connect with the community.' It's an adventure, but really it is the community that I'm seeking. I think that was the real prize at the end of the journey [Ginny].

Revealing Capabilities to Yourself and the World

This theme depicts the participants' views of the backpacking expedition as an opportunity for them to prove to themselves, and others, that they were capable of completing a physically, mentally, and emotionally taxing experience. According to Paula, providing to herself that she was capable of competing this trek was equivalent to "finding my own personal gold on this trail," in that she found herself learning about her abilities as she competed tasks that she was unsure if she could accomplish as a person living with diabetes. This sentiment was commonly expressed by the participants, who recalled feeling "empowered" [John] and "more confident" [Christy] through the experience, and that "proving to myself that it's doable" [Ginny] was the most meaningful aspect of the experience. According to the participants, who became emotional when reflecting about their accomplishments during the trek, the experience had a profound impact on who they believed they were, and what they were capable of. For example, participants recalled that "I don't know that I have words for it. I think I surprised myself in a lot of ways" [Laura] and "Now I'm an adventurer. I'm an adventurer who just happens to have type 1 diabetes" [Martha].

For several of the participants, the opportunity to learn about their capabilities was linked to the trek as a time to step out of their comfort zone and try something new. Highlighting this, Catherine noted, "How could I know what else is out there that I might like if I don't step outside of my comfort zone? This was way out." Similarly, Jennifer recalled that:

> This trip to me was an opportunity to sort of dive head-first into something that's completely outside of my comfort zone—if I can overuse that cliché. It really means

> for me proving to myself that I can do it, and that I can set a goal like this and accomplish it, and do it surrounded by other people like me that are going through the same challenges I am.

Both Catherine and Jennifer referred to the trek as a time where they could step out of their typical assumptions about their ability and challenge themselves to develop a new understanding of their capabilities. Jennifer continued by describing that "One of the things that happened on this trip was that I was reminded how strong I am." This new understanding of capabilities was omnipresent among participants, who appeared to have an expanded idea of what they could accomplish both physically and mentally after completing the trek. Ginny explained that:

> What you think your body can do and what it can do are two different things. Like, if I was just left at the bottom of a rock wall and someone was like "climb up it," I would have said, "Hell no! I can't do that." That's just your own limited thinking, right? And, I think doing this trail helped me to realize that what you think your max capacity is, isn't. Your body, both physically and mentally, can do a lot more than you think [Ginny].

As highlighted by Ginny, Jennifer, and Catherine, the participants found that stepping outside of their comfort zone, by attempting and completing the trek, provided altruistic value that helped them to reconceptualize their capabilities. This feeling helped participants gain an "acceptance of my diabetes [and gain] a step forward with confidence" [John].

While there was clear value in completing the trek for personal reasons, the participants also noted the importance of showing other people what they can do. For some participants, this meant helping inspire other persons with T1D to pursue active lifestyles and push their bodies. For example, Kelly recalled feeling like a "sort of inspiration to people who have Type 1," and Darlene reflected that:

> People have a hard time, even thinking about a trip like this, people with diabetes. They look at it like some unachievable thing. And, it's really not, especially when you're in a group of really supportive people. So, I think now, it's like "Yeah, we can do this" and "We can, we did it."

For Kelly and Darlene, it was important that their accomplishments showed other people with T1D that they are capable of completing the trek and showing the physical and mental strength of those with diabetes. Alfred shared this view and expanded this perspective to note that it is important to show all people, those with and without diabetes, what those with diabetes are capable of. He reflected that:

> I think from a symbolic standpoint, being able to show that, as a group, we can do this and because we have diabetes does not mean we can't do things that other people can do. You can take that personally, and it's frustrating when people kind of have preconceived notions about what it means to be diabetic and what limitations that imposes on someone's life. I think it's a cool thing that we can point to, not just for us, or people on the trip, but for other people with type 1 diabetes, and on a broader scale, showing everyone that this is something that diabetics are capable of doing [Alfred].

Enhancing Diabetes Management and Self-care on the Trail and In Life

The final theme depicts the participants' reflections about the importance that the trek had with regard to their personal diabetes management and self-care. According to the participants, the experience they had with the trek had a refreshing quality on their viewpoint toward self-care and provided much needed confidence with their diabetes management at home and in future outdoor activities. For example, Suzanne reflected that:

> It's probably a way to spark maybe more self-care. I ebb and flow with my enthusiasm and excitement for diabetes management. Even just talking about it, I can hit a wall where I'm like, "I need to talk about other things." But then the stress of ignoring it can become crazy. I'm trying to, not balance because I think that's a challenging term to apply, but just prioritize or recalibrate, or even just give myself permission to give a little more time to some self-care or to diabetes management [Suzanne].

According to the participants, like Suzanne, the completion of this trek came with a newfound viewpoint toward self-care and diabetes management, which for many included encouragement and enthusiasm to prioritize themselves and their bodies to promote health and well-being. Similarly, Alfred reflected on the experience as a way in which to build knowledge and confidence in his diabetes management, particularly in outdoor environments. He noted:

> I'd say from a personal/practical standpoint, I was really keen to try to figure out what it meant to try to manage diabetes in this type of environment under the safety of other people who have been doing it. Since I've been diagnosed, the longest I've done in terms of like, a hiking trip, would be like a one-night overnight thing. I've done a couple of winter camping things, where I've gone in and, both times, I've been low a couple of times during the day and then woken up in the middle of the night. It felt kind of shitty. It's tough too, because it's like "Ah, this is such a fun experience, but it's plagued by this disastrous element [diabetes] right in the middle of it." But after this experience, now if my friends ask me "Hey, do you want to go on a four-day interior thru hike or whatever, like a canoe trip?" I'll say yes, because I'm more comfortable knowing that I'd be okay doing that and I'd know what precautions I'd need to take [Alfred].

For Alfred, gaining knowledge and confidence in his diabetes management was not only beneficial for his day-to-day life, but it also helped him gain confidence in pursuing future activities during his day-to-day life. This sense of confidence and satisfaction was ubiquitous throughout the group, with several participants noting that they now had the requisite knowledge and skills to pursue further outdoor pursuits, which helped them to be their "happiest, most joyful" [Roger] selves.

While experiencing and completing the trek alone was a meaningful accomplishment for the participants, doing so alongside other persons with T1D was critical in providing participants the opportunity to learn about self-care and diabetes management from others like them. That is, the social element of the trek, which is depicted in theme one, also bled through in this theme, where participants noted that the knowledge gained was largely a product of working alongside others who were also managing their diabetes on the same trip. As such, numerous participants reflected about the value of learning about different self-care and diabetes management techniques from their peers. For example, participants noted that:

> It was just neat to feel like we're all striving for health and for the best ourselves that we can be, but it looks completely different for everyone. That was nice, it helped put things into perspective. Because it's easy to start thinking there is only one way to do things [Brenda].

> The most important thing for me was] learning from my tribe different ways of approaching blood sugar management, what types of pumps people are using, etcetera. I'd never had those discussions before, except for with my diabetic nurse [Catherine].

> Coming to this, you meet more people with more different experiences. So, if I'm like, "I want to run a marathon," I now know like four people in this group who have done

> that. Or, "I want to have a kid," a few people in this group have done that. All those things, it's like a bigger, better source of diabetes info that I can draw from [Paula].

According to the participants, meeting others who have similar lived experiences with T1D, but different experiences with self-care, management, and life experiences (e.g., having a child), helped provide confidence to the participants that they too could enjoy life experiences that may have seemed foreign or unachievable to them before the trip. As such, Brenda noted that she would "think of a different way to treat" if diabetes management got in the way of her enjoying new life experiences. Frankie reflected on this phenomenon as well, noting the importance that learning from others can have on one's personal story:

> I knew that if I was going to really be serious about running, and I wanted to be, I needed to find other people doing the same thing, right? I needed to find diabetes who were doing those kind of things. And it was just to find out what [to do]…to ask the questions, or not even to ask the questions, but to listen to the stories of what people are doing, because you learn so many things from listening. I think that's been a big part of this community is for me, learning these sorts of things by osmosis, to a degree [Frankie].

Discussion

The purpose of this study was to explore the meaning that adults living with T1D ascribe to participation in a wilderness backpacking trip. Using a phenomenological approach, three themes were constructed: a) seeking and finding a diabetes community, b) revealing capabilities to yourself and the world, and c) enhancing diabetes management and self-care on the trail and in life. Upon reflections about their experiences, participants began by talking about the lack of friendships and activity within the diabetes community prior to embarking on the trip, and how engaging with this experience helped build that social network in a meaningful way. This finding extends assertions that peer relationships during OAE programs may play a central role in improving psychosocial functioning for individuals living with T1D (Hill & Sibthorp, 2006; Santiprabhob et al., 2008; Weissberg-Benchell & Rychlik, 2017).

The backpacking experience provided participants the opportunity to learn about their capabilities during the trip as a time to step out of their comfort zone and try something new. It also allowed them to reflect on self-care and provided a new level of confidence for diabetes management at home and in future outdoor activities. These findings were consistent with past research on T1D adult OAE programs (Alt, 2009; Hanson, 2010; Herskowitz, 1990) and the growing base of literature on youth diabetes camps (Hill et al., 2019).

A common thread across the three constructed themes was the sense of belonging to the diabetes community, which was described by the participants as paramount to their positive overall trip experience. Their statements reflected a sense of being connected to and cared for by others, which characterizes the psychosocial need of relatedness (Ryan & Deci, 2018). Moreover, the community aspect of their experiences influenced their perceptions of feeling capable and motivated to improve their diabetes self-management. This insight is explained by RMT, which suggests that humans "have evolved to be intrinsically motivated to seek out and maintain close, open, trusting relationships with others" in order to meet their other basic needs (Ryan & Deci, 2018, p. 294).

RMT distinguishes satisfying relationships as those with "autonomously motivated" participants, where individuals on both sides are fully invested in the relationship according to their personal volition (Ryan & Deci, 2018, p. 298). While this is clearly evident and communicated among participants who had meaningful experiences, the concept of autonomous motivation may also account for Bev's unique experience as an outlier, who said, "what happened for the

group is one thing and then what I feel like what happened for me is like a different thing." Bev presented herself on the trip as an "observer," who felt "selfish" and "indulgent" for having left domestic responsibilities behind. These statements signal a lower autonomy orientation, which Ryan and Deci (2018) associate with less self-disclosure and flexibility in relationship interactions. Caring for others is in itself a "fully self-endorsed, autonomous activity" (p. 300). In this way, the present study extends support for RMT.

The findings of this study could have meaningful practical implications. For example, OAE service providers may better serve T1D adult participants by focusing on relationship volition. This could involve improved participant screening and selection or "priming the autonomy orientation" through various program activities (e.g., focused onsite teambuilding) (Ryan & Deci, 2018, p. 301). For traditional health care providers, the role of peers could be further emphasized in promising innovative practices, such as group education (Mensing & Norris, 2003; Tang et al., 2006).

Limitations and Future Research

The study makes a significant contribution to the literature due to the absence of research of using outdoor adventure programs to improve the lives of adults with T1D. Despite strengths associated with this study, limitations are evident. For example, findings from this study should be considered with the sampling methods and contextual nature of the program in mind. For the most part, participant voices reflected perspectives of younger adults from dominant social groups in the U.S. and Canada. Furthermore, all interview data was collected within two days of the trip's completion. This leaves open the possibility that participant perspectives may have changed over time. Finally, the experiences of T1D adults participating on a self-supported backpacking trip are likely to be different than in other OAE environments, such as a residential camp. To alleviate some of these concerns, future research should explore the experiences of T1D adults participating in OAE programs with attention to diversity. Longitudinal data should be collected to explore the long-term impact of peer-support on psychosocial well-being. Finally, future research could compare the impact of various types of OAE program designs for T1D adults (e.g., expeditionary vs. residential settings).

Conclusion

The findings of this study could have meaningful practical implications. For example, OAE service providers may better serve T1D adult participants by focusing on relationship volition. This could involve improved participant screening and selection or "priming the autonomy orientation" through various program activities (e.g., focused onsite teambuilding) (Ryan & Deci, 2018, p. 301). For traditional health care providers, the role of peers could be further emphasized in promising innovative practices, such as group education (Mensing & Norris, 2003; Tang et al., 2006). Finally, this study highlights a need for all peers and diabetes educators to learn about the power of outdoor recreation and its ability to help mitigate the daily challenges of managing TID.

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