



The Perception of Diabetes Self-Management Education and Support Among Primary Care Providers

Submitted to the Faculty of the
College of Health Sciences
University of Indianapolis

In partial fulfillment of the requirements for the degree
Doctor of Health Science
By: Kelley Sky-Eagle, MS, RDN/LD, CDCES

Copyright © June 23rd, 2023
By: Kelley Sky-Eagle, MS, RDN/LD, CDCES
All rights reserved

Approved by:

Laura Santurri, PhD, MPH, CPH
Committee Chair

Lisa Borrero, PhD, FAGHE
Committee Member

Brooke Baker, MSN, RN, CDCES
Committee Member

Accepted by:

Laura Santurri, PhD, MPH, CPH
Director, DHSc Program
Chair, Interprofessional Health & Aging Studies
University of Indianapolis

Stephanie Kelly, PT, PhD
Dean, College of Health Sciences
University of Indianapolis

**The Perception of Diabetes Self-Management Education and Support Among Primary
Care Providers**

Kelley Sky-Eagle

Department of Interprofessional Health and Aging Studies, University of Indianapolis

Abstract

Background: It is estimated that 35 million Americans have type 2 diabetes. Many diagnosed patients will not receive Diabetes Self-Management Education and Support (DSMES) after diagnosis. Referrals entered on behalf of the primary care provider (PCP) are necessary for diabetes education. **Purpose:** This study aimed to understand the perspectives of PCPs regarding DSMES in hopes of identifying barriers or prompters when entering referrals to DSMES. **Method:** Ten providers were interviewed using a qualitative basic interpretive design. A semi-structured guide was used to allow for impromptu data exploration as needed. Following the interviews, data were reduced to codes and sorted in thematic groups. **Results:** Data analysis found that the participants did not have opinions of DSMES, as it was considered too difficult to access. Themes regarding poor accessibility included: limited patient access to education (due to proximity, appointment availability, or finances), limited provider access to the patient, and limited provider access to the diabetes educator. **Discussion:** Providers suggested using in-clinic education, outpatient resources (e.g., home health workers and nurse navigators), and telemedicine to improve DSMES accessibility. Furthermore, enhancing interprofessional collaboration within the medical community can encourage referral and DSMES attendance while improving the overall patient care experience.

Keywords: diabetes education, access, referral

Acknowledgments

Words cannot express my gratitude to Dr. Laura Santurri, who bravely championed this dissertation as my committee chair. This manuscript would not have been possible without your invaluable feedback, limitless patience, and encouraging nature. Further, I was able to complete this feat thanks to the substantial contributions of my remaining committee members. The qualitative expertise provided by Dr. Borrero was unmatched, and it motivated this inexperienced researcher to continue, even while drowning in data. Finally, I am immensely grateful to my content expert, Brooke Baker. Your knowledge of diabetes and experiences as a practitioner were priceless in this journey.

I am grateful for the neverending support of my husband, Robert. I cannot thank you enough for your child wrangling, home cleaning, and errand running, all while I would disappear for hours to research and write. You are the glue that holds our family together. I would be remiss in not mentioning my parents and in-laws. Your selflessness and willingness to help care for your grandchildren so often have made this dissertation a reality. I want to acknowledge my classmate and friend, who is now more like family, Kayleigh. I am confident I wouldn't have completed this without your moral support. Lastly, to my children, Teddy and Izzy, I did this all for you. To show you that you can do hard things, even when you feel that you can't.

Table of Contents

Introduction.....	5
<i>Purpose Statement</i>	6
<i>Research Questions</i>	6
Literature Review.....	7
Method.....	13
Results.....	20
<i>Theme 1: Limited Access to Patient Education</i>	20
<i>Theme 2: Limited Provider Access to Patient</i>	23
<i>Theme 3: Limited Provider Access to the Educator</i>	24
Discussion.....	25
<i>Implications for Practice and Future Research</i>	30
<i>Conclusion</i>	31
References.....	33
Appendices.....	43
<i>Qualitative Interview Guide</i>	43

The Perception of Diabetes Self-Management Education and Support Among Primary Care Providers

The American Diabetes Association (ADA) estimates that 35 million Americans have type 2 diabetes (2019). The rate of those diagnosed with diabetes has increased steadily, and it is projected that 1 in 3 individuals will develop type 2 diabetes by 2050 (Powers et al., 2015). Due to the increased prevalence, diabetes has significantly impacted healthcare costs within the United States. The national financial burden of diabetes was estimated at 245 billion dollars in 2012 and has continued to rise, reaching an estimated 327 billion dollars in 2017 (American Diabetes Association, 2018). As such, the average person with diabetes (PWD) will ultimately spend 2.3 times the amount on medical expenses compared to persons without the disease (American Diabetes Association, 2013).

Problem Statement

Numerous studies have demonstrated the benefits of diabetes education in improving patient health outcomes. Delayed onset of complications, healthy coping, and improved quality of life are a few positive outcomes associated with diabetes self-management education and support (DSMES) (American Diabetes Association, n.d.). However, the Centers for Disease Control and Prevention (CDC) estimate that as few as 5% of Medicare recipients and 7.8% of privately insured individuals receive DSMES within the first year of diagnosis (2018), while fewer than half of those diagnosed will receive DSMES within their lifetime (Azam et al., 2018).

As referrals from an established primary care provider (PCP) are a prerequisite for DSMES, the lack of systematically entered referrals is a concern within the diabetes educator community (Azam et al., 2016). In addition, previously published literature has identified a lack of PCP knowledge regarding DSMES, lack of available local DSMES, lack of perceived benefit,

poor understanding of billing and reimbursement procedures, and daunting or confusing referral processes as potential barriers to referral (Centers for Disease Control and Prevention, 2018).

However, there are few studies qualitatively examining DSMES from the PCP perspective.

Purpose Statement

The purpose of this study is to supplement the existing qualitative research regarding the provider perspective of DSMES.

Research Questions

This study will address the following research questions:

- How do primary care providers treating patients with diabetes perceive diabetes self-management education following diagnosis?
 - What inhibits or prompts the initiation of the diabetes self-management education referral process?

Significance of the Study

Minimal studies have examined provider perceptions of formal training in managing diabetes. Studies identified are few and small in scale; therefore, further research is indicated. This study will supplement the published literature regarding the lack of referrals compared to the sizeable population living with the disease. The study's findings will shed light upon the issue and contribute to the literature regarding the PCP's perceived value of DSMES within the healthcare field. Establishing a more extensive understanding of the PCP perspective will allow for potential educational opportunities, possibly leading to an increased referral rate.

Definition of Terms

The following definition should be noted:

- Diabetes Self-Management Education and Support (DSMES) – “the ongoing process of facilitating the knowledge, skill, and ability necessary for diabetes self-care” (Funnell et al., 2010, p. 89)

Literature Review

Diabetes

As noted, barriers to DSMES referral have been identified within the literature, but few studies have qualitatively examined the PCP perspective of DSMES. This study explored these gaps, determining to what extent PCPs feel DSMES to be ultimately valuable, necessary, and beneficial to the patient. Furthermore, there is minimal knowledge regarding factors that have been shown to prompt referral to DSMES services. Identification of the aforementioned will likely result in a more extensive understanding of the provider perspective, and ideally, lead to an increase in individuals receiving DSMES services.

Diabetes is a chronic disease in which the pancreas does not produce adequate insulin. Additionally, the cells within the body may become insulin resistant, meaning the body cannot appropriately utilize produced insulin to digest carbohydrates (World Health Organization [WHO], 2018). Type 1 diabetes, often diagnosed in childhood or young adulthood, is diagnosed when the pancreas produces little (or no) insulin (WHO, 2018). As such, type 1 management requires multiple daily insulin injections and close carbohydrate and glucose monitoring to maintain normal blood sugar levels (CDC, 2020a).

Type 2 diabetes, comprising 90% of the population with diabetes, is most often diagnosed in adults older than 45 (Diabetes UK, n.d.). Individuals diagnosed with type 2 diabetes are often plagued with a poorly functioning pancreas, as well as insulin resistance (WHO, 2018). Diagnostic criteria for type 2 diabetes include a repeatable fasting glucose level of > 126 mg/dL, a repeatable random > 200 mg/dL in addition to hyperglycemic symptoms, or a Hemoglobin

A1C of $> 6.5\%$ (ADA, n.d.). Lastly, prediabetes is diagnosed when the Hemoglobin A1C reaches 5.7-6.4%, but it is not yet elevated to the 6.5% threshold required for diabetes (ADA, n.d.).

Symptoms of type 2 diabetes are often less noticeable than those of type 1, and long-term hyperglycemic complications are often identified along with the diagnosis itself (WHO, 2018). Complications of diabetes, in the worst case, can be debilitating and life-threatening, including loss of vision, end-stage renal disease, amputation, and stroke (Cleveland Clinic, 2017). Therefore, due to the prevalence of type 2 and the high incidence of complications, type 2 diabetes will be the primary focus of the study.

Prognosis in type 2 diabetes is strongly correlated with the degree of glycemic control, with inadequate control resulting in an anticipated 10-year reduction in life expectancy (Diabetes UK, 2019). While heart disease is the primary contributor to diabetes-related morbidity and mortality, adequate glycemic control has significantly mitigated this risk (Lind et al., 2012; Seshasai et al., 2011). Early glycemic control, within three months of initial diagnosis, has also been shown to be a predictor of early mortality in type 2 diabetes (Kerr et al., 2011). Additionally, initiation of diabetes education is thought to reduce the progression of prediabetes to type 2 diabetes by 58% if less than 60 years of age or 71% if greater than 60 years of age (CDC, 2020b). Therefore, timely DSMES in newly diagnosed individuals with type 2 diabetes is beneficial and potentially life-saving.

Diabetes Self-Management Education and Support

Notably, diabetes is a highly complex disease that often requires professional assistance to manage. Therefore, DSMES is thought to be vital for individuals suffering from the disease (Association of Diabetes Care and Education Specialists [ADCES], 2017). According to the

ADCES (2017), diabetes self-management education and support focuses on developing the knowledge and skills which are necessary for the daily management of diabetes, as well as prediabetes. When compared to individuals attending versus non-attending diabetes education, an average 0.6% reduction in HgbA1C can be anticipated; furthermore, an approximate HgbA1C reduction of 1% has been associated with a 40% reduction in nerve, eye, and kidney complications, and a 14% reduction in heart attack (ADCES, 2015).

The aforementioned physical effects on the health of the person with diabetes can also significantly impact the quality of life (QoL) (Tikkalinou et al., 2017). Trikkalinou et al. further identified psychological outcomes (i.e., depression) and social outcomes (i.e., strained relationships with family and friends) as additional contributors to poor QoL scores in individuals with diabetes (2017). Long-term QoL improvement is thought to result from diabetes education (Trikkalinou et al., 2017). Regardless, DSMES is an often-underutilized resource within the medical community. Healthcare providers openly recognize the benefits of DSMES; however, a study by Azam et al. indicated that a mere 7% of 9,992 patients had received education regarding the management of the disease since being diagnosed (2016).

Provider Referral

Provider referral, a mandatory action to initiate the DSMES process, has been previously identified as a barrier to diabetes education (CDC, 2018). The literature reveals numerous possible barriers to DSMES referral. First, communication between patient and physician was a common concern of numerous persons with diabetes, often reporting reluctance to discuss diabetes-related concerns with associated providers (Beverly et al., 2012; DiZazzo-Miller et al., 2017; Heisler et al., 2009; Stenov et al., 2018). A limited PCP knowledge base of the disease, ultimately inhibiting patient-provider discussion, is considered a second limiting factor in the

referring process. Lastly, provider workload was often reported as a barrier to entering referrals (Balcou-Debussche, 2008; Celeste-Harris & Maryniuk, 2006; Heisler et al., 2009).

Communication. Effective communication between provider and patient is critical in the management of diabetes. Open lines of communication have been shown to improve patient satisfaction, treatment compliance, and overall health outcomes (Beverly et al., 2012). However, it is noted throughout the literature that patients are often reluctant to discuss diabetes-related concerns with their primary care provider (Beverly et al., 2012; DiZazzo-Miller et al., 2017; Heisler et al., 2009; Jalil et al., 2017; Stenov et al., 2018).

In order to improve patient and provider communication, the barriers preventing such communication must be considered. First, many patients report a great deal of unfamiliarity with the disease state itself and, as such, are still determining what questions should be asked in-office visits (Heisler et al., 2009). Secondly, it was noted that when diabetes concerns were addressed with the providers, PCPs often utilized intimidation by self-reported scare tactics, threatening dialysis, amputation, and blindness to encourage compliance (DiZazzo-Miller et al., 2017). Finally, patients reported feeling belittled by healthcare providers (Stenov et al., 2018), while others reported provider annoyance when questions were asked (Jalil et al., 2017).

Alternatively, the benefits of positive communication between the provider and patient have also been established in the literature. A collaborative approach is thought to enhance glycemic control as the PCP has extensive knowledge regarding diabetes treatment. In contrast, the patient has experience in the day-to-day management of the disease (e.g., finger sticks, taking medication, dietary adherence, etc.). (Burridge et al., 2015). Supplementally, patients have conveyed appreciation when being treated as a member of the diabetes treatment team, further emphasizing the importance of communication and collaboration (Hepworth et al., 2013).

Based on the above, poor communication has been established between provider and patient throughout the literature. Unfortunately, the lack of an open dialogue prevents the PCP from identifying those individuals who might benefit from DSMES. Thus, ineffective communication is thought to be an inhibitor in DSMES referral.

Education. Diabetes is considered a difficult disease to treat due to its complex nature. Gaidhane et al. established that PCPs perceive the numerous management components (e.g., blood glucose monitoring, nutrition, and exercise) required in treatment as a significant challenge (2015). It was further discovered that PCPs self-report an ultimate lack of confidence when treating patients with the disease (Gaidhane et al., 2015).

Many providers self-reported an inadequate knowledge base regarding the treatment of diabetes and the overall disease state itself (Balcou-Debussche, 2008; Holt et al., 2013; Torres et al., 2010). For example, as many as 90% of medical doctors and 70% of registered nurses reported receiving education regarding diabetes management at the collegiate level; however, the aforementioned did not find such training applicable to the actual treatment of patients (Balcou-Debussche, 2008). In addition, providers also reported a knowledge gap in up-to-date teaching methodologies in diabetes education, as well as the happenings within diabetes education courses (Mogre et al., 2019; Gaidhane et al., 2015; Torres et al., 2009).

Fortunately, providers are eager to learn more about the disease; as many as 96% of PCPs state that the availability of more diabetes training opportunities would be beneficial to one's practice (Balcou-Debussche, 2008). A survey of 2000 United Kingdom (UK) medical school graduates indicated a lack of confidence in diagnosing and treating diabetes; however, 70% of the doctors were eager to be trained in all facets of the disease (Smith et al., 2014). Alternatively,

many providers are familiar with the disease state; however, Mogre et al. identified a deficit in physician training in diabetes-related patient self-care (2019).

It can be concluded that successful treatment is inhibited by unfamiliarity with the disease state and its management. As such, the likelihood of unawareness regarding DSMES services can also be assumed. Therefore, limitations in diabetes-related knowledge act as an ultimate inhibitor in DSME referral.

Workload. Within the realm of diabetes management and education, research indicates that time constraints on behalf of the PCP are of great concern (Balcou-Debussche, 2008; Celeste-Harris & Maryniuk, 2006; Heisler et al., 2009). In a study by Heisler et al. (2009), patients reported feeling they needed help adequately gaining the physician's attention as the provider is often distracted and rushing through the appointment. Unfortunately, patients have reported low expectations of their providers due to these perceived time constraints (Heisler et al., 2009). The problem is recognized by patients and providers alike. Providers have recognized the lack of time as the primary shortcoming in providing successful diabetes education and management tools (Balcou-Debussche, 2008).

Alternatively, a systematic review by Scheepers et al. determined that physicians' occupational well-being improved the quality of care (2015). Specifically, Bustamente et al. found that instances of a manageable workload led to a more consistent pattern of care in patients with diabetes (2017). It can ultimately be anticipated that an overwhelming caseload is an inhibitor in identifying patients who may benefit from DSMES services.

As noted, barriers to DSMES referral have been identified within the literature, but few studies have qualitatively examined the PCP perspective of DSMES. The proposed study aims to examine these gaps, determining to what extent PCPs feel DSMES to be ultimately valuable,

necessary, and beneficial to the patient. Furthermore, there needs to be more knowledge regarding factors that have been shown to prompt referral to DSMES services. Identifying the aforementioned will likely result in a more extensive understanding of the provider perspective and, ideally, lead to an increase in individuals receiving DSMES services.

Method

In this proposed study, the researcher aimed to understand the meaning of primary care providers' (PCPs) practical experiences with diabetes education. A qualitative basic interpretive research design was used, as this approach allowed an understanding of the participant's perspectives (Merriam & Grenier, 2019). This study design was also selected as ideal as the primary researcher is the instrument, and the study was inductive while the outcomes were descriptive (Merriam & Grenier, 2019). Data were collected via interviews and inductively analyzed, generating common themes reflective of all interviews. The University of Indianapolis Institutional Review Board (IRB) granted approval prior to study commencement.

Participants

Individuals eligible for the study were PCPs with the ability to refer to diabetes education, including nurse practitioners (NPs), physician assistants (PAs), medical doctors (MDs), and doctors of osteopathic medicine (DOs). Only PCPs who work in the field of outpatient general medicine were included. Secondly, a mixture of urban and rural practicing PCPs was utilized. Such diversity revealed different perspectives regarding diabetes education.

Exclusion criteria included providers practicing specialty medicine, as more in-depth experience in diabetes management was necessary. In addition, providers who were not able to speak and read English were excluded, as all study procedures took place in English.

Setting

It is estimated that 12.4% of Arkansans and 11.4% of Oklahomans have type 1 or type 2 diabetes, with the vast majority of those being diagnosed with type 2 (CDC, 2021). The presence of the disease within both states is greater than the national average. Further, Oklahoma is outpacing only eight states in terms of prevalence, while Arkansas is outpacing only four (CDC, 2021). Therefore, these states provided a preferable recruitment setting for the proposed study as PCPs are frequently exposed to the treatment of the disease; thus, the exposure of rich data was anticipated.

Procedures

Sampling and Recruitment

This study involved a maximum variation sampling approach. This type of sampling approach is used to create a sample of diversity (Creswell & Poth, 2018) and was used in this study to recruit PCPs from various locations and educational backgrounds. A sample size of ten PCPs was expected and achieved. The number allowed for a mixed sample of PCP types while remaining feasible, as PCPs can be challenging to recruit (Signorelli et al., 2017). Additionally, a high information power strengthened the data, regardless of the small sample size. Malterud et al. found a smaller sample size appropriate when a high level of information was exposed (2015). A high information power was achieved in the current study with a specific sample and quality dialogue.

A less extensive sample is indicated when participants needed for the study are highly specific (Malterud et al., 2015). As the researcher was seeking credentialed medical practitioners, a smaller sample size was deemed appropriate. Second, information power was demonstrated through high-quality dialogue. The researcher's extensive experience as a diabetes educator

contributed to the quality of the interviews, allowing the researcher to address necessary topics with ease.

Primary care providers are often challenging to recruit to participate in health-related research (Signorelli et al., 2017). Therefore, Signorelli et al. (2017) determined electronic communication to be the most accessible recruitment method for the proposed population. As such, participants were recruited electronically via two different methods.

Participants were recruited via a flyer posted on social media (Facebook exclusively). The investigator shared it via her private page, and it was also requested that individuals share it with others if they so desired. Secondly, direct email communication was made with general medicine office managers. The email and flyer explained the intent of the study, the expectations and inclusion criteria of the PCPs who participated, and it included the primary investigator's contact information. The communication also clarified that all findings were confidential and were shared using numbered participant identifiers. Additionally, a gift card was offered to participants to be provided at the conclusion of the interview. Snowball sampling, a technique in which participants are asked to refer others (National Science Foundation, n.d.), was also utilized to recruit.

When recruiting via email, a follow-up email of similar content was sent one week after the initial email to those office managers from whom a reply was not yet received. If a reply had still not been received two weeks after the follow-up email, the primary investigator contacted the office manager via telephone to verbally discuss the proposed study and potential PCP participation a final time.

Through the recruitment communication, potential participants were instructed to contact the primary investigator directly via email to express interest. Participants were instructed to

provide information regarding the practice credential and the location of the practice. In addition, participants were asked to list any specialty certifications to verify inclusion criteria. Upon initial e-mail contact with the potential participant, the primary investigator reviewed the study's intent. Then, the date and time for the interview was established.

Informed Consent

The informed consent (IC) process was completed with all participants in an ethical manner. Specifically, the participants were provided with a copy of an informed consent form via email prior to the interview. The form contained the following information: the study's purpose and procedures, the role and rights of the participant, the duration of their involvement, and the methods by which confidentiality will be maintained (Manti & Licari, 2018). In addition, the consent form discussed the importance of utilizing an audio recorder to guarantee that data was accurately received. Finally, the document was reviewed, all questions/concerns were addressed, and consent was obtained verbally. A signature was deemed unnecessary as a signed informed consent document would be the only patient identifier within the study.

The informed consent process was conducted virtually by the primary investigator before beginning each interview, with each participant situated in a convenient, private location. Due to the social distancing requirements of COVID-19 at the time, the investigator arranged a meeting that utilized a video conferencing software of the PCP's choice (e.g., Zoom, Google Meets, Skype, etc.). The informed consent discussion was limited to 15 minutes to be respectful of time unless the participant requested an extended discussion period. The participant was reminded that they could stop the interview at any time, or decline to answer a particular question, if they felt uncomfortable. The participant was informed that the interview would last approximately 30-60 minutes.

Data Collection

The primary investigator collected data through the use of individual semi-structured interviews. In addition, data were collected utilizing a video conferencing software of the provider's choice, as the transmission of COVID-19 was a notable public health concern.

The interview began with broad questions. Next, the focus narrowed to allow for a more in-depth understanding of the topic. While a scripted interview guide was used (see Appendix), the semi-structured format allowed the questions to vary slightly depending on participant responses. The use of probing, as well as follow-up questions, promoted further discussion to reveal relevant data. When all questions were exhausted, and it became apparent that the participant had no other perceptions to be explored, the interview concluded. At this point, the investigator further discussed privacy, informing the participant that responses were to be stored in a password-protected document. The participant was made aware of an anticipated timeline for data disposal. The investigator's email address and telephone number were provided at this time, and the participants were encouraged to contact the investigator should any need arise. The participants were informed to expect a transcript within 7-10 days to provide comments about interview accuracy. The gift card for participating was also included within this email.

Data Management and Analysis

Each interview was transcribed verbatim within 7-10 days using the audio-to-text service Temi. After the transcript was reviewed for accuracy and de-identified, it was exported as a Microsoft Word file. To maintain participant confidentiality, the naming format for audio files and transcriptions used an identification number instead of the participant's name. In addition, all study documents were password-protected in Dedoose (Version 9.0.62).

Using a conventional content analysis approach, Dedoose was used for all data analysis (Hsieh & Shannon, 2005). This process involved generalized data reduction, determining relevant data to the research focus, and transforming it into a simplified format (i.e., codes) (LaFrance, 2015). During this process, all interviews were read multiple times, keywords and phrases were identified, and a relevant code was assigned to each noted section. It is also possible for a section to receive more than one code (LaFrance, 2015). Initial coding occurred upon the interview transcription's immediate completion, within 7-10 days.

Following the initial coding, the transcript and associated interpretations were sent to the participant to verify accuracy (i.e., member checking). Member checking minimized investigator bias while results were reviewed and analyzed (Anney, 2014). The participants were then asked to provide comments on the data. The investigator made appropriate edits, and the edited document was then resent until deemed acceptable by the participant.

A secondary investigator with extensive experience conducting and disseminating qualitative research reviewed the investigator's coding to ensure accuracy. Following the first interview and transcription, the secondary investigator and the PI independently coded the data to ensure that the coding was accurate and appropriate and showed no evidence of bias. The primary and secondary investigator then collaborated to review the developed codes and the codebook. The secondary investigator's interpretations were integrated appropriately to deepen the credibility of the data. The primary investigator then re-coded the data within 14 days to encourage additional credibility.

Upon completion of the re-coding, the foundation for a codebook was complete. Boundaries for each code, consisting of a label and definition, were articulated (Creswell & Poth, 2018). Codes were then organized into categories via thematic analysis. Next, data were grouped

into themes and, ultimately, thematic groups, which allowed for analysis of the meanings and connection to the research questions (LaFrance, 2015). Themes were then transferred to an overarching theme table. Participant quotations were organized by category and quotations were listed by a participant ID number and transcript location.

Rigor/Trustworthiness

Per the recommendation of Creswell and Poth (2018), rigor and trustworthiness were ensured in the study by a minimum of two different methods. First, interviewees were consulted following interview completion regarding the accuracy of the interview transcripts and interpretations. Also known as "member checking," the process verified the interviewer's understanding and ultimately promoted credibility (Creswell & Poth, 2018). Second, the code-recode strategy, also referred to as code agreement, was utilized by the primary researcher. The code agreement consisted of a secondary coding procedure performed by the primary investigator, and as findings were consistent, dependability was enhanced (Anney, 2014). In addition, according to Anney (2014), the re-code allowed the researcher to gain a more in-depth understanding of the participant's responses and data patterns.

Transferability is key in qualitative research to ensure that the context of one study may be applicable to another (Stahl & King, 2020). Transferability was achieved through thick description by the primary researcher, which must be done through an in-depth description of the participants (Stahl & King, 2020). The results chapter includes: number of participants, practice credentials, and practice environment (rural versus urban).

The potential for bias is possible when examining an issue with which an individual is highly familiar (Creswell & Poth, 2018). As the primary researcher is a diabetes educator, bias was a cause for concern. According to Henderson and Rheault (2004), confirmability can be

promoted through reflexive analysis (via a field journal). Upon completing each interview, the investigator reflectively journaled any relevant thoughts, questions, and observations, which helped to minimize bias.

Results

Ten participants completed the study. Interviews were conducted from September 2021 to December 2022, and due to COVID-19 concerns, they were all completed via Zoom video conferencing software. The interview duration ranged from 21 to 36 minutes, with an average length of 31. All participant quotations below are referenced by the participant's de-identifier to allow for confidentiality.

The participants were four nurse practitioners (NP), four medical doctors (MD), one osteopathic doctor (DO), and one physician assistant (PA). The provider's practice settings varied significantly. Five providers practiced in an urban area, while four practiced in a more rural setting. The final provider was considered to practice in a combined environment as this participant was practicing in two clinics: one rural and one urban.

While the study's research question focused on providers' perspectives of DSMES, data analysis revealed that the participants often did not have opinions of DSMES, as it was considered too difficult to access. The interviews consistently reflected this, as the three themes that emerged from the data were limited patient access to education, limited provider access to the patient, and limited provider access to the diabetes educator.

Theme 1: Limited Patient Access to Education

If the patient cannot attend DSMES physically, referral on behalf of the provider is useless. The interviews revealed numerous barriers in the realm of patient access to attendance.

Specifically, proximity, appointment availability, and financial constraints were the most frequently reported.

Proximity

As discussed above, many of the study participants (approximately half) provide care in a rural health environment. In several instances, the participants reported that the closest diabetes educator or endocrinologist was an approximate 1-1.5-hour drive to access. Participant HM stated plainly, "You [the patient] are open to go to diabetic teaching, but the educator is an hour away. They aren't going to go." She further stated, "It would be nice to have someone local. I like the idea of having one umbrella. You [the patient] go to one clinic for everything."

Participants frequently mentioned the benefit of an "all-in-one" healthcare setting to minimize the travel burden upon patients, especially those living in a more rural setting. Specifically, patients would be more likely to attend diabetes education if the trip could be combined with the provision of additional care. Participant JJ stated, "I have one diabetic patient that lives in Hughes, and she relies completely on the transit people to bring her. Sometimes they bring her at 8:30, and they don't come back to get her until 1230." Many providers' visits are limited to 30 minutes or less. The possibility of "in-house" diabetes education in this instance would allow for successful education without additional travel burden.

Numerous providers spoke explicitly about the burden of finances and its impact on the patient's ability to travel to diabetes education. Providers repetitively talked about the lack of public transport available to patients, and Participant AF even stated, "Some of these people ride their lawnmowers to the clinic." Unless the patient is within walking distance, transport was identified as a significant barrier to attending education.

Appointment Availability

Should patients secure transportation to an appointment, a secondary concern identified by several providers is the waiting time associated with access to educators and diabetes specialists. "Our nearest endocrinologist would be Memphis, Little Rock, or Jonesboro," an average distance of 2 hours round trip, "Endocrine is one of the specialties that it's harder to get patients into. We [patient and provider] may wait three months or longer," states Participant JM. Participant JJ said, "The hospital nutritionist or dietician is available, but it's hard to get an appointment. Uh, you know, she's got limited times that she can do it." If a patient were planning to attend diabetes education and seek care with a specialist, an extensive waiting period might allow a patient's interest in attendance to wane.

Finances

Providers frequently mentioned concerns about patients' failure to meet base-level care needs. Specifically, providers repeatedly mentioned the patient's need to prioritize securing food for the household. Participant LG stated, "If they have to pick between feeding their families, they're going to pick food for their family. Then the same goes for the kinds of foods they're going to pick. The cheapest things that will feed their family the most." Participant JM echoed the sentiment of LG, "I got patients that are on food stamps. They're going to get the max of food stamps. They're going to load up on carbs, potatoes, and rice, and things that stretch their available funds. You can't expect them to spend their money on kale <laugh>."

Similarly, participants also mentioned patients' frequent inability to afford other high-priority items (e.g., medications). Patients often feel incredibly discouraged in providing self-care due to the aforementioned financial limitations. Participant MC stated, "It's sort of a sense of, um, not just denial, but kind of like, why bother fatalism? That kind of thing." Due to the

patient's innate need to prioritize base-level diabetes needs, it is fair to expect that diabetes education attendance would take a lower priority.

Theme 2: Limited Provider Access to the Patient

The caseload of the practicing primary care provider is substantial, and this was a significant recurring issue mentioned throughout the completed interviews. Providers reported time constraints when providing basic care to patients and, as such, reported severe limitations in creating time to facilitate diabetes education.

When prompted regarding workload, participant MAL stated, "we can see up to 70 patients a day, and there's only one provider there. I don't always have the time to spend that I need on them. I try to spend a little extra time, but it's hard." Participants often desired to spend time educating or facilitating education with the patients, but time constraints were often too significant. Participant AF echoed, "that's something [workload] I've really been struggling with a lot because I do want time to talk to them about making sure they get all their screenings and, you know, doing all that stuff that comes along with diabetes." Participant JM also reported that 60-80 daily patients were not abnormal at certain stages of his career, stating, "I wish I had 20 minutes with each one just for education, but you just do what you can with the time you've got."

Multiple participants reported that clinic visits have often been shortened to a brief 10-20 minutes to accommodate the substantial patient volume. Furthermore, the shortened visit must include all the needed patient care, and it is often not focused solely on diabetes care. Participant AF stated, "For that specific patient population, it's really tough because diabetes is not typically like on its own as a diagnosis. You've got hypertension, hyperlipidemia, kidney disease, you know, all of those things." Often, patient priorities can differ from the providers, leading to variances in the appointment time allocation.

Participant LG stated,

If you're managing diabetes, but their main concern is depression... I mean, it's just not something I get to pick and choose what I do. So, there are times I can't focus on their blood sugar. I can't focus on diabetes management.

To provide an additional barrier around educating or facilitating education, Participant AF voiced significant frustration regarding the hospital standards when referring to education. "Nurse practitioners are not able to order it. It has to be ordered under a doctor. That's one of those things where I'm like, Okay, I can prescribe all the medication to treat it, but I can't order education?" she mused.

Theme 3: Limited Provider Access to the Educator

Participants complained of numerous barriers to contacting educators before and after attending education. Due to poorly established relationships with area educators, providers are often unsure how to facilitate the first crucial step within the education process (i.e., the referral).

Participant MM described attempting to refer patients to local educators, "I tried to call the nutritionist a time or two. I'm not sure if she had got ever gotten my messages." The participant continued, "I haven't talked to the home health diabetes educator. I just know that there's a program, but we don't work closely." Participants described these frustrations in attempting to refer to education with no initial return in contact with the patient or physician. Participant JJ wished for increased visibility of area educators stating, "I almost wish we had another educator that came around and said, 'Okay, don't forget about us. How can we do this together better? What can we do together to help that patient succeed?' We really don't have that."

When the patients have attended education, communication remains a point of contention amongst the interviewed providers. Numerous providers complained of poor educator follow-up regarding patient care plan changes. Participant AF stated, “It’s really frustrating to see a patient like, Okay, you’re on 20 units of insulin. Oh no, now you’re on 40 units with meals or whatever. So, then I feel like I’ve really been out of the loop.” Other providers also stressed the importance of consistent follow-up to provide the best possible patient care. Participant LG stated, “The most helpful thing to me personally is knowing why we’re doing something...what tips you gave, what resources you gave... that way, I can be involved in the care as well and try to reiterate those parts.”

Finally, participant DM1 voiced immense frustration regarding the educator's failure to communicate with her as the primary care provider. The participant's experience had sometimes involved educators excluding her entirely and simply attempting to facilitate patient care with an endocrinologist (diabetes specialist) in her place. She stated,

I feel like they [educators] don't always respect me. I want to have a relationship with them, and I appreciate their recommendations and observations, but I think what it leads to is loss of the patient’s confidence in my ability to care for them.

Discussion

Whether a patient has established or newly diagnosed diabetes, Diabetes Self-Management Education and Support (DSMES) attendance is critical in successfully managing the disease. However, a referral on behalf of one’s primary care provider (PCP) is necessary to attend. This study evaluated the perspectives of PCPs, attempting to uncover underlying barriers or prompters to referral. An extensive literature review identified numerous barriers surrounding provider referral and patient attendance. Many of those reasons are echoed in the results of this

study. Identified barriers include poor patient access to diabetes education, finite provider access to the patient, and limited provider access to educators themselves.

Theme 1: Limited Patient Access to Education

Patient access to diabetes education has long been an issue when attending DSMES. Participants in this study voiced concerns regarding transport to DSMES (particularly in more rural areas). Coates et al. (2018) also reported patient complaints of long commutes to attend education, stating attendees would find it more feasible should providers offer educational services within their respective clinics. While some clinics offer in-house diabetes education services, this is not yet common practice within the medical field (Coates et al., 2018).

Additionally, persons with diabetes (PWD) struggle to access education due to personal barriers within their daily life (Coates et al., 2018; Schwennesen et al., 2016). Participants interviewed revealed that financial difficulties were of notable significance when attending diabetes education, and missed working days can become a non-negotiable for potential attendees. Similarly, Coates et al. (2018) and Schwennesen et al. (2016) found that patients were more willing to attend if classes were to be offered during non-working hours (i.e., evenings and weekends). Patients often prefer a support person in attendance; however, this is also highly unlikely when requiring extensive time off work (Schwennesen et al., 2016). Further complications arise around accessibility when the PWD does not feel they have received adequate notice, and individuals were indeed more likely to attend if given sufficient time to plan for said work hindrances (Schwennesen et al., 2016).

To accommodate those with transportation or fiscal concerns, the participants suggested virtual care offered by nurses or home health workers to extend the reach of the diabetes educator. Barker et al. (2016) found that individuals who were isolated due to their geographic

location were more likely to attend diabetes education virtually. Telemedicine has also been shown to be as beneficial as in-person attendance when reviewing outcomes. The use of telemedicine technology is thought to increase motivation and improve the patient's knowledge, while also minimizing the staff's workload (Molavynejad et al., 2022). Moreover, those who attended traditional and telehealth education were most likely to have a more active role in their diabetes self-care practices (Molavynejad et al., 2022).

Theme 2: Limited Provider Access to the Patient

Providers are notoriously overworked in primary care, and the investigator's findings were similar when completing this study. Providers reported 60-80 patients scheduled daily is a regular occurrence, and, as such, visits are often limited to 15 minutes (or less). Meeting a patient's extensive needs within a 15-minute time slot is an unreasonable and unrealistic request, particularly when considering the extensive comorbidities and complications of diabetes (Watts, 2014). In addition, providers interviewed reported a desire to perform an educational intervention. However, due to the discussed complex nature of the disease state, providers in this study often felt pressed to focus primarily on medication management.

Providers interviewed in this study discussed the benefits of the nurse navigator role. Regular use of a nurse navigator would allow providers to focus on immediate medical interventions while also allocating time to focus on the day-to-day management details of chronic illness (Watts, 2014). In addition, nurse navigators could be responsible for prompt referral to DSMES or act as certified diabetes care and education specialists (CDCES), according to the participants. Furthermore, Watts et al. (2014) found that patient satisfaction significantly improved when paired with a nurse navigator to assist in the logistics of diabetes management.

Interviewees also mentioned the benefit of home health workers in improving patient self-management skills, which would decrease the workload of the primary care provider. Home health workers have the potential to overcome obstacles around diabetes self-management through "extensive hands-on education, connecting patients to community resources, and assistance navigating the medical system" (Silverman et al., 2018, pp. 842). Additionally, home health workers have time allotments for phone follow-ups and additional unplanned visits, which is unrealistic for primary care providers (Silverman et al., 2018). Furthermore, like nurse navigators, home health nurses, therapists, dietitians, and pharmacists also have the potential to become CDCES and complete informal diabetes education within the home (Certification Board for Diabetes Care and Education, n.d.).

Theme 3: Limited Provider Access to the Educator

Awareness of interprofessional collaboration has increased throughout the past 50 years; however, it has come to be considered a medical necessity within the past 20 (Friederich et al., 2021). The need for improved collaborative care became evident when interviewing primary care providers for this study. Several providers complained of poor communication and collaboration with diabetes educators and other medical specialties.

Friederich et al. (2021) found that fostering relationships among the medical professions increased awareness of the responsibilities of each profession's role. Additionally, it can be beneficial to begin developing these relationships as early as undergraduate education (Friederich et al., 2021; Turrentine et al., 2016). Early medical education regarding interprofessional collaboration provided evidence of "shared problem solving, conflict resolution, recognition of patient needs, shared decision making, knowledge and development of

one's professional role, communication, transfer of interprofessional learning, and identification of learning needs” (Turrentine et al., 2016, pp. 38).

The lack of these established relationships became increasingly evident throughout the study's interviews. Many providers reported not knowing local educators, unawareness regarding how to contact educators, and an overall unfamiliarity with the information to be provided by the educator. Numerous participants mentioned the possible benefits of a diabetes educator within the practice itself. The inclusion of a readily available educator would eliminate many of the barriers surrounding referral, as well as improve future coordination of the patient's care.

In a similar quantitative study examining the perspectives of Canadian PCPs, the providers were 55.3% likely to refer to an in-house diabetes educator when compared to only 18.4% likely to refer to an external diabetes educator (Szafran et al., 2019). Further, the increased interprofessional collaboration allowed the PCPs the ability to appropriately delegate education, monitoring, and medication management, which then resulted in improved overall patient care (Szafran et al., 2019).

Limitations

Yvonna Lincoln and Egon Guba found trustworthiness to be crucial in establishing worthy qualitative research (Qualitative Research Guidelines Project, 2008). As such, substantial efforts were made to strengthen the trustworthiness and minimize limitations of the current study. Trustworthy research is built upon a foundation of credibility, transferability, dependability, and confirmability (Creswell & Poth, 2018).

The study's primary limitation is the PI's background as a diabetes educator. The potential for bias due to this was anticipated when planning for data collection. To minimize this bias, the researcher engaged in reflexive journaling following each interview. The journaling

process allowed the researcher to reflect upon her thoughts, feelings, or observations about the research process, ultimately minimizing bias and strengthening confirmability. However, a drawback of journaling is the possibility that the researcher may not fully grasp the reflective nature of the exercise (University of Edinburgh, 2021). As the PI is new to internal reflexivity, confirmability might have been more adequately demonstrated via a secondary avenue.

A second limitation was noted by the PI regarding the establishment of credibility. Participants were asked to engage in “member checking.” This included having the participants review transcripts with interpretations following the initial interview to ensure all was conveyed and understood correctly regarding statements and the tone of the interview itself. The interviewed participants provided little to no feedback regarding the PI’s interpretations. A considerable drawback in member checking is the participant’s tendency to want to be deemed a “good” respondent (The Qualitative Research Guidelines Project, 2018). As such, participants may have been reluctant to provide critical feedback to please the researcher.

Implications for Practice and Future Research

Several implications for future practice and research are made evident by this study, which are also echoed by the existing literature. First, to minimize logistical barriers surrounding the patient's attendance, diabetes education should be made more readily available to the PWD. The addition of telemedicine may be of benefit to improve the reach of the diabetes educator, and telehealth has indeed been shown to be feasible and effective in the delivery of diabetes education (Dhediya et al., 2022). Furthermore, the literature suggests that offering diabetes education via telemedicine can reduce the cost and burden upon the patient and, ultimately, improve the patient’s quality of life (Mastrogiannis et al., 2013).

Offering diabetes education through home health and nurse navigators would also make education more accessible to the PWD. In addition to becoming more readily available, diabetes education within the home has been shown to improve the overall practice of self-management behaviors (Lavelle et al., 2016). Lavelle et al. (2016) also suggest home health education might even allow for a more immediate identification of treatment barriers when compared to traditional diabetes education.

Furthermore, the professional development of the patient's care team would markedly improve care, as the need for established relationships was a significant barrier to referral and attendance. Building relationships as early as undergraduate education can enhance care for patients with diabetes. Relationships with in-clinic diabetes educators have been shown to improve diabetes education attendance (Szafran et al., 2019). Additionally, Miller-Rosales and Rodriguez discovered that the diabetes education experience markedly improved with each additional team member acting on the care team (2021). As such, more research surrounding collaborative care and diabetes education attendance would be of benefit.

Conclusion

Diabetes education is a significantly underused resource in primary care. While providers value education, referral rates remain low when considering the vast number of individuals diagnosed. The providers interviewed revealed several referral barriers, including poor patient access to diabetes education, finite provider access to the patient, and limited provider access to educators themselves. Providers suggested the use of in-clinic education, outpatient resources (e.g., home health workers and nurse navigators), and telemedicine to encourage the provision of diabetes education. Additionally, a greater focus on early interprofessional education would likely improve the relationships of practicing providers. More established relationships within

the medical community have the potential to encourage diabetes education attendance while also enhancing the patient care experience overall.

References

- American Diabetes Association. (2019). Statistics about diabetes. <https://diabetes.org/about-us/statistics/about-diabetes>
- American Diabetes Association. (2018). The cost of diabetes. <https://diabetes.org/about-us/statistics/cost-diabetes>
- American Diabetes Association. (2013). Economic costs of diabetes in the U.S. in 2012. *Diabetes Care*, 36(4), 1033-1046. doi: 10.2337/dc12-2625
- American Diabetes Association. (n.d.). Diabetes self-management education. <https://www.professional.diabetes.org/diabetes-self-management-education>
- American Diabetes Association. (n.d.). Diagnosis. <https://www.diabetes.org/a1c/diagnosis>
- Anney, V. N. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, 5(2), 272-281. Retrieved from <https://pdfs.semanticscholar.org/1419/f7b54e6b7f1215717a5056e0709f8946745b.pdf>
- Association of Diabetes Care and Education Specialists. (2017, July 28). The American Association of Diabetes Educators and the American Diabetes Association issue 2017 National Standards for Diabetes Self-Management Education and Support. <https://www.diabeteseducator.org/news/aade-blog/aade-blog-details/press-releases/2017/07/28/american-diabetes-association-and-american-association-of-diabetes-educators-issue-2017-national-standards-for-diabetes-self-management-education-and-support>
- Association of Diabetes Care and Education Specialists. (2015, Dec 9). *Systematic review of studies reveals that diabetes education lowers A1C.*

<https://www.diabeteseducator.org/news/perspectives/aade-blog-details/press-releases/2015/12/09/systematic-review-of-studies-reveals-that-diabetes-education-lowers-a1c>

Azam, L., Meurer, J., Nelson, D., Asan, O., Flynn, K., Knudson, P., & Young, S. (2018).

Cultural and social challenges of diabetes self-management education through physicians' voices. *State Medical Society of Wisconsin*, 117(5), 219-223.

<http://web.a.ebscohost.com.ezproxy.uindy.edu/ehost/pdfviewer/pdfviewer?vid=7&sid=5b8d2acd-69e5-4659-b2e1-6a6127e3f81f%40sdc-v-sessmgr03>

Azam, L., Jackson, T., Knudson, P., Meurer, J., & Tarima, S. (2016). Use of secondary clinical data for research related to diabetes self-management education. *Research in Social and Administrative Pharmacy*, 13(3), 494-502. doi:10.1016/j.sapharm.2016.07.002.

Balcou-Debussche, M. (2008). Type 2 diabetes patient education in Reunion Island: Perceptions and needs of professionals in advance of the initiation of a primary care management network. *Diabetes and Metabolism*, 34(4), 375-381. doi:10.1016/j.diabet.2008.03.002

Barker, K., Mallow, J., Theeke, L., & Schwertfeger, R. (2016). A Telehealth Rural Practice Change for Diabetes Education and Management. *The Journal for Nurse Practitioners*, 12(5), e225-e229. <https://doi.org/10.1016/j.nurpra.2016.01.015>

Beverly, E. A., Ganda, O. P., Ritholz, M. D., Lee, Y., Brooks, K. M., Lewis-Schroeder, N. F., Hirose, M., & Weinger, K. (2012). Look who's (not) talking: Diabetic patients' willingness to discuss self-care with physicians. *Diabetes Care*, 35(7), 1466-1472. <http://dx.doi.org.ezproxy.uindy.edu/10.2337/dc11-2422>

Burridge, L. H., Foster, M. M., Donald, M., Zhang, J., Russell, A. W., & Jackson, C. L. (2015).

Making sense of change: Patients' views of diabetes and GP-led integrated diabetes care.

Health Expectations, 19, 74-86. doi:10.1111/hex.12331

Bustamante, A. V., Martinez, A., Chen, X., & Rodriguez, H. (2018). Clinic workload, the quality

of staff relationships and diabetes management in community health centers catering to

Latino and Chinese patients. *Journal of Community Health*, 42, 481-488. doi:

10.1007/s10900-016-0280-9

Centers for Disease Control and Prevention. (2020a, March 11). Type 1 diabetes.

<https://www.cdc.gov/diabetes/basics/type1.html>

Center for Disease Control and Prevention. (2020b, June 11). Prediabetes – Your chance to

prevent type 2 diabetes. <https://www.cdc.gov/diabetes/basics/prediabetes.html>

Centers for Disease Control and Prevention. (2018, March 12). Overcoming barriers to referral

and treatment. [https://www.cdc.gov/diabetes/dsmes-toolkit/referrals-](https://www.cdc.gov/diabetes/dsmes-toolkit/referrals-participation/overcoming-barriers.html)

[participation/overcoming-barriers.html](https://www.cdc.gov/diabetes/dsmes-toolkit/referrals-participation/overcoming-barriers.html)

Centers for Disease Control and Prevention. (2018). National and state diabetes trends.

<https://www.cdc.gov/diabetes/library/reports/reportcard/national-state-diabetes-trends.html>

Celeste-Harris, S., & Marynuik, M. (2006). Educating medical office staff: Enhancing diabetes care in primary care offices. *Diabetes Spectrum*, 19(2), 84-89.

[http://web.b.ebscohost.com.ezproxy.uindy.edu/ehost/detail/detail?vid=72&sid=edb56025-](http://web.b.ebscohost.com.ezproxy.uindy.edu/ehost/detail/detail?vid=72&sid=edb56025-24a8-4371-bb3d-8f24cb567779%40pdv-)

[-24a8-4371-bb3d-8f24cb567779%40pdv-](http://web.b.ebscohost.com.ezproxy.uindy.edu/ehost/detail/detail?vid=72&sid=edb56025-24a8-4371-bb3d-8f24cb567779%40pdv-sessionmgr02&bdata=JnNpdGU9ZWWhvc3QtOGl2ZQ%3d%3d#AN=106310531&db=rzh)

[sessionmgr02&bdata=JnNpdGU9ZWWhvc3QtOGl2ZQ%3d%3d#AN=106310531&db=rzh](http://web.b.ebscohost.com.ezproxy.uindy.edu/ehost/detail/detail?vid=72&sid=edb56025-24a8-4371-bb3d-8f24cb567779%40pdv-sessionmgr02&bdata=JnNpdGU9ZWWhvc3QtOGl2ZQ%3d%3d#AN=106310531&db=rzh)

Certification Board for Diabetes Care and Education. (n.d.). Discipline requirements.

<https://www.cbdce.org/discipline-requirement>

Cleveland Clinic. (2017). Diabetes: Complications.

<https://my.clevelandclinic.org/health/articles/11877-diabetes-complications>

Coates, V., Horigan, G., Carey, M., & Davies, M. (2018). Using qualitative data to enhance our understanding of the reasons young people decline Structured Diabetes Education programmes. *Journal of Clinical Nursing*, 27, 3139-3147. DOI: 10.1111/jocn.14508

Creswell, J. W. & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Dhediya, R., Chadha, M., Bhattacharya, A. D., Godbole, S., Godbole, S. (2022). Role of telemedicine in diabetes management. *Journal of Diabetes Science and Technology*, 17(3):775-781. doi:10.1177/19322968221081133

Diabetes UK. (2019). Diabetes life expectancy. <https://www.diabetes.co.uk/diabetes-life-expectancy.html>

Diabetes UK. (n.d.). What is type 2 diabetes?. <https://www.diabetes.org.uk/diabetes-the-basics/what-is-type-2-diabetes>

DiZazzo-Miller, R., Pociask, F. D., Bertran, E. A., Fritz, H. A., Abbas, M., Tarakji, S, Lysack, C. L., Jaber, L. A., & Arnetz, J. (2017). Diabetes is devastating, and insulin is a death sentence: Provider perspectives of diabetes self-management in Arab-American Patients. *Clinical Diabetes*, 35, 43-50. <http://dx.doi.org.ezproxy.uindy.edu/10.2337/cd15-0030>

Friederich, S., Straub, C., Nepomuk Bode, S.F., & Heinzmann, A. (2021). SIESTA: A quick interprofessional learning activity fostering collaboration and communication between

- paediatric nursing trainees and medical students. *BMC Medical Education*, 21(1).
<https://doi.org/10.1186/s12909-021-02880-9>
- Funnell, M. M., Brown, T. L., Childs, B. P., Haas, L. B., Hosey, G. M., Jensen, B., Marynuik, M., Peyrot, M., Piette, J. D., Reader, D., Siminerio, L. M., Weinger, K., & Weiss, M. A. (2010). National standards for diabetes self-management education. *Diabetes Care*, 33, 89-96. doi: 10.2337/dc10-S089
- Gaidhane, S., Khatib, N., Zahiruddin, Q. S., Gaidhane, A., Kukade, S., & Zodpey, S. (2015). Perceptions of primary care doctors towards type 2 diabetes mellitus and challenges for care at primary care level in India. *International Journal of Diabetes in Developing Countries*, 35, 14-18. doi:10.1007/s13410-014-0199-6
- Heisler, M., Spencer, M., Forman, J., Robinson, C., Schultz, C., Palmisano, G., Graddy-Dansby, G., & Keiffer, E. (2009). Participants' assessments of the effects of a community health worker intervention on their diabetes self-management and interactions with healthcare providers. *American Journal of Preventative Medicine*, 37(6), 270-279.
<http://dx.doi.org.ezproxy.uindy.edu/10.1016/j.amepre.20s9.08.016>
- Henderson, R., & Rheault, W. (2004). Appraising and incorporating qualitative research in evidenced based-practice. *Journal of Physical Therapy Education*, 18(3), 35-40.
- Hepworth, J., Askew, D., Jackson, C., & Russell, A. (2013). 'Working with the team': An exploratory study of improved type 2 diabetes management in a new model of integrated primary/secondary care. *Australian Journal of Primary Health*, 19, 207-212.
doi:10.1071/PY12087
- Holt, R. I, Nicolucci, A., Kovacs Burns, K., Escalante, M., Forbes, A., Hermanns, N, Massi-Benedetti, S. K. M., Mayorov, A., Menendez-Torre, E., Skovlund, S. E., Tarkun, I.,

- Wens, J., & Peyrot, M. (2013). Diabetes Attitudes, Wishes and Needs second study (DAWN2™): Cross-national comparisons on barriers and resources for optimal care-healthcare professional perspective. *Diabetic Medicine*, 30(7), 789-798. doi:10.1111/dme.12242
- Hsieh, H., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15 (9), 1277-1288. doi: 10.1177/1049732305276687.
- Jalil, A., Zakar, R., Zakar, M. Z., & Fisher, F. (2017). Patient satisfaction with doctor-patient interactions: A mixed methods study among diabetes mellitus patients in Pakistan. *BMC Health Services Research*, 17, 155. doi:10.1186/s12913-017-2094-6
- Kerr, D., Patridge, H., Knott, J., & Thomas, P.W. (2011). HbA1c 3 months after diagnosis predicts premature mortality in patients with new onset type 2 diabetes. *Diabetic Medicine*, 28(12), 1520-1524. doi: 10.1111/j.1464-5491.2011.03443.x
- LaFrance, J. (2015). Fundamentals of qualitative research [PowerPoint Presentation]. http://www.aihec.org/our-stories/docs/BehavioralHealth/2015/11_FundamentalsOfQualitativeResearch-DrLaFrance.pdf
- Lavelle, D., Joannah, Z., Stern, M., Elise, B., Elfie, W., & Reinisch, C. (2016). Diabetes self-management education in the home. *Cureus*, 8(7). <https://doi.org/10.7759/cureus.710>
- Lind, M., Olsson, M., Rosengren, A., Svennsson, A. M., Bounias, I., & Gudbjornsdottir, S. (2012). The relationship between glycaemic control and heart failure in 83,021 patients with type 2 diabetes. *Diabetologia*, 55(11), 2946-2953. doi: 10.1007/s00125-012-2681-3

- Malterud, K., Siersma, V. D., & Guassora, A. D. (2015). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research*, 26(13), 1753–1760. <https://doi.org/10.1177/1049732315617444>
- Manti, S., & Licari, A. (2018). How to obtain informed consent for research. *Breathe*, 14(2), 145-152. doi: 10.1183/20734735.001918
- Mastrogiannis, D. S., Igwe, E., & Homko, C. J. (2013). The Role of Telemedicine in the Management of the Pregnancy Complicated by Diabetes. *Current Diabetes Reports*, 13(1), 1-5. <https://doi.org/10.1007/s11892-012-0352-x>
- Merriam, S. B., & Grenier, R. S. (2019). *Qualitative research in practice: Examples for discussion and analysis*. (2nd ed.). San Francisco, CA: Jossey Bass.
- Miller-Rosales, C. & Rodriguez, H. P. (2021). Interdisciplinary primary care team expertise and primary care management. *The Journal of the American Board of Family Medicine*, 34(1), 151-161. doi: 10.3122/jabfm.2021.01.200187
- Mogre, V., Johnson, N. A., Tzelepis, F., & Paul, C. (2019). Attitudes towards, facilitators and barriers to the provision of diabetes self-care support: A qualitative study among healthcare providers in Ghana. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 13(3), 1745-1751. <https://doi.org/10.1016/j.dsx.2019.03.041>
- Molavynejad, S., Miladinia, M., & Jahangiri, M. (2022). A randomized trial of comparing video telecare education vs. in-person education on dietary regimen compliance in patients with type 2 diabetes mellitus: a support for clinical telehealth Providers. *BMC Endocrine Disorders*, 22(1), 1–10. <https://doi.org/10.1186/s12902-022-01032-4>
- National Science Foundation. (n.d.). Frequently asked questions and vignettes. <https://www.nsf.gov/bfa/dias/policy/hsfaqs.jsp#snow>

- Powers, M. A., Bardsley, J., Cypress, M., Duker, P., Funnell, M. M., Fischl, A. H., Marynuik, M., Siminerio, & Vivian, E. (2015). Diabetes self-management education and support in type 2 diabetes: A joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *Diabetes Care*, 38(7), 1372-1382. doi: 10.2337/dc15-0730
- Qualitative Research Guidelines Project. (2008). Lincoln and Guba's evaluative criteria. <http://www.qualres.org/HomeLinc-3684.html>
- Scheepers, R. A., Boerebach, B. C., Arah, O. A., Jan Heineman, M., & Lombarts, K. M. (2015). A systematic review of the impact of physicians' occupational well-being on the quality of patient care. *International Journal of Behavioral Medicine*, 22, 683-698. doi:10.1007/s12529-015-9473-3
- Schwennesen, N., Henriksen, J.E., & Willaing, I. (2016). Patient explanations for non-attendance at type 2 diabetes self-management education: A qualitative study. *Scandinavian Journal of Caring Sciences*, 30, 187-192. DOI: 10.1111/scs.12245
- Seshasai, S. R., Kaptoge, S., Thompson, A., Di Angelantonio, E., Gao, P., Sarwar, N., Whincup, P. H., Mukamal, K. J., Gillum, R. F., Holme, I., Njolstad, I., Fletcher, A., Nilsson, P., Lewington, S., Collins, R., Gudnason, V., Thompson, S. G., Sattar, N., Selvin, E., Hu, F. B., & Danesh, J. Emerging Risk Factors Collaboration. (2011). Diabetes mellitus, fasting glucose, and risk of cause-specific death. *The New England Journal of Medicine*, 369(9), 829-841. <https://doi.org/10.1056/NEJMoa1008862>
- Signorelli, C., Wakefield, C. E., Fardell, J. E., Thornton-Benko, E., Emery, J., McLoone, J. K., & Cohn, R. J. (2017). Recruiting primary care physicians to qualitative research:

- Experiences and recommendations from a childhood cancer survivorship study. *Pediatric Blood and Cancer*, 65, e26762. <https://doi.org/10.1002/pbc.26762>
- Silverman, J., Krieger, J., Sayre, G., & Nelson, K. (2018). The value of community health workers in diabetes management in low-income populations: A qualitative study. *Journal of Community Health*, 43, 842-847. <https://doi.org/10.1007/s10900-018-0491-3>
- Smith, C. J., George, J. T., Warriner, D., McGrane, D. J., Rozario, K. S., Price, H. C., Wilmot, E. G, Kar, P., Stratton, I. M., Jude, E. B., & McKay, G. A. (2014). Differences in the level of confidence in diabetes care between different groups of trainees: The (TOPDOC) Diabetes Study. *BMC Medical Education*, 14, 191. <https://doi.org/10.1186/1472-6920-14-191>
- Stahl, N. A. & King, J. R. (2020). Expanding approaches for research: Understanding and using trustworthiness in qualitative research. *Journal of Developmental Education*, 44(1), 26-28. <https://files.eric.ed.gov/fulltext/EJ1320570.pdf>
- Stenov, V., Hempler, N. F., Reventlow, S., & Wind, G. (2018). An ethnographic investigation of healthcare providers' approaches to facilitating person-centredness in group-based diabetes education. *Scandinavian Journal of Caring Sciences*, 32(2), 783-792. <http://dx.doi.org.ezproxy.uindy.edu/10.1111/scs.12509>
- Szafran, O., Kennett, S. L., Bell, N. R., & Torti, J. M. I. (2019). Interprofessional collaboration in diabetes care: Perceptions of family physicians practicing in or not in a primary health care team. *BMC Family Practice*, 20(1), 1-10. <https://doi.org/10.1186/s12875-019-0932->

- Torres, H. C., Rozemberg, B., Amaral, M. A., & Bodstein, R. C. (2010). Perceptions of primary healthcare professionals towards their role in type 2 diabetes mellitus patient education in Brazil. *BMC Family Practice*, 10, 583. doi:10.1186/1471-2458-10-583
- Tikkalinou, A., Papazafiropoulou, A.K., & Melidonis, A. (2017). Type 2 diabetes and quality of life. *World Journal of Diabetes*, 8 (4), 120-192. doi: 10.4239/wjd.v8.i4.120
- Turrentine, F.E., Rose, K.M., Hanks, J.B., Lorntz, B., Owen, J.A., Brashers, V.L., & Ramsdale, E.E. (2016). Interprofessional training enhances collaboration between nursing and medical students: A pilot study. *Nurse Education Today*, 40, 33-38.
<https://doi.org/10.1016/j.nedt.2016.01.024>
- University of Edinburgh. (2021, March 8). *Reflective journals*. Institute for academic development. <https://www.ed.ac.uk/institute-academic-development/learning-teaching/staff/assessment/online-remote/types/reflective-journals>
- Watts, S.A., & Lucatorto, M. (2014). A review of recent literature - Nurse case managers in diabetes care: Equivalent or better outcomes compared to primary care providers. *Current Diabetes Reports*, 14(7), 1-9. DOI:10.1007/s11892-014-0504-2
- World Health Organization. (2018, Oct 30). *Diabetes*. <https://www.who.int/news-room/fact-sheets/detail/diabetes>

Appendix

Qualitative Interview Guide

Opening Paragraph

Thank you for agreeing to participate in this interview. My name is Kelley Sky-Eagle, and I am a Doctor of Health Sciences student at the University Indianapolis. I am conducting this interview as a component of my doctoral project. All interview responses will be entirely confidential; all of your identifying information will be excluded. Should there be any questions you do not wish to answer, simply choose to skip to the next question.

The purpose of this study is to gain an understanding of health providers' perceptions of diabetes self-management education and support (DSMES). The interview will take approximately 30-60 minutes of your time. The interview can be stopped at your request at any point. The interview will be audio recorded to ensure accurate and complete data collection. If you are comfortable with this, I will begin recording. Do you have any questions regarding the interview or the intent of the study?

Interview Questions

1. Tell me what it's like to approach the topic of diabetes with a patient.
 - a. How do you address the topic of diabetes with a patient?
2. Can you tell me how your workload plays into the management of your time between patient care and patient education?
 - a. What are some of the factors that influence how you prioritize patient education, especially when your time with a patient is limited?
3. Tell me about the process in your deciding to refer a patient to diabetes education.
 - a. What factors prompt you to refer a patient to diabetes self-management education?

- b. What is to be gained by the patient in attending diabetes education?
- 4. How closely do you work with diabetes educators in your area?
 - a. What do you feel these educators do well in practice?
 - b. What do you feel these educators could improve upon in practice?
- 5. What barriers do you believe exist in a patient effectively managing their disease state?
 - a. What barriers do you believe exist in a patient's attending diabetes education?
 - b. What facilitators do you believe exist in a patient's attending diabetes education?

Closing Statement

Thank you for choosing to participate in this interview. All of your responses will be stored in a protected document accessible to only myself. All collected data will be deleted within an appropriate timeframe. Again, thank you for participating. I look forward to sharing my results with you.