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**EXPERIENTIAL LEARNING IN DIETETICS: CAN DIABETES CAMP MAKE A
DIFFERENCE?**

A dissertation submitted to
the Graduate College of
Marshall University
in partial fulfillment of
the requirements for the degree of
Doctor of Education

in

Curriculum and Instruction

by

Mallory Jean Mount

Approved by

Dr. Elizabeth Campbell, Committee Chairperson

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Dr. Mary Kathryn Gould

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Marshall University
December 2019

APPROVAL OF DISSERTATION

We, the faculty supervising the work of Mallory Jean Mount, affirm that the dissertation, *Experiential Learning in Dietetics: Can Diabetes Camp Make a Difference?*, meets the high academic standards for original scholarship and creative work established by the Doctor of Education in Curriculum and Instruction and the College of Education and Professional Development. This work also conforms to the editorial standards of our discipline and the Graduate College of Marshall University. With our signatures, we approve the manuscript for publication.

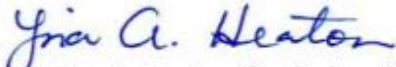


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In 2016, I began this journey, well not the journey to write this dissertation, but my doctoral journey. I always saw myself returning to school for my doctoral degree, but little did I know that this experience would lead me to people and experiences I will never forget. My hardworking and determined personality has struggled with stress and tiredness that has come with working full time and pursuing this degree, but one thing is for sure...I did it!

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ABSTRACT

This longitudinal qualitative case study explored the knowledge, perceptions, confidence, and empathy gained by dietetics students during experiential learning at a residential diabetes camp. Qualitative research methods were used to explore and understand participants' experience of hands-on involvement with type one diabetes, and what they learned at camp that cannot be learned in a classroom. Data were collected over two years at Camp Kno-Koma, the diabetes camp of West Virginia. This study suggests that experiential learning at diabetes camp can make an important contribution to the overall education of dietetics students. One year of experiential learning was beneficial to participating dietetics students; two years provided a deeper understanding of the disease in children's lives and the role of the registered dietitian nutritionist at camp. The experience of participating in diabetes camp was also shown to provide in-depth education about type one diabetes management and care; more than what can be provided in a didactic setting. In the camp setting, participants were able to work interprofessionally to better understand all aspects of diabetes care. This study informs dietetics educators and students about the benefits of experiential learning at diabetes camp; the study's greatest contribution is the ability for educators to understand how experiential learning opportunities at diabetes camp provide in-depth education and how these learning experiences can be incorporated into dietetics curricula.

CHAPTER ONE

INTRODUCING THE PROBLEM

Like most chronic diseases, the incidence of type one diabetes is increasing across the nation and the reason why is not clear. Currently, 1.25 million Americans are living with type one diabetes (JDRF, 2018). It is expected that 5 million people in the United States will be living with the disease by 2050, including 600,000 youth and adolescents. Approximately 400,000 people are diagnosed with type one diabetes each year (JDRF, 2018). Between 2001 and 2009, the prevalence of type one diabetes increased by 21.1% (Hamman et al., 2014). Type one diabetes was previously known as juvenile diabetes, since most diagnoses occur in youth; however, as research on the disease continues, it is now known that adults of any age can be diagnosed with the disease. It is important for health care professionals to understand that children with type one diabetes grow up to be adults with the disease. For proper disease treatment and management, lifelong education is needed by qualified health care providers.

It is normal for both health care professionals and patients to have frustrations with diabetes management; therefore, it is crucial that health care providers have training to increase their knowledge, beliefs, and attitudes about diabetes care. There are many barriers to diabetes management for both patients and providers; however, training—including experiential learning—can be beneficial. Johnson, Crawford, and LaRochelle (2014) noted that an experiential learning opportunity at diabetes camp enhanced student perceptions of diabetes knowledge, skills, confidence, communication, and comfort through interdisciplinary teamwork. Odegard, LaVigne, and Ellsworth (2002) stated that active learning strategies with case-based learning and role-playing can improve confidence and understanding in diabetes management. All health care disciplines have noted the importance of adequate preparation and training for the

management of chronic diseases (Delea, Shrader, & Phillips, 2010). Most health care professional students believe they have a knowledge deficit in diabetes management if they do not participate in experiential learning where they can apply didactic material (Johnson et al., 2014). Current literature provides a need for further research on the impact of experiential learning and knowledge of type one diabetes, especially for dietetics students.

Diabetes Camp as an Experience

This study focused on learning experiences with type one diabetes at a diabetes camp. In the United States, there are approximately 215 camps for children with type one diabetes, with a total of 232 camps in North America (Diabetes Education and Camping Association, 2017). According to the Diabetes Education and Camping Association (2017), every year 20,000 children attend diabetes camp in North America. For youth living with the disease, these camps provide a place for education, adventure, and fun. Camp creates a place where kids can meet and learn from other youths, making lifelong friends. In addition, parents, whose round the clock care becomes the center of the family's life, can rest easy while having confidence their child is receiving proper attention. Diabetes camps are staffed with medical professionals, trained counselors, staff, and health care professional students who are well equipped to take care of children with diabetes and to address any complications that may arise.

Diabetes Camp as a Learning Experience

Diabetes camp provides a learning environment where interprofessional learning can increase diabetes knowledge, comfort, and confidence in all health care professional students (Johnson et al., 2014). Many health professional students attend diabetes camps to gain this important experiential learning. Currently, research on students learning at diabetes camp tends to focus on pharmacy students (Johnson, 2007; Johnson et al., 2014). There is little research that

focuses on nursing and dietetics students learning at diabetes camp (Brann, 2012; Vogt, Chavez, & Schaffner, 2011). This study focused on learning experiences of dietetics students at Camp Kno-Koma, the Diabetes Camp of West Virginia. This study explored the knowledge, perceptions, confidence, and empathy gained by dietetics students during experiential learning at a residential diabetes camp.

Educational Requirements for Dietetics Students

Since the focus of this study is on dietetics students, a brief review of their educational requirements will be helpful. To become a registered dietitian nutritionist, students must complete an undergraduate degree in dietetics, human nutrition and foods, or a related major from an accredited University. The Accreditation Council for Education in Nutrition and Dietetics (ACEND) is the accrediting council for education programs preparing students to be registered dietitian nutritionists (Academy of Nutrition and Dietetics, 2019). After completing their undergraduate degree, students are required to complete a 1,200 hour supervised practice experience, commonly referred to as a dietetic internship. After successful completion of their internship, students are then able to sit for the registered dietitian nutritionist exam. This study engaged students who are in different stages of their education and explored the impact a camp experience can have on learning.

CONCEPTUAL FRAMEWORK

Rationale of the Study

The intent of this qualitative study, which uses visual and narrative methods, was to examine what dietetics students learn about type one diabetes at a residential diabetes camp in West Virginia. To explore their learning experiences, a qualitative longitudinal case study, with Photovoice as a method for data collection, was used. This study was conducted over two years

to gather longitudinal data from research participants. Research methods for year two were enhanced following lessons learned from data collection methods used in year one.

Photovoice, a kind of participatory action research, was used to engage participating dietetics students through data collection and dialogue to reflect on different educational strategies and how those strategies can benefit dietetics students' learning. Research participants' images and narratives focused on their perceptions of hands-on experience and what they learned at a diabetes residential camp that cannot be learned in a classroom. Photovoice has been used to identify patient, family, and community perspectives, along with interventions, challenges, and coping mechanisms with type one diabetes (Florian et al., 2016; Melton & Johnson, 2015; Walker et al., 2016; Yankeelov, Faul, D'Ambrosio, Collins, & Gordon, 2013; Yi-Frazier et al., 2015); however, no Photovoice research has been noted with health care professional students and type one diabetes. In this study, dietetics students compared their assumptions and education about type one diabetes before and after their residential camp experiences. A hope of this study is that Photovoice will also empower dietetics students as they gain confidence and experience with type one diabetes. With the rising incidence of type one diabetes, it is essential for future dietitian nutritionists to be knowledgeable of and confident that they understand proper management of the disease.

Research Methods

Qualitative research methods were used to explore and understand in-depth information from the research participants. Creswell (2014) concisely explains qualitative study as “an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem” (p. 4). Inductive reasoning was used in this study to collect exploratory and open-ended data (Creswell, 2014). This research design was flexible and evolved as data were

collected. This dissertation is an intrinsic case study as the researcher has a genuine interest in the case; as it delves into the experience of a small group of participants at a single camp, the results of this study are not intended to be generalizable. It is hoped, however, that this deep dive into experience will point to common themes that may be helpful for dietetics students and dietetics educators regarding education for type one diabetes.

Creswell (2014) defines a case study as “an in-depth analysis of a case, often a program, event, activity, process, of one or more individuals” (p. 14). Baxter and Jack (2008) state that a case study “facilitates exploration of a phenomenon within its context using a variety of data sources” (p. 544) and is appropriate to answer how and why questions. To better understand the concept of experiential learning at this residential diabetes camp, a qualitative case study was the most appropriate strategy. Using theories of experiential learning and constructivism, this study explored the knowledge, perceptions, confidence, and empathy gained by participating dietetics students during an experience at a residential diabetes camp.

The benefits of using qualitative research include the in-depth examinations of issues or experiences such approaches provide, as well as the capacity to adapt the design as new information is obtained, the ability to discover intricacies that can be missed through other research methods, and opportunity to re-count human experiences in ways that can provide more compelling information than quantitative data. Qualitative data is becoming increasingly accepted in many areas, including education and health care (Anderson, 2010).

METHODS

Purpose of the Study

The purpose of this study was to explore whether and how an educational experience at a residential camp for children with type one diabetes changes knowledge, perceptions,

confidence, and empathy of the disease for dietetics students. In addition, this study helped describe how interprofessional education and teamwork can enhance learning for dietetics students regarding type one diabetes. The aim of the Photovoice intervention, in particular, was to improve student knowledge, perceptions of diabetes, and increase confidence and empathy in caring for patients with type one diabetes. In addition, this study was able to add to the small body of knowledge concerning experiential learning in dietetics students.

Convenience sampling was used to select four research participants to best understand the research problem and questions. This sampling allowed the researcher to collect the appropriate data to answer the research questions. Dietetics students who attended camp in 2018 and 2019 were eligible for participation in the study. Data were collected over two years at Camp Kno-Koma, the diabetes camp of West Virginia. Research participants attended both years of camp and participated in all data collection methods. The following information overviews how data were collected in each year of the research.

Year One

The researcher gathered data at Camp Kno-Koma through one-on-one interviews, participatory action research through Photovoice, observations and field notes, and a focus group. Interview, focus group, and observation guides were used (Appendix B, C, & D). Photo collection was completed using disposable cameras for year one. At Camp Kno-Koma, campers are asked to leave smart phones and technology at home. Electronic devices are not recommended for use at camp. To comply with this request, the research team decided to use disposable cameras for data collection. In addition, research participants were asked to keep a journal to record their learning experiences at camp. Journals were hand written to comply with the technology request at camp. For year one data collection, the journals were not collected by

the research team, but were used by the participants to recall learning experiences during the focus group.

During the focus group, participants identified the three most significant photographs that resonated with them and used their photos to describe their experiential learning at camp. Research participants were asked to provide a caption for each of the three photos. The researcher led all interviews and the focus group in year one. Each interview and focus group, for year one and two, had the same components: an explanation of the purpose of the study, introduction of the researcher, the maintenance of confidentiality, an ice-breaker, data collection, and a closing.

Data review and analysis were ongoing and simultaneous throughout data collection, in both years one and two. Data analysis continued until data saturation occurred. Coding allowed the researcher to develop a general understanding of the research data and identify common themes in the data. Data were analyzed to identify the change in knowledge, perceptions, confidence, and empathy of type one diabetes in dietetics students at a residential diabetes camp.

Year Two

Data collection, review, and analysis for year two were similar to year one; however, data collection methods were changed to enhance and simplify the research process. A brief description of the changes for year two are noted here. Disposable cameras were used for photo collection in year one. One unforeseen issue in regard to disposable cameras is that one hour photo developing is almost non-existent. For year two, the research team decided to use digital cameras with an SD card for photo collection. This research was approved by the Camp Kno-Koma Board of Directors, as campers are asked to bring disposable or digital cameras for picture taking and this complies with the technology requests for camp. Pictures from disposable

cameras are of poorer quality than digital photos, which should be considered for the purpose of research.

Journals kept by research participants in year two were collected for review. The reason for journal collection was to help increase validity of photograph data collection, as participants were to journal their learning experiences, as well as their thoughts about the photographs they were collecting. Journals for year two were hand written to comply with the technology request at camp.

Interview and focus group guides for year two were created and used in data collection (Appendix I & J). Since this research was collected through longitudinal data with the same research participants, different questions were needed for year two to guide a more in depth conversation of their learning experiences.

Problem Statement

Experiential education helps to enhance knowledge and camp provides an opportunity for this type of learning in many health care disciplines. Currently, there is little research comparing the changes in knowledge and perception during experiential learning in dietetics students at a residential diabetes camp. The goal of this qualitative case study was to compare changes in knowledge, perceptions, confidence, and empathy of dietetics students through longitudinal data collection. In addition, this study helped identify how interprofessional education and teamwork can enhance learning for dietetics students regarding type one diabetes. To gather the appropriate data for year one and two, information was obtained during one-on-one interviews before the camp experience. The researcher observed learning experiences and took field notes during camp, while students participated in experiential learning and gathered information using Photovoice. In addition, students kept a journal to note their learning experiences at camp. After

each camp experience, students participated in one focus group to discuss their learning experiences. Through Photovoice, photographs obtained at camp guided the focus group discussion. The central question that was studied is: can experiential learning at diabetes camp make a difference in the education of dietetics students?

Research Questions

The following research questions were investigated:

1. How do dietetics students identify their role in type one diabetes management?
2. How confident are dietetics students in caring for patients with type one diabetes?
3. How can immersive experiential learning at a residential diabetes camp improve knowledge of type one diabetes?
4. How can immersive experiential learning at a residential diabetes camp improve confidence in the management of type one diabetes?
5. How can immersive experiential learning at a residential diabetes camp enhance perceptions of type one diabetes?
6. How can immersive experiential learning at a residential diabetes camp improve empathy for type one diabetes?

Definitions

The following definitions are provided for this study:

- Residential diabetes camp - a camp setting where campers living with type one diabetes, volunteers, and staff members reside for a pre-determined amount of time, usually one week.
- Type one diabetes - an autoimmune disorder that occurs when the insulin-producing cells of the pancreas are mistakenly destroyed by the body's immune system.

- Dietetics students - a student majoring in undergraduate dietetics, human nutrition and foods, or a related major at an accredited University, or a student completing their dietetic internship.
- Certified Diabetes Educator – a health care professional (nurse, pharmacist, physician, dietitian nutritionist, exercise physiologist) who has completed a minimum of 2 years professional practice, a minimum of 1,000 hours of experience providing diabetes education, and a certification exam. In addition, these practitioners complete at least 15 hours of continuing education each year that are applicable to diabetes.

Significance of the Study

How health care professional students work in an interdisciplinary method is significant in the management and treatment of all diseases, including type one diabetes. Currently, little research has been conducted with experiential learning at diabetes camp with dietetics students. In dietetics, one study identified changes in knowledge and confidence in students after a week-long type one diabetes camp (Brann, 2012). Brann (2012) demonstrated that research participants benefitted in hands-on learning during camp, which improved their knowledge and confidence in caring for those with the disease. With a small amount of research noted, our study increased the overall knowledge of experiential learning for dietetics students. Research completed with dietetics students during the camp experiences gathered beneficial information to experiential and interprofessional education, as well as the dietetics profession. The goal of this study was to identify how experiential learning impacts student knowledge, perceptions, confidence, and empathy on type one diabetes. With the increased prevalence of type one diabetes, it is important that all health care providers understand proper treatment and management of the disease

(Johnson, Chesnut, & Tice, 2003). This study has extended thinking, provided new knowledge, and influenced teaching strategies for dietetics students and educators.

Delimitations and Assumptions

This study was limited to one week of the year during Camp Kno-Koma, the Diabetes Camp of West Virginia. One strength, or advantage, to this longitudinal data collection is that data were collected during two different camp experiences with the same research participants. Another strength of the study is that it has the potential to gain essential knowledge on how experiential learning experiences can inform dietetics students' professional development. This study is limited to a small group of dietetics students who attended camp in July 2018 and 2019. It is assumed that the limited time period of this study may present problems; diabetes camp in West Virginia is held for one week each year. In order to obtain information during a residential camp, researchers must comply with the timeline of the camp. For both the participants and the researcher, the study was expected to be time consuming. Thick, rich descriptive data were collected through triangulation.

Organization of the Study

In this dissertation, you will find a complete narrative of current research, research methods for this study, research results, and a full discussion of the results. Following this introductory chapter, Chapter Two highlights the current literature; Chapter Three describes the methodology in full detail; Chapter Four provides information about Camp Kno-Koma, the diabetes camp of West Virginia; Chapter Five identifies the results of the first year of data collection; Chapter Six identifies the results of the second year of data collection; and Chapter Seven closes the research with a discussion of the results and the conclusion.

CHAPTER TWO

LITERATURE REVIEW

Living with Type One Diabetes

Type one diabetes is an autoimmune disorder that occurs when the insulin-producing cells of the pancreas are mistakenly destroyed by the body's immune system. After destruction, the cells are unable to produce enough insulin to maintain proper blood sugar levels. All people living with type one diabetes must take insulin via vial and syringe, insulin pen, or insulin pump for survival (JDRF, 2018). There is no cure for type one diabetes; however, through disease management, everyone living with the disease can live long, healthy lives. It is important that health care professionals understand how to care for and manage type one diabetes in people of all ages. Everyone living with type one diabetes should work with a multidisciplinary health care team for appropriate management of the disease. This team may include general physicians, nurse practitioners, endocrinologists, physician assistants, nurses, pharmacists, social workers, dietitian nutritionists, dentists, podiatrists, psychologists and other mental health professionals, exercise physiologists, and certified diabetes educators (American Diabetes Association, 2018). Complex health care issues, including diabetes, need more than one discipline involved in their care (Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011).

Prevalence and Incidence

Like most chronic diseases, the incidence of type one diabetes is increasing across the nation and the reason why is not clear. Currently, 1.25 million people are living with type one diabetes. It is expected that 5 million people in the United States will be living with the disease by 2050, including 600,000 youth and adolescents. Approximately 400,000 people are diagnosed with type one diabetes each year (JDRF, 2018). Type one diabetes was previously known as

juvenile diabetes, since most diagnoses occur in youth; however, as research on the disease continues, it is now known that adults of any age can be diagnosed with type one diabetes. It is also important for health care professionals to understand that children with type one diabetes grow up to be adults with the disease. For proper disease treatment and management, lifelong education is needed by qualified health care providers.

Factors in Diabetes Management

The majority of research on diabetes focuses on type two diabetes. Different from type one diabetes, type two diabetes occurs when the body does not effectively regulate and use insulin. In type two diabetes, problems with insulin resistance (the body's cells do not use insulin properly) and insulin secretion (the pancreas does not produce enough insulin to control blood sugar levels) lead to issues with blood sugar management (American Diabetes Association, 2019). Some research regarding type two diabetes can be relevant for type one diabetes; however, type one and type two diabetes are categorized as two different diseases. One research topic relevant in both diseases is how health care providers play a role in the treatment and management of the disease. It is normal for both health care professionals and patients to have frustrations with diabetes management. Training for health care providers is crucial to increase their knowledge, belief, and attitudes about diabetes self-care.

Poor communication between patients and health care providers is seen as a barrier to management and increases poor adherence to recommendations in both diseases, type one and type two diabetes (Nam, Chesla, Stotts, Kroon, & Janson, 2011). Importantly, poor communication could lead to fatal errors in patient management (Olenick, Allen, & Smego, 2010). A patient-centered approach, recommended for the management of type one diabetes, involves a collaborative, close working relationship between patients and their practitioners

(American Diabetes Association, 2018). Effective communication can improve trust and empathy not only in practitioners, but also in health care professional students (Kerr, Stahnke, & Behnen, 2015). Poor attitudes of health care professionals, related to diabetes and its management, can lead to negative outcomes for their patients (Delea et al., 2010).

There are many barriers to patient and provider diabetes management; however, training—including experiential learning—can be beneficial. Johnson et al. (2014) noted that one experiential learning opportunity at diabetes camp enhanced student perception of diabetes knowledge, skills, confidence, communication, and comfort through interdisciplinary teamwork. Odegard et al. (2002) stated that active learning strategies with case-based learning and role-playing can also improve confidence and understanding in diabetes management. All disciplines have noted the importance of adequate preparation and training for the management of chronic diseases (Delea et al., 2010). Most students believe they have a deficit of knowledge in diabetes if they do not also have experiential learning where they can apply didactic material (Johnson et al., 2014). This information provides a strong need for further research where this study can provide beneficial data for both students and educators.

Experiential Learning

Most education in dietetics is provided through direct instruction, also known as lecture-based learning. Dietetics students prefer learning styles that include convergence (learning facts, following instructions, and solving problems with one right answer), assimilation (fitting new knowledge into what they already know), learning through thinking before acting, and lecture-based teaching methods. The identification of preferred learning styles is important for educators to meet the needs of their students (Palermo, Walker, Brown, & Zogi, 2009). It is important to remember that in addition to lectures, education needs to be interactive and hands-on, especially

for students who will work in health care fields. Students need to be engaged to build on their current knowledge and experience in a conducive learning environment (Gilboy, Heinerichs, & Pazzaglia, 2015). Experiential learning is an opportunity for students to work in their field with more hands-on experience, build on their current knowledge, and apply didactic learning to real life situations.

Many definitions can be noted for experiential learning. Hoover and Whitehead's definition, provided by Gentry (1990), states "experiential learning exists when a personally responsible participant cognitively, affectively, and behaviorally process knowledge, skills, and/or attitudes in a learning situation characterized by a high level of active involvement" (p. 10). Another definition from Confucius states: "I hear and forget, I see and remember, I do and I understand" (Gentry, 1990, p. 9).

Experiential learning involves four different phases, which include design, conduct, evaluate, and feedback. All four phases need to be completed and repeated over time for experiential learning success. Gentry (1990) noted that experiential learning is interactive, applied, and participative. Experiential learning focuses on the whole person, including cognitive, problem-solving, interpersonal, and people skills. In this style of learning, learners are in contact with the real world environment, which can pose variability and uncertainty. Feedback regarding learning styles and environments should be obtained from the learner as it is beneficial for understanding the learning process and educational outcomes (Gentry, 1990).

Interpersonal and communication skills are enhanced when students engage in problem solving strategies with others (Johnson et al., 2014). Imbedding students in interactive learning experiences can greatly enhance their knowledge and abilities. Research reinforces that diabetes camp can offer beneficial learning opportunities where students can apply and integrate

previously learned knowledge (Johnson, 2007). Benefits have been noted in improved counseling, skills, knowledge, confidence, communication, and comfort with type one diabetes during service-learning opportunities at camp. In addition, camp experience helps students apply material learned in the classroom to the camp setting (Johnson et al., 2014). At diabetes camp, students become part of the interprofessional team and are trained and guided by licensed medical professionals.

Service-Learning

One common type of experiential learning is service-learning. Service-learning promotes community involvement and partnerships, which enhances student participation and the application of knowledge (Ivey, 2011). Service learning is a unique form of experiential learning where students work collaboratively with community partners, which may also include interdisciplinary education (Johnson et al., 2014). Vogt et al. (2011) explain service learning as:

an educational experience in which students participate in an activity that meets the needs of a specific community [and] reflect on the service in such a way as to further understand the course content, the broader role of the discipline, and their sense of civic responsibility. (p. 69)

Service-learning has been noted at diabetes camp with pharmacy and nursing students, and has shown to improve knowledge and confidence after the experience (Ivey, 2011; Johnson, 2007; Vogt et al., 2011). In addition, all types of experiential learning improves confidence and knowledge of diabetes in multiple settings (Ellis, Nuffer, & Turner, 2012).

Although positive outcomes regarding knowledge and empathy have been identified with nursing students' service-learning experience at a residential diabetes camp, there is little research on the topic (Vogt et al., 2011). Vogt et al. (2011) noted in research with service learning for nursing students at diabetes camp that common experiences included anxiety, fatigue, responsibility, and empathy. Most students noted anxiety when beginning the

experience. As the week went along, fatigue began to set in with most students; however, students felt more responsible and gained more confidence in their role. Students also noted their knowledge increased during the week. One interesting finding in this research is that many of the students felt like an outsider during their time at camp, since they did not have diabetes. Many students adopted a diabetes lifestyle (following a diabetes meal plan, checking blood glucose levels, and practicing insulin injections with saline) while caring for the kids at camp, trying to experience the disease for themselves. One student noted camp was a very rewarding experience and it was the “best week of the summer” (Vogt et al., 2011, p. 72). With most research being conducted with pharmacy and nursing students, our study provides additional resources for dietetics educators and experiential learning at diabetes camps.

Other active learning strategies

Simulations and assessment labs are another strategy used in active learning. The implementation of non-traditional active learning strategies can improve knowledge and skill in diabetes management, noted in pharmacy students, but relatable to all health professional students (Delea et al., 2010). Simulation through role-playing can improve empathy and self-efficacy to diabetes in health professional students, which can lead toward focusing on patient-centered care (Kerr et al., 2015). Didactic experiences where students “live with diabetes” and interview people living with diabetes can also be a beneficial strategy to influence empathy (Johnson et al., 2003; Whitley, 2012). As noted in the research, many factors can influence empathy, so it is hard to know if one particular strategy will be the reason for changes.

As simulation strategies grow in higher education, educators have started incorporating these strategies into first and second year courses to enhance learning (Johnson et al., 2003; Whitley, 2012). Early introduction to active and interprofessional learning strategies can better

prepare students for clinical practice and result in changes in attitudes, interests, and professionalism (Olenick et al., 2010). While simulations can be beneficial to learning for health care professionals, they are not real world practice.

Simulation is supported by experiential learning theories, as well as the Transformative Learning Model, with active reflection being a key to incorporate experiences into skillsets (Cooper, 2018). The Transformative Learning Model is relevant to experiential learning. This theory, developed by Jack Mezirow in the 1970s (Kitchenham, 2008; Nerstrom, 2014), focuses on “the process of using a prior interpretation to construe a new or revised interpretation of one’s experience in order to guide future action” (Clapper, 2010, p. e10); although, Nerstrom (2014) noted that no universal definition for transformative learning exists. The Transformative Learning Model is similar to constructivist theories in that learning begins with an experience and moves into exploration of the current situation and the development of new ways of thinking. In this model, the transfer of learning is social and can be adapted to different situations (Clapper, 2010). Transformative learning includes critical reflection and active experience. Trusting and supportive relationships help to foster transformative learning (Malamed, n.d.). In experiential learning, people learn from experience that is not possible from information delivery alone. With experiential learning, emotions are a powerful tool in regard to learning and reflecting on new information (Clapper, 2010). Nerstrom (2014) noted an important concept to consider when using this learning model—it is unlikely learners will regress to prior beliefs once obtaining new knowledge (p. 328).

Interprofessional Education

In all health professional programs, experiential and interprofessional education are becoming more mainstream (Ellis et al., 2012). Without interprofessional learning, students will

not be exposed to positive opportunities when health care professionals work together. In 1988, collaborative medical education was first acknowledged (Olenick et al., 2010). To better define interprofessional education, educators must consider interdisciplinary and multidisciplinary education also. Interdisciplinary education occurs when professionals working in different focus areas interact, but includes little sharing of value and knowledge. This type of education is not collaborative, and is not necessarily patient-centered. Multidisciplinary education encompasses interaction with the patient, but not with other health care professionals (Olenick et al., 2010). Interprofessional education occurs when two or more disciplines share information and make decisions together, which is the goal of medical care, especially in diabetes. Interprofessional education may be a barrier for institutions that lack access to other health care professional schools; however, experiential learning with diabetes or other chronic disease camps can be a beneficial avenue for these students (Johnson et al., 2014).

To define interprofessional education, Johnson et al. (2014) provided the following “students from two or more professions learning about, from and with each other to enable effective collaboration and improve health outcomes” (p. 495). One of the main goals of interprofessional education is to provide safe, timely, and effective care (Interprofessional Education Collaborative Expert Panel, 2011). Patient-centered, team-based care has been a main outcome of interdisciplinary education, which has the opportunity to promote collaborative practice (Bennett et al., 2011). The Academy of Nutrition and Dietetics *Change Drivers and Trends Driving the Profession: A Prelude to the Vision Report* identified education to be the cornerstone of patient-centered care to drive innovation and improve the quality of care (Kicklighter et al., 2017). Interprofessional education can help to produce prepared clinicians who have respect for their fellow professionals (Bennett et al., 2011).

Benefits of Interprofessional Education

Research has noted that positive perceptions of interprofessional education are seen among faculty members of health care professional students. Interprofessional education is not a new concept; however, it has recently become more popular in undergraduate health care programs and professional schools (Olenick et al., 2010). Benefits to interprofessional education include building collaborative knowledge and skills, improving clinical outcomes and safety in patients, and enhancing educational opportunities for students. Health care providers are expected to work together in their professions; however, they are rarely educated collectively (Horsburgh, Lamdin, & Williamson, 2001; Johnson et al., 2014). Interprofessional education can help to clear blurred boundaries of health care professional roles and responsibilities; working together rather than alongside is essential. Interprofessional education should begin in undergraduate health care programs (Horsburgh et al., 2001). Previous research has been inconclusive to identify improved patient outcomes with interprofessional education; however, as research continues on this topic, it is now known there is a positive impact on outcomes through doctor and nurse collaboration (Horsburgh et al., 2001).

Barriers to Interprofessional Education

Since the 1990s, education has worked toward integration, although this is still not common practice today (Hoachlander, 1999). John Dewey's view was that students should be educated through occupation, as they learn best by considering and acting upon real-world problems. Education through occupation needs creative and collaborative curriculum planning and the development of partnerships with outside businesses or educators, which may be difficult to accomplish (Green & Joseph, 2011). Learning is enhanced by application and doing, and this can be a challenge in the classroom (Hoachlander, 1999). Hoachlander (1999) provides several

reasons for difficulty, including the need for well-defined educational objectives, overcoming challenges to effective integration, and finding activities and applications that excite students. Often times it is easy for educators to lose focus and interest due to these challenges (Hoachlander, 1999).

Additional barriers to interprofessional education include experiences being too complex to implement; no current relationship between experiential learning and reduced health care costs; inflexible curricula and accreditation requirements; and financing, scheduling, and time barriers for faculty and administration (Bennett et al., 2011; Olenick et al., 2010). One challenge, that may be the hardest to change, is negative student attitudes toward learning experiences (Horsburgh et al., 2001). In many educational settings, experiential learning in the real world environment seems to be actively rejected (Kolb, 1984), which may be due to many of these challenges. In interprofessional learning, educators from multiple disciplines must work together. Unfortunately, educators working interprofessionally can be a challenge (Hoachlander, 1999). A coordinated approach to interprofessional education is needed for success and includes cognitivism, constructivism, and humanism learning theories (Olenick et al., 2010). Interprofessional learning is both experiential and social and includes many strategies for active learning.

In most health care professions, specific courses on diabetes management are not part of the curriculum. In addition, the majority of education and training focuses on type two diabetes, which takes up different management and treatment strategies. Interprofessional and multi-disciplinary educational experiences are needed to prepare students in all health care fields. At diabetes camp, interprofessional education is essential, which makes this setting ideal for experiential learning.

Theories in Experiential Learning

“Learning,” according to Kolb (1984), “is the process whereby knowledge is created through the transformation of experience” (p. 38). Often, experiential learning is mistakenly described as a set of tools and techniques provided to learners to help with gaining knowledge; however, it is better described as a philosophy of education (Kolb & Kolb, 2005, p. 193). Dewey noted that experiential learning needed a sound theory to guide it; thus began the theory of experiential learning (Kolb & Kolb, 2005).

Experiential learning has been influenced by many theorists including Dewey, Lewin, Piaget, Freire, and Vygotsky. These scholars helped to build and define this theory through six schemes. These schemes include learning is a process, all learning is re-learning, learning requires conflict resolution, learning is a holistic process of adaptation, learning results from relations between a person and the world, and learning creates knowledge (Kolb & Kolb, 2005). The emphasis is that experience is the central role in the learning process and provides a holistic integrative perspective. The process of learning is the focus of this theory; this is much different from learning that focuses on behavioral outcomes, which is seen in many different learning and curriculum theories influenced by Skinner and Watson (Kolb, 1984).

In experiential learning, ideas are formed and re-formed through experience. Bruner stated it best when he said “knowing is a process, not a product” (Kolb, 1984, p. 27), which reinforces that learning is a lifelong process. Each experience with learning involves restructuring knowledge, thus all learning is a kind of re-learning. Experiential learning brings together creativity, problem solving, and decision making so that adaptation may take place. Adaptation, or adjusting to change, is essential in learning (Kolb, 1984). Experiential learning can also be known as spiral learning, in which learners take experience, reflection, thinking, and

acting into consideration. Kolb and Kolb (2005) stated the experiential learning theory includes acquisition, specialization, and integration, and emphasized that learning shapes personal development. This theory is inherently interdisciplinary, which makes it beneficial in interprofessional learning (Kolb & Kolb, 2005).

Kurt Lewin

In the Lewinian model of action research, learning begins with previous and current concrete experience. It is then followed by data collection and observation of the learning experience. Experience is the focal point of learning in this theory. This model is comprised of a four-stage cycle that includes concrete experience, observations and reflections, formation of abstract concepts and generalizations, and the testing of implications in new situations. The Lewinian model emphasizes conflict between concrete experience and abstract concepts, and observation and action (Kolb, 1984). The experiential learning theory was developed following Lewin's research.

Learning space is a term that was influenced by Lewin. Both internal and external needs of the learner will influence this space. Situated learning is also a term used in the learning space and draws on Vygotsky's social cognitive idea that learning is an interaction between the person and their social environment (Kolb & Kolb, 2005).

John Dewey

Dewey's model of learning is similar to Lewin's model. This model includes three stages: observation of current and surrounding conditions, previous experience of what has happened during similar situations in the past, and connecting what is observed and what is recalled from the situation to decide a method of action. Dewey's model integrates experience, observation, and action. The major struggle with this model is between ideas and desires (Kolb, 1984). John

Dewey theorized that students learn through constant construction of knowledge that is grounded in real life experience (Saini, 2015). Windschitl (2011) noted that Dewey encouraged students to gather information to solve problems, be responsible for solving problems, and test their ideas. Dewey identified that learning through occupation, also known as experiential learning, can influence our society (Doolittle & Camp, 1999).

Jean Piaget

Piaget's model is a little different in that learning moves from a concrete phenomenal view to an abstract constructionist view. Learning results during the interaction of assimilation and accommodation, which leads to a higher level of cognitive functioning. This model includes four stages of cognitive growth: sensory-motor, representational, concrete operations, and formal operations. Piaget also noted that new ideas are developed by integration and substitution (Kolb, 1984). His theory focuses on the use of personal ethics and current knowledge during social interactions with others to promote critical thinking in their own learning (Windschitl, 2011).

Lev Vygotsky

Kolb and Kolb (2005) noted that Vygotsky's social-constructivist theory and its role in the development of the experiential learning theory has been overlooked. Vygotsky's concept of the zone of proximal development is noted as the intellectual potential of a child when helped by their educator. Building on the learner's current knowledge through scaffolding and cues from the educator will progress the learner's intellectual growth (Jones & Brader-Araje, 2002).

Vygotsky's Sociocultural Theory of Cognitive Development includes social interaction, the more knowledgeable other (MKO), and the zone of proximal development (David, 2014; Psychology Notes HQ, 2019). This theory focuses on social learning in different settings with those who have a better understanding of the concept or task than the learner. The level of

guidance needed from the MKO depends on the amount of assistance needed for the learner to complete a task on their own, this is known as the zone of proximal development (Psychology Notes HQ, 2019). This theory can be beneficial in experiential education and diabetes education.

Paulo Freire

Freire's most pivotal work in education was the *Pedagogy of the Oppressed* (1970). His theory emphasized education being the focus of social change, and school and society must work together for this change to occur. This theory's focus includes all people, even those who are under the powerful elite, and suggests anyone can control their education and their lives (Windschitl & Joseph, 2011). Freire's theory focuses on empowerment education and "promotes participation of people, organizations, and communities in gaining control over their lives in the community and larger society" (Wallerstein & Bernstein, 1988, p. 380). Freire emphasized empowerment to oppressed populations through education, recognition, and liberation to free themselves from their struggles. Oppressed populations many times undervalue themselves and are driven by their oppressors. Through liberation, oppressed populations, which include people living with type one diabetes, can use their voice to create change in their environment. Freire's theory involves assessing problems and developing strategies to overcome challenges, which can be seen in many research areas, including health promotion.

From my experience, oppressed populations in health care include low socioeconomic status, elderly patients, and those living with chronic diseases. With health promotion and patient advocacy, oppressed populations can enforce policy change and health promotion. Freire's purpose for education is to liberate humans so they can become participants in their own lives. Knowledge should be gained by learning from others and understanding social factors and how these factors influence society. In addition, Freire believed that learners need action in the world

to learn, which promotes experiential learning (Wallerstein & Bernstein, 1988). Friere's theory aligns well with the Photovoice research method.

David Kolb

David Kolb's learning cycle has been used in many areas of education (Raschick, Maypole, & Day, 1998). There is no one size fits all approach to education, which allows Kolb's learning theory to be beneficial to all learners. Four different dimensions are incorporated into this learning model, including concrete experience, reflective observation, abstract conceptualization, and active experimentation (Raschick et al., 1998). Learning methods include experience, examination, explanation, and application (Raschick et al., 1998).

Learners move through a circular cycle, which Kolb refers to as a complete learning experience (Raschick et al., 1998). Educational research in social work suggests that beginning with the learner's preferred learning style and moving through the cycle from there is beneficial (Raschick et al., 1998). Four different learning combinations are used in this learning theory. These learning combinations include divergers, in which learners use information from their senses and feelings; assimilators, in which learners use abstract thinking and theoretical orientation; convergers, in which learners focus on practical ideas and their application, and accommodators, who are people-oriented and learn through problems solving (Raschick et al., 1998). Accommodating learners have the ability to learn mainly through hands-on experience (Kolb & Kolb, 2005), which was the setting for this research study. This information reiterates the importance of my previous discussion regarding preferred learning styles of dietetics students who prefer convergent and assimilating strategies and using multiple learning strategies to meet the needs of all students (Palermo et al., 2009).

Constructivism

Constructivism is a theory that undergirds both experiential learning and Photovoice (Hergenrather, Rhodes, Cowan, Bardhoshi, & Pula, 2009). Both Piaget and Vygotsky believe in constructivism where people use their past experiences to build new knowledge and understanding. Constructivism helps students to restructure their current knowledge for better understanding (Biggs, 1996; Windschitl, 2011). Restructuring results in accommodation and assimilation of knowledge, similar to Piaget's theory mentioned previously (Brandon & All, 2010). Included in this theory is active, student-centered learning where learners construct new ideas (Brandon & All, 2010; Windschitl, 2011).

Many different definitions to constructivism were provided in Jones and Brader-Araje's (2002) article, with the most comprehensive from Naylor and Keogh (1999):

The central principles of this approach are that learners can only make sense of new situations in terms of their existing understanding. Learning involves an active process in which learners construct meaning by linking new ideas with their existing knowledge. (p. 93)

This definition hits the key points to constructivism: active learning and learning as a process (Jones & Brader-Araje, 2002). Bravmann (2011) notes that "learning through experience and interaction is liberating" (p. 104) and using our past and current knowledge can lead to an informative and creative future. Learning is optimal when the student has control over the direction of the learning process that allows for maximum input and participation.

In constructivism, students interact with each other and the educator, who is the mediator. Windschitl (2011) noted that the educator is the facilitator and co-developer. The educator plays a supportive role in the learner's education (Windschitl, 2011). Brandon and All (2010) noted four major assumptions in constructivism: the learning process embraces previous knowledge and ideas, concepts that are not fully understood will lead to the development of new knowledge,

knowledge is obtained through meaningful methods, and the reflection and development of previous and new knowledge is completed. These concepts allow students to build new knowledge from previous experiences (Brandon & All, 2010).

With constructivism, educators recognize that learners bring various experiences to the learning environment, which help them to construct new and different understandings. Large group discussions and small group work help satisfy this theory. This learner-centered, active education resonates with educators while reassuring them that these learning processes correspond to recent research (Jones & Brader-Araje, 2002). A key concept from this article is that “knowledge is never acquired passively” (Jones & Brader-Araje, 2002, p. 6) and the evaluation of learning is constant. Benefits of this method include flexibility, reflection, negotiation, adaptation, validation, experience, and communication during learning (Saini, 2015).

Constructivism, along with all other curriculum theory, provides a deep, detailed explanation of learning strategies. To briefly detail, constructivism can be thought of as a culture where multiple perspectives are taken into consideration. These perspectives include prior knowledge and real world problems to promote meaningful learning. This curriculum focuses on digging deeper into big ideas, rather than covering a large range of general topics. Cognitive conflict and negotiation stimulate learning in this curriculum. In regard to assessment, both formative and summative methods are practiced. In this curriculum, the educator is known as the “guide on the side” rather than the “sage on the stage”:

A sage on the stage is an instructor who imparts knowledge on the student through lecture alone, whereas a guide on the side provides students with assistance and correction to explore the content independently or within a group. (Gilboy et al., 2015, p. 109)

For the last 25 years, constructivism has had major influences on education (Jones & Brader-Araje, 2002).

Benefits of Experiential Learning in Dietetics Students

Currently, much research in experiential learning focuses on pharmacy students, with little research with nursing students, and even less research involving dietetic students. It would behoove both nursing students and dietetics students to experience the many benefits of experiential learning, which include interdisciplinary education, experience, collaboration, teamwork, establishing roles and responsibilities, personal growth, improved skills, and opportunities for multiple institutions to collaborate (Illingworth & Chelvanayagam, 2007; Johnson et al., 2014; Vogt et al., 2011). The ideal method to providing education, support, monitoring, and follow-up for students has not been studied or noted in pharmacy students (Odegard et al., 2002), which can also be assumed in dietetics students.

In dietetics, one study identified changes to knowledge and confidence in students after a week-long type one diabetes camp. This study showed that students benefitted from hands-on learning during camp and improved their knowledge and confidence in caring for those with the disease (Brann, 2012). With a small amount of research noted, and no research looking at interprofessional experiences at diabetes camp, this study increased the overall knowledge of experiential learning for health care education programs, particularly dietetics education.

Benefits for Camp

From my personal experience, benefits of experiential learning for diabetes camps include more staff available to help care for campers, hands-on learning for type one diabetes, and building relationships with future health care professionals who could volunteer for camp in the future. In addition, the exposure to new ideas and improved cooperation between disciplines

could be a benefit for camp and higher education programs (Illingworth & Chelvanayagam, 2007). Most students who participate in camp are forever changed and many of them choose careers in diabetes based on their camp experience (Rosenbloom, 2001).

Benefits for Students

Students have the ability to gain many positive learning experiences at diabetes camp, including networking, making new friends and potential colleagues, advanced hands-on learning experiences, increased confidence and knowledge on diabetes care and management, strength in their professional identity, understanding the role of other professionals, collaboration, self-reflection of their contribution to a certain population, and identifying how interdisciplinary teams can work together (Illingworth & Chelvanayagam, 2007; Vogt et al., 2011).

Unfortunately, at this time it is unknown how much time is spent on type one diabetes education in dietetics curricula as there are no requirements for standards or competencies. To help with appropriate diabetes education, this study identified benefits in learning at Camp Kno-Koma, the Diabetes Camp of West Virginia.

Benefits for Programs

Benefits for experiential learning at diabetes camp in higher education programs include the opportunity for interprofessional education, building relationships with other institutions and programs, building relationships with other professionals, building collegial relationships between institutions, and cost efficiency (Illingworth & Chelvanayagam, 2007; Vogt et al., 2011). One major benefit for learning experiences at camp is that students from different occupations and institutions can work together. Experiential learning outside of institutions is essential if small schools do not have access to work interprofessionally with departments at their own school (Johnson et al., 2014).

Challenges of Experiential Learning at Summer Camp

In addition to benefits, there can be a variety of challenges for experiential learning at camp. From my experience, challenges can include appropriate timing of experiences, requiring summer experiences for students, and asking for volunteers versus requiring the experience as part of a course. The implementation of interprofessional education can be challenging; however, the benefits of this experience outweigh the risks of overcoming these challenges.

History of Diabetes Camp

Since the first diabetes camp began in 1925 (American Diabetes Association, 2007), medical professionals have focused on the importance of camp and its role in better management of the disease. In the United States, there are approximately 215 camps for children with type one diabetes, with a total of 232 camps in North America (Diabetes Education and Camping Association, 2017). According to the Diabetes Education and Camping Association (2017), every year 20,000 children attend diabetes camp in North America.

For youth living with the disease, these camps provide a place for education, adventure, and fun. Camp creates a place where kids can meet and learn from other youths, making lifelong friends. In addition, parents, whose round the clock care becomes the center of the family's life, can rest easy while having confidence their child is receiving proper attention. Diabetes camps are staffed with medical professionals, trained counselors, staff, and health care professional students who are well equipped to take care of children with diabetes and to address any complications that may arise. Most staff members volunteer their time to make camp a safe, fun week for the campers. Many campers attend camp for the first time not knowing anyone else living with type one diabetes; making these kinds of experiential and relational connections is a major benefit of the camp environment.

Summary

Experiential learning has been noted to be beneficial to health professional students, including dietetics majors. To help improve knowledge, perceptions, confidence, and empathy of type one diabetes, experiential learning strategies should be implemented into dietetics curricula. Unfortunately, at this time it is unknown how much time is spent on type one diabetes education in dietetics curricula as there are no requirements for standards or competencies. This literature review supports this study as the study's goal was to identify how experiential learning at diabetes camp can help dietetics students fully understand the disease.

CHAPTER THREE

RESEARCH METHODS

Introduction

The intent of this qualitative study was to use visual and narrative methods to explore what dietetics students learn about type one diabetes at a residential diabetes camp in West Virginia. The research design selected for this qualitative study was a longitudinal case study, with data collection over two years. Photovoice, participatory action research, was used to engage students through data collection and dialogue to reflect on how different educational strategies can benefit dietetics students. Research participants focused on their experience of hands-on involvement with type one diabetes and what they learned at a residential diabetes camp that cannot be learned in a classroom. The goal was to use Photovoice, along with other qualitative data collection methods, to empower dietetics students in gaining knowledge, confidence, and empathy and identifying their perceptions of type one diabetes.

Problem Statement

Experiential learning helps to enhance knowledge and camp provides an opportunity for this in many health care disciplines. Currently, there is little research comparing changes in knowledge and perception during experiential learning in dietetics students at a residential diabetes camp. The goal of this qualitative case study was to compare changes in knowledge, perceptions, confidence, and empathy in dietetics students through longitudinal data collection. In addition, this study helped identify how interprofessional education and teamwork can enhance learning for dietetics students regarding type one diabetes. To gather appropriate data for year one and two, information was obtained during one-on-one interviews before the camp experience. The researcher observed learning experiences and took field notes during camp,

while students participated in experiential learning and gathered information using Photovoice. In addition, students kept a journal to note their learning experiences at camp. Together, research participants shared their learning experiences with one another in a focus group after their camp experiences. It is important to remember that investigation of research questions is the goal for this qualitative research, not generalizability.

Research participants compared their assumptions, perceptions, and education about type one diabetes before and after their residential camp experiences. In turn, camp experiences helped students gain empathy, confidence, and knowledge regarding type one diabetes. With the rising incidence of type one diabetes, it is essential for all health care providers to understand proper management of the disease.

QUALITATIVE FRAMEWORK AND STRATEGIES

To explore the learning experiences of dietetics students on type one diabetes at a residential diabetes camp, a qualitative case study, with Photovoice as one method for data collection, was used. This study focused on dietetics students who participated in experiential learning at a residential diabetes camp. Qualitative research methods were completed to explore and understand in-depth information from the research participants. Creswell (2014) provides a concise explanation of a qualitative study, "...an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (p. 4). Inductive reasoning was used in this study to collect exploratory and open-ended data (Creswell, 2014). This research design was flexible and evolved as data were collected. This is an intrinsic case study as the researcher has a genuine interest in the case. It is understood that the results of this study are not intended to be generalizable.

Case Study Research

Schwandt (2007) describes case study research as a strategy for social inquiry that will seek answers for how and why questions, especially when studying phenomena in real-life context. Creswell (2014) defines a case study as “an in-depth analysis of a case, often a program, event, activity, process, of one or more individuals” (p. 14). Baxter and Jack (2008) state that a case study “facilitates exploration of a phenomenon within its context using a variety of data sources” (p. 544) and is appropriate to answer how and why questions. Constructivism is the philosophical and theoretical basis for case studies (Baxter & Jack, 2008). To better understand the concept of experiential learning at a residential diabetes camp, a qualitative case study was needed. Using theories of experiential learning and constructivism, this study identified the knowledge, perceptions, confidence, and empathy gained during experiences at a residential diabetes camp.

Phenomenology Research

Creswell (2014) describes phenomenology as the description of research participants lived experiences about a particular phenomenon. Schwandt (2007) describes phenomenology as a description of experiences in everyday life. The lived experiences of our research participants, prior to camp, during camp, and after camp, are essential to answer the research questions in this study. To fully understand the students’ experiences at camp, research participants were asked to help construct this phenomenon during interviews, observations, Photovoice data collection, and focus group methods.

Research participants identified the meaning of their camp experiences and how the experiences contributed to their overall knowledge and confidence in caring for and educating people living with type one diabetes. By studying participants’ thoughts, perceptions, memories,

emotions, and desires, this study allowed for intentionality, their experience towards things in the world, or in this case at diabetes camp. The camp experience was phenomenological—what it is for the experience to be experienced—and ontological—what it is for the experience to be. Phenomenology allowed participants to become aware of experiences and discuss them with each other. Phenomenology is the starting point of building foundational knowledge of type one diabetes, while identifying participants' subjectivity and intersubjectivity (Stanford Encyclopedia of Philosophy, 2003). Through intersubjectivity, the participants and I developed an interpretation together to help aid in validity and authority of the research findings.

Photovoice and Participatory Action Research

Photovoice, a kind of participatory action research, was used to engage students through data collection with photographs and dialogue to reflect upon how different educational strategies can benefit dietetics students. Photovoice has become a popular research tool in health care (Florian et al., 2016; Melton & Johnson, 2015; Walker et al., 2016; Yankeelov et al., 2013; Yi-Frazier et al., 2015); however, no research has been noted on using Photovoice in a diabetes camp setting. Photovoice focuses on taking photographs as part of a research study, which was first completed in China with village women in the Yunnan Province (Rose, 2012; Wang, Morrel-Samuels, Hutchison, Bell, & Pestronk, 2004). Photovoice draws from the feminist theory and was first introduced by Caroline Wang and Mary Ann Burris in 1994. The feminist theory promotes women to share information that affects their lives and identify what needs changed (Wang et al., 2004).

Schwandt (2007) notes there is not one single concept to feminist ethnography or epistemology. Based on Schwandt's (2007) definitions, feminist empiricism is the most appropriate epistemology for this research. Feminist empiricism is described as identifying data

about experiences that are missing from theory and aims to recognize a more accurate representation of social reality. In addition to the feminist theory, Photovoice encompasses empowerment education to encourage communities to be verbal about their needs through documentation with photographs (Kuratani & Lai, 2011; Wang & Burris, 1994). In most cases, Photovoice is used to reflect upon a community, including the strengths and concerns (Kuratani & Lai, 2011). The goal of Photovoice is to promote change at the community level and progress it to institutional and public policy. This research tool promotes the chance for transformation of communities and lives. Much focus of Photovoice stems from Freire's pedagogy of the oppressed (Kuratani & Lai, 2011), which is relevant to those living with type one diabetes.

Photovoice is a qualitative research method of participatory action research, also called community-based participatory research, and includes photos and discussions to collect data (Nykiforuk, Vallianatos, & Nieuwendyk, 2011). Photography began in 1839 and allowed for visual research to begin (Prosser & Loxley, 2008). This data collection method provides an alternative to word only data in qualitative research and allows data to be experienced and perceived in more detail than words alone. In this study, research participants were tasked with taking pictures of what they learned during their time at diabetes camp. By empowering research participants as active researchers in this study, I was able to gain more details than using dialogue alone (Harley, 2012). The participants in this study were co-researchers as they participated in data collection. After each camp experience was complete, I met with research participants in a focus group to discuss their photographs. Photographs provide a unique method to identify what students learned about type one diabetes, which provided additional information than discussion alone. Pictures may show concepts that could be hard to explain with words alone (Nykiforuk et al., 2011) and can deepen the understanding of lived experiences (Plunkett,

Leipert, & Ray, 2012). Everyone is influenced by photographs on a day-to-day basis, which makes this a powerful research tool. Photovoice is a flexible approach and incorporates creativity and collaboration (Catalani & Minkler, 2010; Palibroda, Krieg, Murdock, & Havelock, 2009; Prosser & Loxley, 2008).

Photo-elicitation was developed by John Collier in the 1950s to help with obtaining a solution for a problem. This research method can help in adding reliability and validity to word-based research strategies (Harper, 2002; Prosser & Loxley, 2008). Strengths of photo-elicitation include discussions about photographs to obtain more information from research participants, exploring everyday items through photographs in the participant's experience that may be taken-for-granted, and empowering research participants (Rose, 2012). The photographs taken in this study allowed for critical discussion regarding experiential learning at diabetes camp and engaged students with similar backgrounds and experience. By taking photographs, knowledge and experience that is not normally visible was obtained.

The term photo novella is also used in this research, which means, "picture stories" (Plunkett et al., 2012; Wang & Burris, 1994). Wang and Burris (1994) transitioned photo novella into Photovoice by including three main goals: recording and reflecting on community strengths and concerns, promoting critical discussion about issues through collaboration in groups, and incorporating strategies to reach policymakers (Dahan et al., 2007; Plunkett et al., 2012). The core of most health problems are found in the social environment of our society, which lends Photovoice as a beneficial research tool to promote change on a community level (Strack, Lovelace Jordan, & Holmes, 2010). Many outcomes can be noted as a result of the Photovoice research method, which is a benefit (Catalani & Minkler, 2010). It is my goal that results of this research will not promote change in policy, but in dietetics curricula across the country.

Photovoice can be used across the lifespan to obtain information about community benefits and challenges. This research method is flexible and allowed for adaptation to the diabetes camp setting. This study has the potential to identify needs of children living with type one diabetes and what needs to be addressed on a larger scale. Putting empowerment in the hands of oppressed populations can be beneficial in raising concerns that are not identified in many areas of our population. The goal of using Photovoice for this study was to promote creativity in documenting learning experiences and to encourage participants to take the role of researcher at camp.

Photovoice Research in Diabetes

In diabetes care, Photovoice has been completed with patients living with uncontrolled type two diabetes and identifying barriers for control (Florian et al., 2016), adolescent and parental perspectives on type one diabetes (Walker et al., 2016), older adults living with diabetes (Yankeelov et al., 2013), challenges and resilience in adolescents with type one diabetes (Walker et al., 2015), social media Photovoice for storytelling and sharing in adolescents with type one diabetes (Yi-Frazier et al., 2015), and perspectives on coping for young adults with type one diabetes (Melton & Johnson, 2015). Photovoice is used in many different areas of health care including chronic disease prevention and management, women's health (Wang, 1999), AIDS prevention (Harley, 2012; Kuratani & Lai, 2011), preventing and controlling public health problems (Nykiforuk et al., 2011), and environmental roles on benefits and challenges to eating healthy and being physically active (Joy, Mann, & Blotnicky, 2014; Nykiforuk et al., 2011). No known Photovoice research has been conducted on type one diabetes in a camp setting. In addition, Photovoice has been used in rural nursing education (Leipert & Anderson 2012), self-reflection in social work graduate students (Mulder & Dull, 2014), and in the classroom to

enhance learning. Participatory action research strategies, including Photovoice, are valued by health care professionals (Wang, Kun Yi, Wen Tao, & Carovano, 1998).

Photovoice is generally used as a data collection method, but can also be used in arts-informed analysis. Arts-informed research offers creative representations of experiences and allows for additional information during the analysis of research than dialogue alone.

Photographs add a multisensory experience for the researcher and research community. In addition, art has the potential to generate a type of empathy, which is an essential part of this study (Capous-Desyllas & Bromfield, 2018).

Photovoice helped me to gather more detailed information than conversation alone and put me in the eyes of the research participants. I feel this method of data collection made my research unique in many different ways, which helped make my research significant. In regard to ethics with analysis and interpretation, researchers must remember confidentiality and should present viewpoints fairly and respectfully, which can be both critical and challenging (Hennink, 2014).

Photovoice is flexible and allows for adaptation to the diabetes camp setting. Putting empowerment in the hands of oppressed populations can be beneficial in raising concerns that are not identified in many areas of the type one population. The goal of using Photovoice for this study was to promote creativity in documenting learning experiences and to encourage participants to take the role of a co-researcher at camp.

Possible Concerns with Photovoice

Ethical Concerns

With Photovoice, it is essential that research participants are properly trained on the process of taking appropriate photographs for the research study, including interacting with

people who will be in the photographs. Photographs may represent controversy, ethical dilemmas, or even illegal actions (Prins, 2010). This study did not include photographs of illegal action or violation of privacy of those being photographed. Research participants in this study were instructed to limit photographs of people and were encouraged to focus more on learning experiences. Participants were asked not to photograph the face of anyone attending Camp Koma. If a photograph was taken that contained faces, the photograph was deleted and not used in research. One picture taken and selected as a significant photo by one research participant included side profiles of some campers and staff and was blurred to protect individuals in the photo. Participants were required to ask permission when taking photographs of individual's personal items. Photographs can be falsified, which could not only be an ethical concern, but also a limitation (Harley, 2012). As with all research, ethics must be considered. All research must be fair and appropriate and must support an individual's privacy (Palibroda et al., 2009).

Possible limitations

The evaluation of Photovoice research is vaguely described in many research studies and many studies do not describe contributions on the community level (Catalani & Minkler, 2010). Although vague descriptions are limitations to specific studies, these limitations play a role in how Photovoice may be perceived. One weakness of Photovoice is that photos can be highly subjective; however, subjectivity can be noted in written or spoken dialogue as well (Harley, 2012). Most of the time Photovoice is used to meet the needs of a unique research project, which can also be seen as a limitation (Catalani & Minkler, 2010). Photovoice is timely and there is debate over the validity and reliability over participatory research, which can be limitations to this method. One major issue is that research participants may compromise the integrity of the data (Wang et al, 1998); however, participants have different skills that they can offer, and

through collaboration there are many points of view that can be considered. It is important to identify possible problems that may arise when using this research method. Photovoice was used to supplement qualitative data collection methods in this research study. For this study, the benefits outweighed the possible risks when using Photovoice as a research method.

Epistemology

Schwandt (2007) describes epistemology as the theory of knowledge or how we know what we know. The epistemology for my research includes interpretivism, which stems from hermeneutic traditions (Guest, MacQueen, & Namey, 2012). Interpretivism integrates human interest into the interpretation of the study. Interpretivism is a process and includes natural approaches to data collections such as interviews, observations, and focus groups. This epistemology allows for intersubjectivity, the exchange of thoughts and feelings between people, that is socially constructed (Dudovskiy, n.d.) and knowledge that is transferred through ideas and experiences. Interpretivism allowed me to identify and interpret multiple realities represented in my data and enhance a particular thought of camp experiences. Interpretivism is associated with phenomenology and social constructivism, concepts previously discussed in Chapters Two and Three. Schwandt (2007) describes phenomenology as a description of experiences in everyday life. Social constructivism encompasses the social nature of knowledge and social interaction (Doolittle & Camp, 1999). The goal of my analysis was to enhance the overall quality of my data and add to the current body of knowledge on dietetics curriculum and experiential learning.

RESEARCH QUESTIONS

The central question that was studied is: can experiential learning at diabetes camp make a difference in the education of dietetics students? The following research questions were investigated:

1. How do dietetics students identify their role in type one diabetes management?
2. How confident are dietetics students in caring for patients with type one diabetes?
3. How can immersive experiential learning at a residential diabetes camp improve knowledge of type one diabetes?
4. How can immersive experiential learning at a residential diabetes camp improve confidence in the management of type one diabetes?
5. How can immersive experiential learning at a residential diabetes camp enhance perceptions of type one diabetes?
6. How can immersive experiential learning at a residential diabetes camp improve empathy for type one diabetes?

RESEARCH DESIGN

The goal of this study was to identify how experiential learning impacts student knowledge, perceptions, confidence, and empathy on type one diabetes. A longitudinal qualitative case study design model, with Photovoice strategies, was utilized to encourage honest and open feedback from research participants. This study utilized interpretive strategies to identify learning experiences of dietetics student at a residential diabetes camp. Photovoice strategies were used to capture the research participants' views of their most significant learning experiences at diabetes camp.

Population and Sample

Convenience sampling was used to select participants, which allowed the researcher to best answer the research questions. Dietetics students who attended the full week of diabetes camp at Camp Kno-Koma in 2018 and 2019 were eligible for participation in the study. Exclusion criteria included non-dietetics students who attended camp, dietetics students who did

not attend camp in 2018 and 2019, and dietetics students who attended camp and were living with type one diabetes. This criteria allowed the researcher to collect appropriate data to answer the research questions.

The researcher obtained written consent from each participant. Potential participants received the informed consent via postal mail no later than one week before the scheduled first meeting. I met with each potential participant individually at the first meeting to re-read the consent form, describe the study, and answer questions. All students recruited for this research study chose to participate and signed the consent form. Participation was entirely voluntary and participants were informed they could leave at any time without penalty.

The main benefit of participating in this study was the opportunity for students to discuss what they learned in an interdisciplinary environment with their peers. There were no known risks to those who took part in this study. Participants were assured that all information was kept confidential.

Student Recruitment and Preparation

Students from the Marshall University Department of Dietetics and the West Virginia University Department of Human Food and Nutrition were recruited to participate in this study. Participants were recruited by word of mouth and e-mail communication. Students enrolled in dietetics or human nutrition and foods undergraduate, graduate, and internship programs at Marshall University and West Virginia University were contacted. As a faculty member in the Department of Dietetics at Marshall University, I began recruitment through oral communication with students in my courses. To follow, I contacted all undergraduate, graduate, and dietetic internship students at Marshall University via e-mail. To recruit the appropriate amount of students for this study, I then contacted faculty members at West Virginia University via e-mail

and encouraged them to forward the message to all of their students, as well as pass the information via word of mouth in their courses. A total of four students were recruited to participate in the study.

In the beginning of recruitment, three students from Marshall University, one dietetic internship student and two undergraduate students, and one dietetic internship student from J. W. Ruby Memorial Hospital submitted their volunteer applications to attend camp. The one student from Ruby Memorial Hospital was encouraged to attend camp during her internship rotation at a diabetes center in Morgantown. She was encouraged by the staff and her pediatric patients to attend camp. Due to this, she completed the volunteer form on the camp website and was then asked to participate in this research. I had no communication with her before her application was submitted for camp. Soon after I received confirmation of their applications, two of the students, one undergraduate student and one dietetic internship student from Marshall University, contacted the researcher to report schedule conflicts and their inability to attend camp. After this, I began more formal recruitment strategies. E-mail and verbal invitations to all Marshall University Dietetic Internship students was completed, along with word of mouth communication and e-mail invitations to the undergraduate and graduate students at Marshall. E-mail invitations and communication were completed to both undergraduate and dietetic internship students at West Virginia University, along with word of mouth communication from WVU faculty members. No communication was completed with the J. W. Ruby Memorial dietetic interns. In the end, one undergraduate student from Marshall University, one undergraduate from West Virginia University, one dietetic intern from West Virginia University, and one dietetic intern from Ruby Memorial Hospital were recruited for the study.

Before camp began, all students participated in a required day of orientation. Topics included an introduction of all key medical staff members, code of conduct and HIPAA guideline review, treatment for medical emergencies, appropriate communication procedures at camp, camp safety, nutrition guidelines and information, insulin injection and insulin pump overview and protocols, infirmary processes, and daily camper log requirements. All dietetics students worked under the guidance of the camp dietitian nutritionist during the week.

The dietetics student's primary function at camp was to assist the dietitian nutritionist in reading labels for carbohydrate counting, checking ingredient lists for food allergies, confirming nutrition facts on menus and providing adjustments as necessary, planning snacks for the week, organizing and delivering snacks for the week, and teaching healthy eating and carbohydrate counting to campers and staff, as well as other needs that arose. In addition, students spent time with other multidisciplinary professionals to learn more about certain areas of diabetes management and care. This camp experience provided a unique learning opportunity that students cannot get in most experiential learning settings. Camp medical staff were always looking for teachable moments for dietetics students during the week and encouraged students to participate in learning experiences outside of their field of expertise. Students were expected to complete assigned tasks and spend time with other members of the camp medical team as desired.

Description of Camp Kno-Koma

Camp Kno-Koma is held in the Monongahela National Forest at the Greenbrier Youth Camp (GYC) about 15 minutes from Lewisburg, West Virginia. The GYC is located in Anthony, West Virginia near the Greenbrier River. The GYC began holding 4-H camps in 1954 (Greenbrier Youth Camp, 2017). In 2018, Camp Kno-Koma began their tenth year holding camp

at the GYC (K. Porter, personal communication, July 23, 2018). While this is not a permanent home for Camp Kno-Koma, it is a location that meets the current needs of camp. The location has four large cabins and a combined dining and activities hall. Participants in this study were assigned to a cabin for their time at camp and were able to explore the entire campgrounds.

Additional details of Camp Kno-Koma and the GYC can be found in Chapter Four.

DATA COLLECTION AND INTERPRETATION

Photo and Narrative Collection

Data were collected over two years at Camp Kno-Koma, the diabetes camp of West Virginia. Research participants attended both years of camp and participated in all data collection methods. The following information describes how data were collected during each year of the research.

Year One

The researcher gathered data at Camp Kno-Koma through one-on-one interviews, participatory action research through Photovoice, observations and field notes, and a focus group. Interview, focus group, and observation guides were used (Appendix B, C, & D). The one-on-one interviews were audio recorded and transcribed. Field notes were typed and organized and an observation guide was used during data collection in the field. Field notes were taken by hand in a notebook and on the observation guide and then transcribed after returning from the field. Disposable cameras were used for Photovoice photo collection in year one. Disposable cameras were provided by the researcher for photo collection. At Camp Kno-Koma, campers are asked to leave smart phones and technology at home. Electronic devices are not recommended for use at camp. To comply with this request, the research team decided to use disposable cameras for data collection.

In addition to obtaining photographs during the study, participants were provided a journal to record their thoughts about the photographs that were taken and their learning experiences at camp. Journaling helped the participants remember camp details during the reflection of photographs at the focus group. To comply with the technology request, the research team decided to use hand written journals for data collection. For year one of data collection, the journals were not collected by the research team, but were used by the participants to recall learning experiences during the focus group.

After the camp experience, research participants gathered together in one focus group to discuss their learning experiences. During the focus group, participants identified the three most significant photographs that resonated with them and used the photos to describe their experiential learning at camp. Research participants were asked to provide a caption for each of the three photos. Participants used the SHOWeD method when analyzing and discussing their photographs at the focus group (Appendix F) (Dahan et al., 2007; Hergenrather et al., 2009; Wang et al., 1998). I led all interviews and the focus group.

Year Two

Data collection, review, and analysis for year two were similar to year one; however, data collection methods were changed to enhance and simplify the research process. The following information describes the changes made to data collection for year two; all other data collection and analysis remained the same. Disposable cameras were used for photo collection in year one. One unforeseen issue in regard to disposable cameras is that one hour photo developing is almost non-existent. For timely photograph development in year one, I had photos developed in Columbus, OH (a three hour drive) so the focus group could be completed the week after camp. For year two, the research team decided to use digital cameras with an SD card for photo

collection. The digital cameras were provided by the researcher for the study. This research was approved by the Camp Kno-Koma Board of Directors, as campers are asked to bring disposable or digital cameras for picture taking. Using digital cameras allowed for timely photo review for the focus group. Another unforeseen issue is that some photos were underexposed and were not able to be developed, which led to the students having fewer pictures to represent their learning experiences. Pictures from disposable cameras are of poorer quality than digital photos, which should be considered for the purpose of research.

Journals kept by the research participants in year two were collected for review. Journals for year two were hand written to comply with technology requests at camp. In year one, journals were not collected, but remain property of the research participants. Journal collection for year two was changed in the Institutional Review Board (IRB), and was approved. The reason for journal collection was to help increase validity of photograph data collection, as participants were to journal their learning experiences, as well as their thoughts about the photographs they were collecting.

Lastly, interview and focus group guides for year two were created and used in data collection (Appendix I & J). Since this research was collected through longitudinal data with the same research participants, different questions were needed to guide a more in depth conversation of their learning experiences. I led all interviews and the focus group.

As discussed here, data collection tools were changed to better meet the needs of data collection and appropriately answer the research questions. Learning from experience is essential and through experiences in year one, I enhanced the data collection methods for year two.

Interviews

Conversations are a rich source of information to identify personal and social aspects of people's lives. An interview is an exchange of views, through conversation, between two people on a subject of common interest (Brinkmann, 2013). In 1924, Emory Bogardus, a sociologist noted that interviewing "is as old as the human race" (Brinkmann, 2013, p. 6). Methods of interviewing began as early as the 1930s and have been used in many fields of research (Brinkmann, 2013). Our research team discussed the benefits of conducting one-on-one interviews [compared to focus groups] before the camp experiences. To allow the research participants to provide open and honest information about their current level of knowledge and confidence in a confidential, trusting setting, it was decided to conduct interviews before the camp learning experience, in both year one and two.

The interviews were semi-structured, but flexible. The interview questions were written to elicit exploratory and descriptive information from the interviewees. I valued and encouraged conversations that uncovered new topics during the interview. In addition, non-verbal communication and emotions were identified during the interview to aid in careful interpretation. Face-to-face interviews were conducted to gain the richest source of information possible.

The one-on-one interviews were audio recorded and transcribed. A minimum of 30 minutes was planned for each interview. Interviews were completed one week before camp using the interview guide questions (Appendix B & I). During the interview, research participants were guided on how to take photographs for the study. Participants were asked not to photograph the face of anyone attending Camp Kno-Koma. If a photograph was taken that contained faces, the photograph was deleted and not used in research. One picture taken and selected as a significant

photo by one research participant included side profiles of some campers and staff and was blurred to protect individuals in the photo.

Observations, Photographs, and Journals

Field notes were typed and organized and an observation guide was used during data collection in the field (Appendix D). The researcher worked closely with the research participants during camp to observe interactions, learning, and discussions among campers, the medical staff, and fellow students. During year one, each participant was asked to use one disposable camera to capture images of their learning experiences. By using critical thinking and analysis, participants were asked to take all photos on the camera roll. I provided four disposable cameras for the first year camp experience of this research study, one for each of the participants. During year two of data collection, digital cameras with SD cards were used and were provided by the researcher for data collection. Research participants were asked to take as many photographs as they saw fit to collect appropriate data with the digital cameras. Both data collection methods were approved by the Camp Kno-Koma Board of Directors for the study.

Research participants spent time with multiple health care professionals during their time at camp in order to gain knowledge in all areas of diabetes care and management. In addition to obtaining photographs during both years of the study, participants were asked to write their thoughts about the photographs that were taken and their learning experiences in a journal. Journaling helped the participants remember camp details during the reflection of photographs at the focus groups. For year one of data collection, the journals were not collected by the researcher, but were used by the participants to recall learning experiences during the focus group and kept by the participants. Journals were collected by the research team in year two to help increase the validity of photograph data collection. Although Photovoice is known to

promote change in communities and policies; it was the goal of this study to use Photovoice to encourage educators to use diabetes camp for experiential learning.

Focus Groups

During the focus groups following the camp experiences, participants identified their three most significant photographs [taken in the respective year] that resonated with them and used the photographs to describe their experiential learning at camp. Participants were asked to provide a caption for each of the three photos. Participants used the SHOWeD method when analyzing and discussing their photographs (Appendix F) (Dahan et al., 2007; Hergenrather et al., 2009; Wang et al., 1998). Probing on the photographs during the focus group allowed participants to identify how other student participants perceived their image.

Focus groups are a positive method for data collection in qualitative research and help to gather more information than an interview. A focus group involves focusing on specific issues with a predetermined group of people through an interactive discussion, and provides an environment where participants feel comfortable to express their views. In addition, focus groups allow participants to build on the responses of others and provide contrasting views (Hennink, 2014). Group interaction is used to obtain a variety of perspectives on research issues. Focus groups have been used in many different ways since the 1920s and gained most of their popularity in the 1950s with market research. During the 1980s, focus groups gained more popularity in academic research and are now widely used across multiple disciplines, one of these being the field of health care (Hennink, 2014).

Focus groups provide flexible data collection strategies and are appropriate for exploratory, explanatory, and evaluation research (Hennink, 2014). This study was exploratory research as it aimed to explore and understand perspectives of the research participants.

Researchers must understand that limitations, such as group talk and a less controlled environment, may be an issue (Hennink, 2014).

When designing and conducting focus groups, researchers should realize that purposive recruitment of participants adds strength to focus group research. The goal of a focus group is to understand and provide insights about how people perceive a situation. Focus group discussion guides are used to help guide conversation, while providing flexibility to explore new topics that arise and probe for additional information as needed. Focus group guides are similar to interview discussion guides. Researchers must use active listening strategies and pay attention to non-verbal cues. During data collection and analysis, researchers must understand the concept of saturation, also known as data redundancy. Reflexivity, also important to consider during analysis and interpretation, identifies how personal or interpersonal ideals may have influenced the research. Qualitative research should be written to present research findings in a clear and compelling way (Hennink, 2014).

Our research team decided that focus groups would be the best method of data collection after the camp experiences to allow participants to individually and collectively provide information about their experiences. Our focus groups did not have a set time allotment, but concluded when all discussion ceased and data saturation occurred. Each focus group was completed no later than one week after both camp experiences and was guided by focus group questions and probing, as needed (Appendix C & J).

The researcher led all interviews and focus groups. Each interview and focus group had the same components: an explanation of the purpose of the study, introduction of the researcher, the maintenance of confidentiality, an ice-breaker, data collection, and a closing. Descriptive questions were asked during the interviews and focus groups and probing were used as needed.

Data Review and Analysis

Data review and analysis was ongoing and simultaneous throughout data collection. Cross-checking was completed between notes and records right after data collection. All data were reviewed and the researcher manually coded and sorted the data into themes. After all information was transcribed, data were organized and prepared for analysis. I listened to all audio recordings and transcribed all discussion verbatim. Transcription was completed manually. In addition to the transcription of interviews and the focus groups, field notes were transcribed after returning from the field. Data were aggregated and collectively analyzed. Each interview and focus group was audio recorded and transcribed. All recordings of the interviews and focus groups were deleted after transcription. Field notes and recordings were reviewed to identify commonalities and individualities in the data.

Coding allowed the researcher to develop a general understanding of the research data. Coding was completed using three categories: topics the reader would expect to find, topics that are surprising and were not anticipated, and topics that are unusual and are of interest to the research (Creswell, 2014). In addition, codes were identified and created as new themes were discovered in the data. The researcher aimed to find four to five themes for each year of the camp experiences during analysis. Data analysis continued until data saturation occurred. Data were analyzed to identify the change in knowledge, perceptions, confidence, and empathy of type one diabetes in dietetics students at a residential diabetes camp.

The analysis and interpretation of the data in this study was ongoing and simultaneous throughout data collection through thematic analysis. Schwandt (2007) describes thematic analysis as the general approach to analyzing qualitative data. Thematic analysis led the researcher to identify emerging themes. Hennink (2014) notes that thematic analysis is a

common approach in qualitative research, which involves immersion into data. In an inductive approach, codes and themes are directed by the content of the data and assumptions are data-driven. Inductive thematic analysis was my preferred approach for analysis. The goal of this analysis was to identify the participants' perspectives of an issue or experience, in this case diabetes camp (Hennink, 2014).

In addition, research participants helped to identify themes in their photographs during the focus groups. The SHOWeD method was the guide used for analyzing Photovoice data in this study. Participants were asked to complete the SHOWeD analysis on their three most significant photos taken during their learning experience at camp, which makes this data analysis unique. The SHOWeD analysis includes:

1. What is Seen here?
2. What is really *Happening*?
3. How does this relate to *Our* lives?
4. Why are things this way?
5. How could this image *Educate* people?
6. What can I *Do* about it? (Dahan et al., 2007).

Using photographs, along with dialogue data, I was able to gain a deeper understanding of the data in this study. Through this thematic analysis, I was able to draw appropriate conclusions from the gathered data.

Identifying Emergent Themes

Through coding, descriptive words were used for categorizing. These descriptive words were identified from recurrent themes in the data. Data were aggregated and collectively analyzed. Data analysis continued until data saturation occurred. Coding allowed the researcher

to develop a general understanding of the research data. All data were reviewed and the researcher coded and sorted the data into themes. In addition, research participants helped identify emerging themes through their analysis and discussion of their photographs.

Reliability and Validity

To aid in reliability, interview and focus group transcripts were checked to make sure no errors occurred during transcription. Codes and data were consistently compared to ensure no changes in coding occurred during analysis, also known as cross-checking. To aid in validity, triangulation using different data sources was used; rich, thick descriptions conveyed the findings; convenience sampling was used; and the researcher spent time in the field (Creswell, 2014). Multiple data sources were used to enhance data credibility (Baxter & Jack, 2008); although, to aid in the management of data, concise questions were asked during interviews and focus groups.

Photovoice, as a research method, helped in adding reliability and validity to word-based research strategies (Harper, 2002; Prosser & Loxley, 2008). The photographs taken in this study allowed for critical discussion regarding experiential learning at diabetes camp and engaged students with similar backgrounds and experiences. By using Photovoice, knowledge and experience that is not normally visible was obtained.

Through triangulation with data collection, I was able to contribute to the larger body of knowledge of experiential learning at a residential diabetes camp with dietetics students. Schwandt (2007) identifies triangulation as a way to determine validity of data. Triangulation involves using multiple data sources, theoretical perspectives, and methods. Data from multiple sources must be aggregated to identify the truth. Through multiple avenues of data collection, I reached data saturation and validity through triangulation. An example of triangulation was to

use interviews, focus groups, and observations during data collection to begin a serious and broad exploration of this topic. In addition, research findings on experiential learning at diabetes camp will enter into larger conversations about appropriate learning experiences and curriculum changes. Open-ended questions for data collection, transparency of the research process, and providing delimitations were used to enhance validity.

Additional Thoughts

I believe that identifying the insider/outsider perspective of the participants is essential to the epistemology of interpretivism and to understanding their perspectives during their learning experiences (Schwandt, 2007). I anticipated since the participants did not have type one diabetes, they may feel like “outsiders” at the start of their camp experience. I anticipated the participants would soon begin to feel like insiders as their time at camp progressed and intersubjectivity began to occur.

Authenticity and honesty from the participants was important during data collection to recognize their identity as an individual. Yes, the participants are dietetics students, but there is much more to their identities, experiences, and knowledge base. I believe it is important to share the participants’ voices to improve dietetics curricula and learning experiences for increased knowledge on type one diabetes, a topic that generally does not get much attention.

Summary

Through this qualitative longitudinal case study, I collected data using narrative and visual methods to identify how experiential learning at a residential diabetes camp impacted student knowledge, perceptions, confidence, and empathy on type one diabetes. Themes in the data were identified to appropriately answer the research questions. Throughout analysis, I identified emerging themes and made adjustments to the study as needed. Using interviews,

observations, Photovoice data collection, and focus groups as research methods, this study allowed for multiple methods to ensure the reliability and validity of the data collected.

CHAPTER FOUR

CAMP KNO-KOMA

History of Diabetes Camp

Since the first diabetes camp began in 1925 (American Diabetes Association, 2007), medical professionals have focused on the importance of camp and its role in better management of the disease. In the United States, there are approximately 215 camps for children with type one diabetes, with a total of 232 camps in North America (Diabetes Education and Camping Association, 2017). According to the Diabetes Education and Camping Association (2017), every year 20,000 children attend diabetes camp in North America.

For youth living with the disease, these camps provide a place for education, adventure, and fun. Camp creates a place where kids can meet and learn from other youths, making lifelong friends. In addition, parents, whose round the clock care becomes the center of the family's life, can rest easy while having confidence their child is receiving proper attention. Diabetes camps are staffed with medical professionals, trained counselors, staff, and health care professional students who are well equipped to take care of children with diabetes and to address any complications that may arise. Most staff members volunteer their time to make camp a safe, fun week for the campers. Many campers attend camp for the first time not knowing anyone else living with type one diabetes, making these kinds of experiential and relational connections a major benefit of the camp environment.

Camp Kno-Koma

History of camp

Camp Kno-Koma is West Virginia's only residential diabetes camp. For over 65 years, since its beginning in 1950, Camp Kno-Koma has been a place for adventure, education, and

friendship (Camp Kno-Koma, 2014; Hefner & Miller, 1951; Henson & Hefner, 1953; Lewis, n.d.). Camp Kno-Koma has been held in many locations across the state and serves children with diabetes from West Virginia and surrounding states. The first camp in West Virginia was held from August 27 to September 3, 1950 in Alum Creek. This camp served 34 campers between the ages of six and 14 years old and included 15 boys and 19 girls (Hefner & Miller, 1951; Henson & Hefner, 1953; Lewis, n.d.).

During the first year of camp, blood sugar was mainly tested through urine collection that was dipped with urine strips to check sugar levels (Henson & Hefner, 1953), a method of testing that is rarely used today. During the week of camp, each camper discussed their diabetes individually with one medical staff member, which led to individualized diabetes management for each camper. In addition, while at camp, it was recognized that children with diabetes could do everything that other children could do, with a little bit of extra work to manage blood sugar levels. Of the 17 children who attended camp on insulin the first year, 15 of them could give their own injections before leaving camp. In addition to benefits for the children, doctors also gained the opportunity to learn more about diabetes in children (Hefner & Miller, 1951). As diabetes camp continued in the early years, the efficiency and success of the camp increased (Henson & Hefner, 1953).

As camp continued, it became supported by the West Virginia Affiliate of the American Diabetes Association. In 1987, the American Diabetes Association came upon funding issues and decided to stop supporting Camp Kno-Koma. Because of the lack of funding, camp was forced to take a few years off. Over four years, several health care professionals in West Virginia worked together to re-start camp. In 1992, a new organization and board was formed and camp was re-born. This new organization is known as Camp Kno-Koma, the Diabetes Camp of West

Virginia, Inc. (Lewis, n.d.). While many organizations in West Virginia support camp, there are still many costs that need to be covered. A volunteer 20 member Board of Directors oversee the camp and ensure proper financial decisions for the organization. When camp began in 1950, it cost \$852.00 to operate the camp for 34 children (Lewis, n.d). Today, the operating cost is more than \$98,000 for about 130 campers (Miller, McCarthy, & Ficker, 2017).

Currently at camp

Over the last 69 years, camp has grown into an amazing organization that provides life-changing experiences for children living with diabetes. Today, Camp Kno-Koma serves between 130 and 140 campers each year, ages seven through 15. In 2019, camp accepted 157 campers, an increase of 34 campers from 2018. With increasing developments in diabetes technology, the care at diabetes camp only continues to improve. Staff members use technology to teach campers how to better manage their diabetes with medication, new insulin delivery methods, blood sugar testing, nutrition, and physical activity.

Currently, blood sugar levels are tested using glucose monitors. By using a small amount of blood from the tip of the finger, blood sugar levels can be measured in seconds; a much easier method than urine testing used during the first year of camp. In addition, many campers are using continuous glucose monitors where blood sugar levels are checked every five minutes.

Continuous glucose monitors are worn over a seven to fourteen day period and check glucose levels in the interstitial fluid, the fluid between cells in the body. In addition to continuously monitoring blood sugar levels, these monitors will also alert the camper when their blood sugar levels are rising or dropping. Insulin pumps that are programmed to continually dose insulin are commonly used by campers; although, many campers also use insulin pens and syringes to manually inject insulin. To help properly educate health care professional students on the

management of type one diabetes and the importance of diabetes technology, every year camp accepts nursing, dietetics, pharmacy, medical, and other various health care professional students to learn at camp.

Camp Kno-Koma is held the second week of July in the Monongahela National Forest at the Greenbrier Youth Camp (GYC) about 15 minutes from Lewisburg, West Virginia. The GYC is located in Anthony, West Virginia near the Greenbrier River. The GYC began holding 4-H camps in 1954 (Greenbrier Youth Camp, 2017). In 2018, Camp Kno-Koma began their tenth year holding camp at the GYC (K. Porter, personal communication, July 23, 2018). The location has four large cabins and a combined dining and activities hall. While the Greenbrier Youth Camp is not a permanent home for Camp Kno-Koma, it is a location that meets the current needs of camp.

Campers reside in cabins during their stay at camp. One lead medical staff member provides oversight for the cabin, while additional staff members serve to assist in the cabin. Lead medical staff members include nurses, pharmacists, and physicians. Additional medical staff members include medical students, nursing students, pharmacy students, dietetics students, camp counselors, and additional volunteers.



Figure 1. Greenbrier Youth Camp Entrance

This image represents the sign at the entrance to the Greenbrier Youth Camp road. *Camp Entrance* (2019), Mallory Mount.



Figure 2. Dining and Activities Hall

This image represents the building that houses the dining and activities space at the Greenbrier Youth Camp. *Dining and Activities Hall* (2019), Mallory Mount.



Figure 3. Inside Dining and Activities Hall

This image represents the dining space at the Greenbrier Youth Camp. *Inside Dining and Activities Hall* (2019), Mallory Mount.



Figure 4. Camp Office

This image represents the camp office at the Greenbrier Youth Camp. *Camp Office* (2019), Mallory Mount.



Figure 5. Jimmy Johnson (Left) and Sherwood (Right) Cabins

This image represents two of the cabins (Jimmy Johnson and Sherwood Cabins) at the Greenbrier Youth Camp. *Jimmy Johnson (Left) and Sherwood (Right) Cabin* (2019), Mallory Mount.



Figure 6. Frances Preston (Left) and Moore (Right) Cabins

This image represents two of the cabins (Frances Preston and Moore Cabins) at the Greenbrier Youth Camp. *Frances Preston (Left) and Moore (Right) Cabin* (2019), Mallory Mount.



Figure 7. Inside Moore Cabin

This image represents the inside of the Moore Cabin at the Greenbrier Youth Camp. *Inside Moore Cabin* (2019), Mallory Mount.



Figure 8. Inside Frances Preston Cabin.

This image represents the inside of the Frances Preston Cabin at the Greenbrier Youth Camp. *Inside Frances Preston Cabin* (2019), Mallory Mount.

Campers participate in a variety of activities during their time at camp. Each day begins for everyone with breakfast at 8am, followed by morning activities. Before breakfast all campers check their blood sugar and take their morning medication doses. Insulin doses are given before or after meals by the cabin medical staff. During meals, campers file into the dining hall to make their way through the tray line to select their meal. Medical staff members, including dietetics students, assist with carbohydrate counting during the meals. Following the meal, campers are provided with instructions for their morning activity and filter out of the dining hall for fun. All campers participate in all activities at camp; activities rotate on a schedule. Morning activities include bike riding, archery, cooking, nature walks, sports, and crafts. Following morning

activities, campers return to their cabins to check their blood sugar and take their afternoon medication doses, then make their way back to the dining hall for lunch. After lunch, afternoon activities consist of tubing down the Greenbrier River, swimming in the pool, adventures down the water slide, relaxation in front of a movie, or building creativity with crafts. Following afternoon activities, campers return to their cabins to check their blood sugar and take their evening medication doses. Their final meal for the day ends with dinner. Following dinner, evening activities are different each day of camp. Favorite evening activities include camp fires, dances, and additional activities geared toward the camp theme for the year. One day of the week campers have the opportunity to participate in an all-day activity, which may consist of biking along the Greenbrier River Trail, fishing at a local pond, and for older campers, visits to West Virginia landmarks including Green Bank or the Greenbrier Bunker. The nutrition team provides three snacks to campers each day to help maintain blood sugar levels during their active lifestyle at camp. The camp theme for 2018 was “Super Heroes” and for 2019 was “Under the Sea.”



Figure 9. Greenbrier River Access

This image represents the Greenbrier River access at the Greenbrier Youth Camp. *Greenbrier River* (2019), Mallory Mount.



Figure 10. Greenbrier River

This image represents the Greenbrier River near the Greenbrier Youth Camp. *Greenbrier River* (2019), Mallory Mount.



Figure 11. Greenbrier Youth Camp Pool

This image represents the pool at the Greenbrier Youth Camp. *Greenbrier Youth Camp Pool* (2019), Mallory Mount.

In addition to activities, all campers participate in educational sessions on nutrition, insulin dosing, and coping with emotions related to diabetes. Campers also learn from teachable moments during the week of camp.

Camp Training

Before camp begins, all medical staff, health care professional students, counselors, and volunteers participate in a required day of orientation. Topics include an introduction of all key medical staff members, code of conduct and HIPAA guideline review, treatment for medical emergencies, appropriate communication procedures at camp, camp safety, nutrition guidelines

and information, insulin injection and insulin pump overview and protocols, infirmatory processes, and daily camper log requirements. All dietetics students work under the guidance of the camp dietitian nutritionist during the week. A medical staff of nurses, pharmacists, physicians, and dietitian nutritionists are the key medical staff at camp and work as volunteers for the week.

The dietetics student's primary function at camp is to assist the dietitian nutritionist in reading labels for carbohydrate counting, checking ingredient lists for food allergies, confirming nutrition facts on menus and providing adjustments as necessary, planning snacks for the week, organizing and delivering snacks for the week, and teaching healthy eating and carbohydrate counting to the campers and staff, as well as other needs that may arise. In addition, students spend time with other multidisciplinary professionals to learn more about certain areas of diabetes management and care. Camp provides a unique learning opportunity that students cannot get in most experiential learning settings. Camp medical staff are always looking for teachable moments for health care professional students during the week. Approximately 100 staff members care for campers during their seven days at camp; this number varies each year. In 2018, 94 staff members attended camp (K. Porter, personal communication, April 2, 2019). In 2019, 120 staff members attended camp (K. Porter, personal communication, July 12, 2019). Camp provides lodging, meals, activities, and medical supplies to everyone who attends camp.

Summary

Camp Kno-Koma, the diabetes camp of West Virginia, is a place where campers, staff, and health care professional students work together to learn about and manage type one diabetes. Camp Kno-Koma is held at the Greenbrier Youth Camp in Anthony, West Virginia the second week of July. To learn more about Camp Kno-Koma and volunteering, visit the camp website: <https://campknokoma.com/>.

CHAPTER FIVE

YEAR ONE: FINDINGS AND RESULTS

Introduction

This study used a qualitative longitudinal case study approach to explore how experiential learning impacts dietetics student knowledge, perceptions, confidence, and empathy of type one diabetes. Photovoice, participatory action research, was used to engage students through data collection and dialogue to reflect on how different educational strategies can benefit dietetics students. Research participants focused on their experience of hands-on involvement with type one diabetes and what they learned at a residential diabetes camp that cannot be learned in a classroom. The aim of the study was to identify if experiential learning makes a difference in student knowledge, perceptions, confidence, and empathy with type one diabetes. This study adds to the small body of knowledge concerning experiential learning in dietetics students. Data were collected over two years at Camp Kno-Koma, the diabetes camp of West Virginia. Research participants attended both years of camp and participated in all data collection methods. In this chapter, I will discuss the results and findings of data collection in year one.

Data Collection

Data were gathered through one-on-one interviews, participatory action research through Photovoice, observations and field notes by the researcher at camp, and focus groups following the camp experiences. Interview, focus group, and observation guides were used during data collection (Appendix B, C, D, I & J). The following paragraphs provide details of how the data collection methods were completed.

Interviews

Conversations are a rich source of information that identify personal and social aspects of people's lives. An interview is an exchange of views, through conversation, between two people on a subject of common interest (Brinkmann, 2013). The research team discussed the benefits of conducting one-on-one interviews [compared to focus groups] before the camp experiences. To allow the research participants to provide open and honest information about their current level of knowledge and confidence in a confidential, trusting setting, it was decided to conduct interviews before the camp learning experience.

The interviews were semi-structured, but flexible. The interview questions were written to elicit exploratory and descriptive information from the interviewee. In addition, non-verbal communication and emotions were identified during the interviews to aid in careful interpretation. Face-to-face interviews were conducted to gain the richest source of knowledge possible.

The one-on-one interviews were audio recorded and transcribed. Interviews were completed one week before camp using the interview guide questions (Appendix B & I) and lasted approximately 30 minutes. During the interviews, research participants were guided on how to take photographs for the study. In addition, this information was reviewed the day the study began when cameras were dispersed to the participants. Participants were asked not to photograph the face of anyone attending Camp Kno-Koma. If a photograph was taken that contained faces, the photograph was deleted and not used in research. One picture taken and selected as a significant photo by one research participant included side profiles of some campers and staff and was blurred to protect individuals in the photo.

Observations, Photographs, and Journals

Field notes were typed and organized and an observation guide was used during data collection in the field (Appendix D). The observation guide consisted of seven questions to guide the researcher during data collection. These questions helped to identify the learning experience that was taking place, questions from the students during the learning experience, assistance needed from the camp staff during the learning experience, and resources that were used during the learning experience. Research participants spent time with multiple health care professionals during their time at camp in order to gain knowledge in all areas of diabetes care and management.

Photograph collection was different for each year of the camp experience. During the first year of data collection, each research participant was asked to use one disposable camera for the week to capture images of their learning experiences. Participants were instructed to take all photos on the camera roll; however, none of the students took all 23 photographs. During year two of data collection, digital cameras with SD cards were used. Research participants were asked to take as many photographs as they saw fit to collect appropriate data with the digital cameras. Theoretically, the number of pictures they could take on the digital cameras was unlimited, with a maximum of 500 photos that could be stored on the SD cards that were used. Both data collection methods, using disposable and digital cameras, were approved by the Camp Kno-Koma Board of Directors for the study.

In addition to obtaining photographs during both years of the study, participants were asked to record their thoughts about the photographs that were taken and their learning experiences in a journal. For year one of data collection, the journals were not collected by the research team, but were used by the participants to recall learning experiences during the focus

group. These journals remain property of the research participants. Journals were collected by the research team in year two to help increase the validity of photograph data collection, as participants were to journal their learning experiences, as well as their thoughts about the photographs they were collecting. For year one, participants identified they used the journals to keep a log of their daily activities and what they learned at camp. The journals helped students reflect on their photographs and guide our discussion during the focus groups. Students reported the journal was helpful to remember all that occurred during the week of camp.

Focus Groups

During each of the focus groups, participants identified the three most significant photographs that resonated with them and used the photos to describe their experiential learning at camp. Students provided a caption for each of their three photos. Participants used the SHOWeD method when analyzing and discussing their photographs (Appendix F) (Dahan et al., 2007; Hergenrather et al., 2009; Wang et al., 1998). The SHOWeD analysis includes:

1. What is Seen here?
2. What is really *Happening*?
3. How does this relate to *Our* lives?
4. Why are things this way?
5. How could this image *Educate* people?
6. What can I *Do* about it? (Dahan et al., 2007).

Probing on the photographs with participants was completed to identify how other students perceived the image. Images were not displayed in a formal manner, but were shared with all participants during the focus group discussion. Participants passed their photos around for everyone to view.

The goal of the focus groups was to understand and provide insight on how research participants perceived their experiences at camp. Focus group discussion guides were used to help guide conversation, while providing flexibility to explore new topics that arose. Year one's focus group did not have a set time allotment; it lasted about one hour and 55 minutes. The focus group was completed one week after camp and was guided by focus group questions and probing, as needed (Appendix C). During the focus group, all students mentioned their desire to return to camp in the following years.

Demographic Information

Participants were chosen through convenience sampling and were recruited through word of mouth and e-mail correspondence with dietetics programs in the state of West Virginia at the time of recruitment in 2018. At the time of data collection, two of the students were undergraduate students in dietetics, also called human nutrition and foods. One student attended Marshall University, and the other student attended West Virginia University. One student was currently completing her dietetic internship at West Virginia University and was working toward her 1,200 hours of supervised practice. The last student recently completed her dietetic internship. The different education levels of these students helped to identify their current knowledge and confidence levels in dietetics. All of them reported knowing enough about type one diabetes, but did not feel they were an expert. All four participants completed a one-on-one interview before camp, participated in the week-long residential camp experience, and participated in the focus group after camp for year one data collection. All students volunteered their time at camp.

Emerging Themes

During the pre-camp interviews students indicated an interest in learning about diabetes through the lifecycle, how home lives of campers affect their care, how insulin therapy is used to manage diabetes, and the individualization of the disease. All students noted that people living with type one diabetes can live a healthy life if the disease is properly managed. In addition, the students discussed an interest in having the registered dietitian nutritionist better known in health care and interdisciplinary work with other health care professionals. Three of the students had previous experience with type one diabetes with friends or family members; one student mentioned no previous experience with the disease. Other interests identified in the interviews included independence of campers in disease management, initiative of campers in disease management, and the effect of food insecurity on the management of type one diabetes. Food insecurity is a major issue in nutrition, affecting 40 million Americans in 2017, and is defined as “a lack of consistent access to enough food for an active, healthy life” (Feeding America, 2019).

After completion of the focus group and reviewing the transcription of our discussion, the photographs, participant observation notes from camp, and the analysis of their photographs with the SHOWeD method, I was able to identify five emerging themes from students’ experiences at camp for year one. In addition, I found many important topics to help explain each theme. The five themes for year one are represented in Table 1:

Table 1. Emergent Themes Identified by Researcher – Year One

This table represents the emerging themes identified by the researcher through interpretation and analysis of year one data.

| Emergent Themes |
|---|
| The difference in diabetes (and management) throughout the lifecycle |
| The complex and overwhelming feelings associated with type one diabetes |
| Dietetics students and their role in the interdisciplinary team—we fit! |
| More education needed on type one diabetes in dietetics curricula |
| The influence of this experience on the participant’s future plans in dietetics |

Participants ranked the photographs taken at camp to pick the top three significant photos that showed their learning experiences. In addition, each student labeled their top three photographs with a caption. One student also provided additional captions for her photos not in her top three. The pictures and titles for all photographs taken in year one are available for review in Appendix H. Commonalities and individualities were noted during data analysis. No pictures in year one data collection contained faces, so no images needed to be deleted. All but one student took similar photographs to identify their learning experiences. These photographs are shown in the following figures. Each photograph was titled by the student who took the picture.



Figure 12. “Me with OmniPod”- Participant One

This image represents participant one’s number one image in year one. This is an image of the participant wearing an insulin pump, the OmniPod, during her week at camp. *Me with OmniPod* (2018), Participant One.



Figure 13. “Pricking Finger/BG Check”- Participant One

This image represents participant one’s number two image in year one. This is an image of a student checking a blood sugar. *Pricking Finger/BG Check* (2018), Participant One.



Figure 14. “Pump Site Change”- Participant One

This image represents participant one’s number three image in year one. This is an image of a camper after changing her insulin pump site. *Pump Site Change* (2018), Participant One.

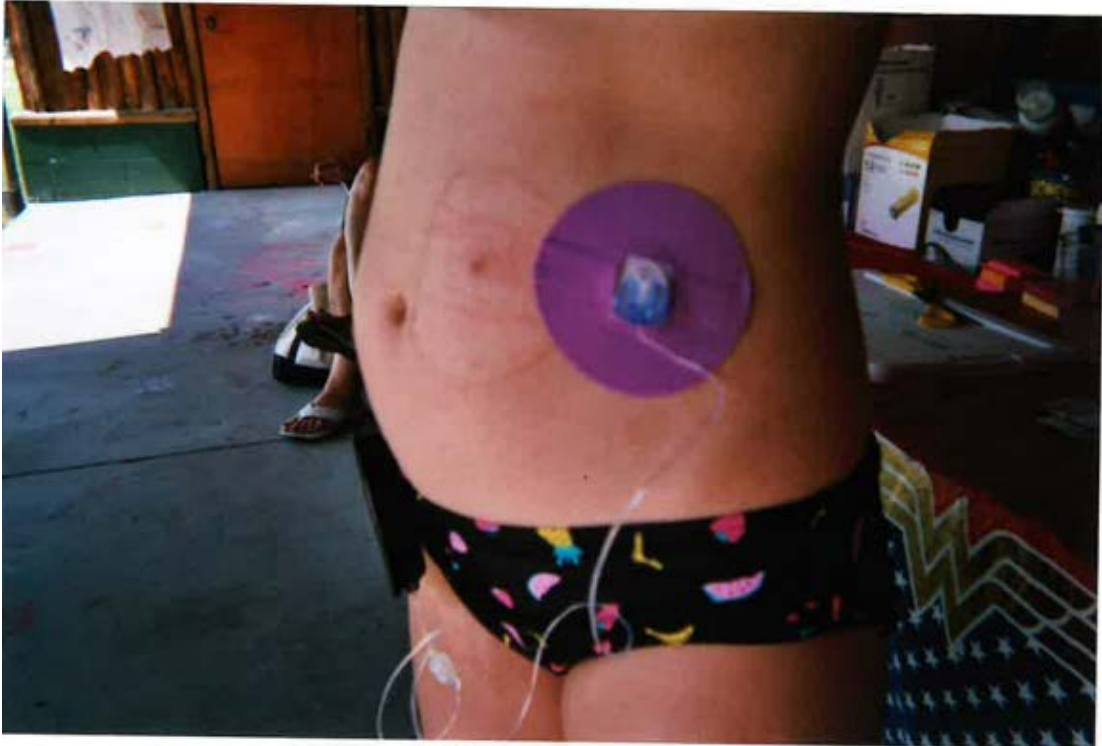


Figure 15. “Site Change”- Participant Two

This image represents participant two’s number one image in year one. This is an image of a camper after changing her insulin pump site. *Site Change* (2018), Participant Two.



Figure 16 “Snacks”- Participant Two

This image represents participant two’s number two image in year one. This is an image of snacks needed for the week of camp. *Snacks* (2018), Participant Two.



Figure 17. “Blood Sugars”- Participant Two

This image represents participant two’s number three image in year one. This is an image of a table at the cabins where campers check their blood sugars. *Blood Sugars* (2018), Participant Two.



Figure 18. “Camp Snacks”- Participant Three

This image represents participant three’s number one image in year one. This is an image of snacks needed for the week of camp. This picture is dark and hard to see; however, participant three noted this picture to be one of her most significant learning experiences at camp and wanted to use it. *Camp Snacks* (2018), Participant Three.



Figure 19. “Infirmary”- Participant Three

This image represents participant three’s number two image in year one. This is an image of insulin needed for the week of camp. The title of the picture, “Infirmary”, is where the medical equipment and medication for camp is stored. This photograph is also dark; however, participant three noted the importance of how much insulin is needed to care for the campers for one week. *Infirmary* (2018), Participant Three.



Figure 20. “Blood Sugar Checks”- Participant Three

This image represents participant three’s number three image in year one. This is an image of a table at the cabins where campers check their blood sugars. *Blood Sugar Checks* (2018), Participant Three.

The individuality of one student (participant 4), noted she identified a different perspective of capturing how kids with type one diabetes live day-to-day with the disease and how they experience camp as a camper, captured much different photographs than the other three students. Some of the students’ photographs were underexposed and could not be developed. Participant four chose a picture to represent her camp learning experience that was not developed, but was available to review in the negatives. This photo was titled “Memories” as it captured campers watching a slideshow recap of their week on the last night at camp. Overall, there were more commonalities than individualities in the data for year one.



Figure 21. “Bunking”- Participant Four

This image represents participant four’s number one image in year one. This is an image of campers’ towels and water shoes after an afternoon at the river. *Bunking* (2018), Participant Four.



Figure 22. “Playing Games”- Participant Four

This image represents participant four’s number two image in year one. This is an image of campers in the field playing games during camp. *Playing Games* (2018), Participant Four.

Overall, students captured experiences of checking and observing blood sugars, the amount of snacks and insulin supplies needed for camp, insulin pump site changes, wearing an insulin pump, and camp life. Students noted they knew what they wanted to take pictures of to capture their experience and indicated that a picture helped bring back a more detailed memory than journaling about their experience alone. One student acknowledged she knew people with diabetes check their blood sugars and take insulin, but she was not sure how all of it worked together, like a site change for a pump is required every three days. She noted her pictures really helped her to understand what people living with type one diabetes must do to manage the disease and the frequency of care. Students agreed they felt they should take a picture each time they learned something. One student recognized, “Everything I took a picture of was something I

interacted with every day.” Students discussed many different aspects of type one diabetes medical care from their experience, noting they were less familiar with the topic before their experience.

RESEARCH QUESTIONS/QUALITATIVE DATA ANALYSIS

Research Question One

How do dietetics students identify their role in type one diabetes management?

Overview

Through data collection with the pre-camp interviews, students reported they identify their roles as an educator, meal planner, supporter, and advocate in the management of type one diabetes. Before their camp experience, the students understood the importance of the interprofessional team, although most of them had little to no experience working within the team. One student reported feeling comfortable working in an interdisciplinary team, as she had more involvement with experiential learning in dietetics at the time of data collection.

Data collection identified that students view themselves as an important part of the interprofessional team at diabetes camp. In addition, students agree that more education on type one diabetes is needed in their dietetics courses in both undergraduate and graduate programs to obtain the amount of knowledge needed to care for the disease. During the students’ experiences at camp, they discovered other health care students, namely nursing and pharmacy students, did not completely understand the role of dietetics students at diabetes camp. In addition, dietetics students noted it was not clear if these students understood the role of the registered dietitian nutritionist in overall diabetes care and management. Through the analysis of photographs taken at camp using the SHOWeD method, students realized it is important to educate the public, those living with type one diabetes, and their support team on proper management for the disease.

Topics of education, identified by the students, should include disease pathophysiology, proper management and treatment options, the importance of awareness regarding type one diabetes, clarifying myths about type one diabetes, and the importance of a safe living environment for everyone living with type one diabetes. In addition, students realized they are an important part of the support system for those living with type one diabetes. Students noted the importance of sharing their camp experiences and encouraging other health care professionals and students to attend camp.

Interprofessional Team

All four students enjoyed their time learning from a wide variety of health professionals at camp; one noted, “I learned at least three new things a day. I always felt like I was using something that I learned.” Dietetics students spent the majority of their time learning from the camp dietitian nutritionist, along with nurses and pharmacists on staff. In addition, the students also worked with a variety of nursing and pharmacy students. Dietetics students reported they enjoyed learning about calculating insulin doses for meals and high blood sugar corrections, something they do not typically get to see in their education. One student noted,

(Camp staff members) were showing me how to do all the insulin calculations and I was hovering over their shoulder and was asking them something at every step... I felt like everybody that I asked a question to was very willing to teach and take the time [to explain], which I appreciated.

Students also enjoyed learning how individualized care is identified and managed with each camper. Through the students’ interaction with the medical staff, conversations and camp learning experiences led to many different discussions. Through conversation and questions, one discussion began regarding glucagon and its role in treating blood sugars and how seizures from low blood sugars are treated. Students found this information interesting to them as it is not

something they think about as dietetics students and future dietitian nutritionists. One student noted,

I felt I could listen to (camp nurse) talk for hours. Every time she said anything I just wanted to listen. When she was talking about the glucagon shots and telling us about seizures, that was really interesting to me because it's something you don't really think about.

All students reported they learned how important nursing and medical care is for those living with type one diabetes. Students particularly enjoyed getting to learn the perspectives of nurses at camp and spent time observing how they care for the disease. These experiences identified the importance of interprofessional learning for these students. One student noted,

They [camp medical staff] understand that it [nutrition] is a huge component to the treatment of the disease, but they let you do what you know. And they understand you're an important part of the team. You could definitely feel that within the camp environment.

While the students identified different perceptions of how they fit into the interprofessional team, they realized health care professional students need more education on the role of the registered dietitian nutritionist. Collectively, the dietetics students recognized that nursing and pharmacy students thought the dietitian nutritionist's role at camp was to "pack snacks and fill lows boxes." Lows boxes are cardboard boxes filled with snack foods that are strategically placed around the camp grounds to use for the treatment of low blood sugars. One student noted, "Nursing and pharmacy students didn't really know...like nutrition people, they just pack snacks, but then the actual nurses and pharmacists actually knew there was more that took place [in what we do at camp]." Dietetics students felt they had a hard time fitting into conversations as part of the medical staff at camp; this was frustrating for them. Dietetics students recognized they have an important role in the medical team regarding education and support for type one diabetes; however, they felt undermined by the other health care

professional students at camp. Dietetics students mentioned they were surprised when talking with the other health care professional students, as they did not have a basic understanding of nutrition and type one diabetes. One student recognized,

If you're not a nutrition major you really aren't required to take any of this stuff (referring to nutrition courses) and that to me is a huge flaw in healthcare. No one really requires anyone to know this kind of stuff. It makes it frustrating for us, because we know exactly what needs to be done.

Students identified themselves as the nutrition professionals, but were surprised other health care professional students lack knowledge on basic nutrition. Students noted the importance of basic nutrition education for all health care professional programs and professionals. Dietetics students understand that the camp staff admires them, although the staff are sometimes unsure what dietitian nutritionists do [as a professional]. One camp nurse stated, "We are just curious, like we don't know what you do all of the time, but we admire that you're here," to one of the dietetics students in a conversation. The students realized they are an important part of the diabetes care team, just as important as anyone else, and the importance of self-promotion and education on the role of the registered dietitian nutritionist.

Overall, the students felt camp was a supportive learning environment where they could ask questions and gain detailed information. In addition, the students noted it was fun to help campers learn nutrition and carb counting as the staff called on them for education during meal times. One student, who is further in her educational career in dietetics, felt she was an important part of the treatment team at camp and acknowledged that camp had a similar learning environment as a teaching hospital, noting "it was a very supportive environment."

Education

At camp, the students realized they play an important role in the interdisciplinary team as an educator. The importance of their role was identified on the second day of camp when parents

were dropping their kids off and the cabin medical staff would perform the campers “intake.” During the intake, parents were asked about care at home and how the camper cares for their diabetes in regards to taking injections, using an insulin pump, checking blood sugars, the camper’s levels of self-care, food allergies, and any additional pertinent information needed before assuming care of the child. Students reported many parents were not able to recall insulin doses and relied on insulin pumps to store the information, which could be fatal if the pump stops working. One student noted,

It’s scary to talk about how it [the pump] can fail. (Camp staff member) was talking about how people don’t know what to do if the pump fails and they end up in the hospital. Even though you have this easier route, you still can’t forget everything else.

This realization was shocking to the students; they mentioned many times the camper would know more information than their parents [about diabetes care]. One student recognized,

“Parents care, but they do not have the education to help their child in the way they should.”

Another student acknowledged that we, as nutrition professionals, cannot expect someone who has never been exposed to anything medical-related to know about nutrition, and that basic nutrition education should be a requirement for everyone (not just health care professionals and people living with chronic diseases).

In addition, all students had the opportunity to work with two type one parents during the week. These parents are volunteers that come to camp every year. I was surprised to see these parents have a huge influence on the students’ learning experience at camp. The students were able to see how parents cope with the disease, noting it is sad to see some parent’s lack of care for the disease compared to parents who do all they can to care for their child. The students had a somber tone discussing this during the focus group. One student stated,

It’s sad to see that some parents don’t know their child’s insulin-to-carbohydrate ratio and then there are other parents that literally do everything in their power to make sure

their child's okay. Learning how parents live with it too is heartbreaking. I know they're trying to do the best they can, but their child's body is fighting itself and they just can't help it.

Students recognized that all parents probably do care, but some have a lack of proper knowledge on treatment and management of the disease. In addition, students spoke about the lack of education and how it could possibly seclude a child who is told they cannot have or do something. For example, students mentioned some campers asking for high carbohydrate foods and drinks during their week at camp that were not available. One student noted one camper asked to have Mountain Dew and was offered water. When told there was no Mountain Dew available, the student realized the camper thought she was being punished, when she was asking for a drink she should not be drinking on a daily basis. The students were able to see how important parental education is in type one management.

In addition, students identified a lack of education on type one diabetes in all settings (patients, families, health care providers, community programs) and noted there is big stigma and stereotype with diabetes. Students realized more education for type one diabetes is needed noting, "it needs to be talked about." Students recognized there is more awareness and education regarding type two diabetes in our society, leading people to think diabetes is all the same. Type one diabetes is an autoimmune disorder that occurs when the insulin-producing cells of the pancreas are mistakenly destroyed by the body's immune system. After destruction, the cells are unable to produce enough insulin to maintain proper blood sugar levels. All people living with type one diabetes must take insulin via vial and syringe, insulin pen, or insulin pump for survival (JDRF, 2018). In type two diabetes, problems with insulin resistance (the body's cells do not use insulin properly) and insulin secretion (the pancreas does not produce enough insulin to control blood sugar levels) lead to issues with blood sugar management (American Diabetes

Association, 2019). Some research regarding type two diabetes can be relevant for type one diabetes; however, type one and type two diabetes are categorized as two different diseases.

Students mentioned we [as health care professionals] cannot blame someone who has not had the opportunity to gain proper knowledge of type one diabetes. Students specifically noted examples of health care providers giving wrong information to campers. For example, one student shared a conversation with a camper who had been told incorrect information by her physician to manage her type one diabetes. This student was shocked the camper knew more about her disease than her medical team, noting “It’s sad. You would normally believe your doctor, but you could get wrong information.”

In addition to education for the public and those affected by type one diabetes, students discussed the importance of appropriate type one education in regard to management and treatment for dietetics students. One student noted,

I feel like it [type one diabetes] is glazed over so much, especially in the nutrition field. I feel like I could talk about type two diabetes all day and know so much about that, but they [educators] don’t really take the time to break down type one the way they should.

She recognized the importance of education on both types of diabetes, but determined more detailed information on type one is needed in dietetics curricula. The other three students agreed. Most students shared they did not know as much about type one as they thought and would not have without this experience. One student stated,

I didn’t know anything about type one diabetes. I thought I knew what it was and what it does, but I has no, not even the slightest idea of what it meant to have type one diabetes. This week was so eye opening for me.

Another student recognized, “I thought I had beginner’s knowledge, like I know what I need to do, but then I got there [to camp] and I was like no, no, no—you thought wrong.” In addition, the

participants feel all dietetics students should have this opportunity [experiential learning] to “really learn” about type one diabetes.

These dietetics students realized they, as future dietitian nutritionists, play an important role in carbohydrate counting, treatment of low blood sugars, and food label reading. All students were able to teach nutrition education sessions to the campers. During this time, the students were able to identify that the campers are very bright and know more than they should about nutrition (and medicine) at such a young age. Overall, students realized education is the top priority for the treatment and care of type one diabetes. In addition, students realized the importance of bringing awareness to the disease and building community. This experience relates to Freire’s work titled, *The Pedagogy of the Oppressed* (1970). Freire’s theory focuses on empowerment education and “promotes participation of people, organizations, and communities in gaining control over their lives in the community and larger society” (Wallerstein & Bernstein, 1988, p. 380). Freire emphasized empowerment to oppressed populations through education, recognition, and liberation to free themselves from their struggles. Oppressed populations many times undervalue themselves and are driven by their oppressors. Through liberation, oppressed populations, which includes people living with type ones diabetes, can use their voice to create change in their environment.

Support

In addition to providing education for those affected by type one diabetes, students also acknowledged they provide support. The students’ support was evident during their experiences I observed with the campers on a daily basis. One student mentioned after she talked with a camper about better meal choices, the camper was excited to show her their food tray and tell her they tried the food, even if they did not like it. In addition, the students were not only able to

provide support for the campers, but also to the counselors and staff with type one diabetes. One student noted,

They [the counselors] are intelligent and well-rounded. They're not offended to answer questions that I don't know the answer to, they're excited I am asking and they want to answer so I can understand and get better. It was a very good learning environment and I really enjoyed that.

Through developing relationships, these students were able to provide support in many different ways at camp through direct support to medical staff members during meal times and in the cabins, to campers during meal times and activities, and to counselors during activities and cabin time with campers. The camp experience helped to show students how important a supportive health care team (and family/friend support) is for those living with type one diabetes. In addition, the students acknowledged that camp was a supportive environment for them to learn. All students shared how they developed supportive relationships with each other, which was not expected by me. The culminating camp experiences confirmed the important roles these students have as nutrition professionals in diabetes management.

Research Question Two

How confident are dietetics students in caring for patients with type one diabetes?

Overview

Data collection and analysis were able to answer the second research question. Before camp, during the individual interviews with each student, they reported their confidence level of caring for patients with type one diabetes as intermediate; a five on a one-to-ten scale. This confidence level was similar across all students. After their camp experience in year one, all students realized they did not know as much about type one diabetes as they thought. All students stated having more confidence after their camp experience, but all noted they still have a lot to learn. In addition, all students reported they are interested in becoming an expert in

diabetes after the learning experience; however, they recognized the disease is so individualized that they are not sure they can become an expert. One student noted,

I don't think I'll ever be an expert because it takes time. You'll learn more over time. And I personally don't have it [type one diabetes]. Each person is different so individuality kicks in. Individuality, it takes time. But if I ever want to be (camp nurse), I have a long way to go, but she is someone to look up to because she doesn't have it, but she knows so much about it.

Similar to the Vogt et al. (2011) study, the students were able to personally experience living with diabetes by checking blood sugars, wearing insulin pumps, and counting carbohydrates, which also increased their confidence. One student noted, "After I took mine [blood sugar] and just like seeing the difference was really interesting. It was a good learning experience for me." All students mentioned they are interested in specializing in diabetes care as a certified diabetes educator or in the endocrinology field in the future.

Perceptions of Confidence

During my first conversations with each of these students, I asked them how confident they feel about caring for patients with type one diabetes. All students reported they felt they were in the intermediate stages of confidence, some noting a five on a 10-point scale. Before camp, one student had no experience with type one diabetes, while the others had some personal and family experience with the disease. One of the students with family experience shared that she felt she knew what to do to care for type one diabetes; however, she reported realizing she really did not know anything about proper management of the disease [after the camp experience]. She recognized, "I thought I had beginner's knowledge, like I know what I need to do, but then I got there [to camp] and I was like no, no, no—you thought wrong." None of the students mentioned feeling very confident in caring for the disease during the interviews, so I was surprised to see them place themselves at an intermediate level of confidence at that time.

After the camp experience and during our focus group discussion it was noted by three of the students they “didn’t know anything about type one diabetes” and they had no idea what it meant to live with the disease. In addition, they feel there is so much more to learn to increase their confidence in managing the disease. For more details on the students’ increase in confidence during their experiences, see chapter six for year two data.

Future Plans

All four students recognized interest in becoming a certified diabetes educator (CDE) and learning more about diabetes and endocrinology. One student who attended camp to challenge herself, reported she was previously interested in only one area of dietetics, but is now excited to work towards becoming a CDE after obtaining her RDN credential. She stated,

When I first came into this I was intrigued. I was really interested and I was curious to challenge myself, because I feel like this was very out of my comfort zone. I’ve always wanted to be a sports dietitian, so I never ever thought about anything else—it was always what I wanted to do. Going to camp was just like all of a sudden—I felt that same passion that I feel for the field in general and that I felt when I started getting involved in sports. And for me it was like wow, I had no idea that this was going to develop so much for me and I’m really glad that it did. It just kind of gave me something else to work towards and something else to learn about. Now it’s just like I can keep challenging myself. And I just, I feel like I’m going to be a better dietitian for it and being able to acknowledge that I didn’t know as much as I wanted to know. Just taking that step and then finding something so interesting and so valuable when I really had no idea that it would turn into that.

This change was not expected by the researcher. In addition, one student reported,

I feel 100% comfortable in getting started within the scope of an RDN. I feel like I have all of the tools to care for patients with type one diabetes. I would love to go into being a CDE right away.

Research Question Three

How can immersive experiential learning at a residential diabetes camp improve knowledge in the management of type one diabetes?

Overview

All four dietetics students reported camp was a beneficial learning experience to increase their knowledge on type one diabetes. One student recognized, “I’ve never learned so much in my life.” Another student noted, “When I’m moving, I’m learning. I have to be doing things and I absorb so much better. It made it so much more real.” Another shared, “It was basically a crash course [in type one diabetes].” Students acknowledged learning the language of diabetes to be very helpful. The first few days at camp students mentioned they were adjusting to a new routine and reported the days felt like they lasted forever. One student noted, “It felt like the second half of the week I blinked and it was over. Whereas, in the beginning of the week I was like this is only day two—it feels like day four.” About mid-week, students were adjusting to the camp environment and reported the days went by much quicker. One student shared she was learning so much that her head was spinning (in a good way).

Students reported as they learned information, they were able to apply it, and new information helped to build on their previous learning experiences. During the interviews before camp, three of the students mentioned they had never been to a residential camp and stated it would be an adjustment for them. All four students shared their biggest challenge of the experience would be adjusting to the camp (and diabetes) environment, which they were able to overcome. One student recognized camp was, “An adjustment that I ended up loving. I felt like it was a good challenge and I trust myself a little bit more now.” In addition, students discussed how this experience helped them to decide their direction in dietetics, a few of them acknowledging pediatrics is not for them and one stating this experience reinforced her love of caring for kids. One student realized, “It’s like before oh—I want to do pediatrics. I genuinely thought I would enjoy it. I went into a situation where I’m with children all week and I was like

whoa, whoa, whoa—pediatrics is not for me.” All students recognized their learning will never stop when it comes to diabetes and its advancements. Students recognized they did not realize how much is involved in diabetes care and how much they feel they still need to learn. In addition, all students shared how the experience increased their comfort for moving forward in their continued education and future careers.

Learned by Experience

All four dietetics students acknowledged they could not have obtained this detailed learning experience in a classroom. Camp provided an experience to put knowledge to use that they learned in the classroom, but also provided education on many different aspects of diabetes care that could not be learned in a classroom. For example, students noted the most valuable concepts they learned included recognizing how independent campers were with their diabetes care, trusting the campers to recognize how they feel and when they need to check their blood sugar, learning how food insecurity can deliver challenges to kids with type one, the difference in home lives of campers and how that affects their care, and how treatment is constantly evolving to help improve the campers’ quality of life. One student stated,

I think something that I really let open my eyes was seeing that one of my campers in my cabin was in the hospital for diabetic ketoacidosis (DKA) three days before camp started. Watching her mom check her in—she had a bathing suit on underneath her clothes, had her towel in her hand ready just to go just basically dump her off there [at camp] and then go have fun by herself.

This student showed sadness when discussing this situation during the focus group.

One student recognized she resonated the most with what it means to have a low blood sugar compared to a high blood sugar and how the treatment for each differs. The camp experience led another student to discover, “The water component was something I wasn’t expecting, like having everybody drink a bunch of water when they were high. I was like oh, I

hadn't thought about that. I mean, it makes sense." Another student acknowledged her most valuable learning experience was how insulin doses are calculated to correct high blood sugars and insulin doses with meals. All students recognized they now understand what correction factors and insulin-to-carbohydrate ratios are and how they are used in the management of the disease. One student discussed that her most valuable experience was to learn about insulin pump site changes. She shared, "Whenever someone was changing their pump site, I was like up close and personal—that fascinated me." The last student mentioned her most valuable learning experience was how the campers could feel changes in their blood sugars and know when they needed to check; she recognized it was mind blowing how fast blood sugars can change and the symptoms campers get with the changes. She noted, "They came up to you knowing exactly when something changed." Students realized they have a better understanding of type one diabetes and can better use their knowledge of diabetes after their camp experience.

Students agreed in many of their learning experiences [previous to camp], the stigma and stereotype of diabetes needs to be changed through proper education and information delivery. In addition, all students recognized they would like to have more education on type one diabetes in their dietetics curricula. Students shared obtaining very basic knowledge of type one diabetes in their respective programs, and nothing to the extent that camp can provide. Students reported understanding type two diabetes from their coursework, but feel they learn very little about type one diabetes in the classroom. This understanding was confirmed after their camp experience. During the focus group one student reported, "I've never learned so much in my life." Another student noted she never really thought about the difference in education between type one and type two diabetes, and by understanding this concept she is able to be more appreciative and

empathetic towards both populations. In addition, an undergraduate student reported she is excited to learn more about diabetes in her coursework. She noted,

Knowing when I do sit in class and learn the lecture I'll know I can relate to that information now. When they [educators] start talking about things, I'll know because I basically had the crash course of that actual thing [referring to type one diabetes].

During camp, students were able to experience how to live with, work with, and manage type one diabetes. In addition, they were able to observe and understand the daily lives of kids, adolescents, and adults living with diabetes. Students discovered kids with type one are just like any other kid; they just have a few extra steps in their daily routines. One student noted, "They just have an extra step in their daily routine as far as checking and doing a little bit more math." This camp experience not only increased student knowledge, but also changed their perceptions of the disease.

Specific learning experiences at camp to increase students' knowledge included carbohydrate counting, label reading, providing appropriate nutrients to treat and maintain low blood sugar levels, how to lower high blood sugar levels through drinking water and taking insulin, checking their own blood sugars and staff member's blood sugars, and observing insulin pump changes. Students reported the most beneficial information they learned was the medical aspect of type one, which they do not routinely learn in their dietetics courses. One student shared, "I definitely think the majority of the focus of camp was on the medical portion of treatment." One student had the opportunity to wear an insulin pump for three days at camp, which she noted as her favorite and best learning experience, sharing, "I enjoy wearing the Omni pod. I think I became best friends with that little pod." Students realized through their photographs they had no idea how many resources it took to run camp, specifically the amount of food and insulin for the week.

As the researcher, I expected the students did not know as much as they thought going into the experience. As confirmed in the interviews prior to camp, students reported they learn better in a hands-on environment. One student noted she prefers to learn from a lecture and then apply her knowledge in an experiential environment, an important concept noted by Palermo et al. (2009) in previous research. This student recognized,

Doing the lecture portion first and then being able to apply it in an actual setting [is my preferred style of learning]. So, the internship type setting was really great for that because we had homework ahead of time and I felt like it prepared me to actually be in the setting and use that knowledge. So a little bit of both.

All students shared in the focus group they learned a lot at camp through hands-on learning and resonated with the active learning strategies. Camp also provided learning opportunities for real life situations that arise when living with type one diabetes they would not otherwise know. One student stated, “I learned at least three new things everyday.” Another student noted, “I read about all that stuff, but I didn’t know the process until I saw it with my own eyes.” All four of the students shared they want to return to camp next year.

Diabetes in the Lifecycle

During the interviews prior to camp, all four students noted they were interested in observing and identifying how different age groups care for their diabetes. During the interviews, the majority of the students mentioned they felt they would learn more about proper care and management [of type one diabetes] from the kids in the older age groups. Much to their surprise, students reported learning more from the youngest age groups at camp, noting the older kids were much like typical teenagers and the younger kids were more willing to try new things and share their knowledge. One student noted,

I obviously expected the oldest age group to be the leaders in it [diabetes care and management]. They have a better grasp on health and so they’re going to be more eager

to be in good health, but it was actually the exact opposite. The seven year olds, eight year olds, and nine year olds had such a firm grasp on it.

In addition, two of the students reported they learned about insulin pump changes from a nine year old camper who walked them through it step-by-step and answered questions, acknowledging, “She told us exactly what to do.” This situation was not expected for them as the students felt the older kids would have a better grasp on the disease and proper management; however, one student recognized she expected the older kids to act like “typical teenagers” and not have as much care for the disease. She noted, “They’re just like regular teenagers. I think that the desire to fit in with that age group becomes more powerful than to try new things.” This situation was expected for her.

The students recognized all of the campers were very independent and well-adjusted to their care. Three of the students and I observed a camper, probably seven or eight years old, who was refusing to take an insulin injection after her meal. All of the other campers had gone out for activities and she and her cabin medical staff were perched on some chairs in the dining hall having a discussion about taking her insulin in her stomach, which the little girl was upset about. One of the students reported she did not understand why the medical team did not hold her down and give the injection. This student eventually realized the importance of the child in the situation and the injection ultimately had to be her decision. This perception came to the student after checking her own blood sugar for the first time and the anxiety that came with the experience. She realized support in diabetes management is essential to proper care and how a traumatic situation can be used to educate and encourage new behaviors. This student noted,

I saw this little girl in the dining hall. She was afraid of injecting into her stomach and she was crying. I was just like why—why wouldn’t they just shove that in her? Why does this have to be her decision? She needs it, why don’t they—but then we went to check our blood sugars and my hands were shaking when I was like holding it [the lancet to prick the finger], I had to just click it...and then it hit me. This is hard to do and being 21

[years old] and I'm shaking at a little needle pin prick in my finger and I'm talking about why doesn't this girl just shove a needle into her stomach? I almost cried pricking my finger. It should be her [the campers] choice and you can't just shove that needle in. It would traumatize her if you did that. It has to be her choice, she has to want to do that.

Another student recognized, "I know their anxiety has to build up. I relate with them on the whole anxiety standpoint. I was like wow, you're a trooper pricking your finger six, seven, eight times a day. So I did learn empathy and patience." This situation was a big learning experience for this student who has learned to encourage patience and comfort in diabetes care.

In addition to medical care, students noted how independent the campers with food allergies and intolerances were about reading food labels, specifically noting a boy who is seven years old reading allergies for food dye. One student shared, "I didn't know how to fully read a label until my first semester of college when they taught me in my nutrition class." This student found it upsetting that campers have to know so much at such a young age; she noted she was motivated to see these traits in young kids. Overall, students enjoyed learning from different age groups at camp.

Technology

All students recognized that technology in diabetes care is ever changing. Students noted the difference between insulin pumps, including a conversation they had with counselors at camp about the newest pump, called the artificial pancreas. This pump continually checks blood sugars with a continuous glucose monitor and doses insulin as needed. Students were not aware of the different types of technology for insulin delivery and managing blood sugars. Students shared camp provided them with a variety of experiences to see many different pump changes and observe how different continuous glucose monitors work. Through camp experiences, students were able to recognize the amount of training needed to use these products, which, to them, seems never-ending. It was surprising to me that students learned a lot of information regarding

insulin pumps from the camp counselors. The students recognized they developed strong relationships with the counselors, and a few of the students continue to keep in contact with some of the counselors on social media. One student noted,

I interacted with all of the counselors in my cabin. I can't even believe how close you can get with people in just a matter of a week and you have such a new appreciation for it [type one diabetes].

In addition, students realized people living with type one diabetes should not rely on the insulin pump to do everything and store all of the information they need to know for care. One student noted, "So many of the kids rely on their pump. What happens if your pump fails one day? You have to be able to just know how to do it [calculate insulin doses without the pump]." Students stressed the importance for both parents and the child to know and understand how to use insulin injections if the pump fails. In addition, pump information (insulin doses, pump settings, and blood sugar goals) should be written down and stored in a safe location if needed. Luckily, we had no pumps fail during the week of camp.

One student noted the evolving treatment and resources to manage type one diabetes was the most important concept she learned at camp. She shared, "Technology is something that's constantly evolving, changing, and becoming better and the quality of life [for people with type one diabetes] will just keep improving as the technology keeps improving." Students were able to observe pump changes, insulin delivery by pumps, and continuous glucose monitors. There was a variety of older and newer technology for students to explore at camp. In addition, students were able to attend one of the educational sessions for campers on insulin pumps and technology and found it helpful to understand the medical care they do not typically learn in their dietetics education.

Individualized Treatment

Students learned patience throughout the week in many different ways; one of the major experiences with patience was checking their own blood sugar and observing blood sugar checks on campers. In addition, one student mentioned how important patience is with kids and working with them to be comfortable with their care. Another student noted she found patience especially importance in working with the older campers and their personalities. One student noted, “You can very clearly see with them [the campers] that food [and diabetes care] definitely has an effect on what happens with their mood and personality and energy levels.” Another student was able to observe an insulin pump site change that was a little uncomfortable for a camper. This camper has a specific routine to changing her pump site at home. Her routine was a bit disrupted at camp and the pump was inserted too fast, which caused her to be upset. The student noted, “She [the camper] ended up crying because it [the pump] got pushed in too quickly. At home they go through all the steps to get it in and she’s fine, but she can’t be surprised about it.” With a little love and care, the camper was okay and ready to get back to her friends in the cabin. The students realized that trust is a very important component to care, and individualization of the disease plays a more important role than they realized.

Each student was able to observe many campers throughout the week while staying in cabins and attending activities with the campers. During this time, each student was able to identify how this disease is individual for each person. Students noted there was one statement that summed up the week said by one of the volunteers at camp – “what you do today, won’t work tomorrow.” The students recognized this concept resonated with them during their time at camp and they were able to see how many different campers manage a very individualized disease.

Research Question Four

How can immersive experiential learning at a residential diabetes camp improve confidence in the management of type one diabetes?

Overview

Students were surprised during our focus group discussion about how their confidence changed with this camp experience. All students reported the camp experience was eye opening and provided them with practical experience in the management of type one diabetes. Students noted it was beneficial to see the management of diabetes in the camp setting versus what they would normally see in the hospital or clinic setting. In addition, their confidence increased as they developed their sense of community with the medical staff, volunteers, and the campers. Students recognized the immersion into the camp experience was beneficial and key to learning. Surprising to them, the students realized they really did not know anything about type one diabetes before this experience. As noted previously, their confidence increased as their knowledge about the disease increased. In addition, students shared their anxiety and anticipation to check their own blood sugar was so small compared to what someone living with type one diabetes goes through each day. They also realized their interactions with staff members helped to increase their confidence as a member of the interdisciplinary team.

Increase in Confidence

All of the students reported an increase in confidence throughout all areas of treatment and care for type one; however, they recognized the most increase with technology and insulin. Learning about different types of technology with insulin pumps and continuous glucose monitors helped students better understand insulin dosing. In addition, understanding the

difference in insulin injections compared to using an insulin pump was also noted, as they were able to have hands-on experience with the devices.

In addition, students were able to experience checking their own blood sugar, as well as a staff member's blood sugar [living with type one diabetes]. Students shared this particular experience helped to increase their confidence in a medical aspect of diabetes they had never done before. Three students reported they previously had their blood sugars checked from a health care professional, but had not done it on their own. (Three of the students participated in this experience as the fourth student had already checked her blood sugar in one of her classes and felt comfortable.) Students acknowledged their feelings of anxiety to check blood sugar, both theirs and someone else's, recognizing they had more anxiety to check someone else's blood sugar compared to their own. All students stated they did not want to inflict pain on someone. One student stated, "I was more nervous because I was inflicting pain on someone." Another student shared,

I was really nervous to check my own, and I was initially nervous to check a staff members and she looked at me like she trusted me and I was like oh, she trusts me so I can do this.

Another student mentioned, "It took me a long time. I had to give myself a speech." in regard to checking her own blood sugar. This experience also led students to recognize an increase in empathy for people living with diabetes.

All students reported immersing themselves in this camp experience was eye opening for them and allowed them to increase their confidence, as well as learn about tools and resources that are available to their future patients with diabetes. One student noted she is confident in taking a job working with patients who have diabetes and is looking forward to learning more

about endocrinology as she plans to attend medical school. She noted the camp experience helped her gain this confidence and realized, “I would love to go into being a CDE right away.”

In addition to checking blood sugars, one student was able to wear an insulin pump for three days while counting carbs, checking her blood sugar, and taking “insulin” (saline) with the pump. She noted,

When wore the OmniPod, I thought about my life would be so much different if I had type one diabetes and I actually had to count my carbs and bolus for every single meal? I sat there and I thought about it—well, I couldn’t go Rooster’s every single night like I did growing up.

A dose of insulin taken before a meal or snack is also referred to as bolus insulin (Scheiner, 2011). This student reported many changes in perception and empathy, as well as confidence in caring for patients who wear insulin pumps. In addition, all students learned the importance of trust when checking staff members’ blood sugars. Students lacked confidence in themselves; however, when the staff showed trust in them, they felt more confident and relaxed.

As mentioned in the results for this question and the second research question, students were able to identify their level of confidence before and after the first year camp experience. In addition, all students noted an increase in their confidence with type one diabetes care and management as camp progressed. All four students identified an increase in confidence throughout all areas of treatment and care for type one; however, they reported the most with technology and insulin. All students reported that immersing themselves in this camp experience was eye opening for them and allowed them to increase their confidence, as well as learn about tools and resources that are available to their future patients with diabetes. One student noted, “We learned so much and it’s completely eye opening.” After the camp experience, all students identified a passion for diabetes that has driven their interest in becoming a certified diabetes educator (CDE) and learning more about diabetes and endocrinology. Two of the students noted,

“This week made us both think about getting our CDEs.” The findings of this research question are similar to research question number two. Please see details of the results for question number two above.

Research Question Five

How can immersive experiential learning at a residential diabetes camp enhance perceptions of type one diabetes?

Overview

Through experience and observation at diabetes camp, all four dietetics students had a change in their perceptions of the disease. By personally experiencing diabetes through blood sugar checks, wearing an insulin pump, counting carbohydrates, and reading food labels, in addition to living with campers with type one diabetes and observing their daily routines, students realized that campers were just like any other kids with a few additional steps needed to keep them healthy. One student noted,

Being able to be there and see how everybody lives on a daily basis and the kind of things that they do just to feel normal or just to fit in or to be a normal kid was one of the biggest topics I learned during the week. I feel like it [camp] made me a lot more empathetic. I always had empathy for type one diabetes, but I never understood it. So now I feel like I can really empathize with people and I really have a lot of admiration for them.

Not only did students gain experience with kids living with type one diabetes, they also learned from adolescents and adults living with the disease. In addition, students identified different perceptions between type one and type two diabetes after this experience, as mentioned previously. All students recognized a big stigma and stereotype with type one diabetes and many different components that need to be managed for this one disease. In addition, students recognized they will be better dietitian nutritionists after this experience. One student described, “I feel like I’m going to be a better dietitian and just being able to kind of acknowledge that I

didn't know as much as I wanted to know." Another student recognized, "I think the week taught me as a person more of the path I want to go down as a dietitian." With this information and the additional information discussed in this chapter, you, the reader, are able to understand how the students' perceptions of type one diabetes changed. Overall, students used independence at such a young age, individualization, fearlessness, and well-adjusted to describe the campers. One student stated, "It's a lot of trust to put into a kid. If I had a kid with type one diabetes, I'd be really nervous."

Specific examples of the changes in perception include the need for detailed parental education of the disease, how the lifecycle and age differences affect disease management, the amount of trust that is put into kids regarding disease management, the lack of care at home for some campers, how dietetics students fit into the interdisciplinary team, and how a high or low blood sugar can affect a person and how fast their blood sugar numbers can change.

Insider/Outsider Perspective

During the beginning of their camp experiences, students reported a sense of feeling left out as everyone on the camp staff or volunteering seemed to know each other. The students were unsure how they were going to connect with everyone; however, by the end of the week they felt belonging. One student noted,

It was like everybody knows each other and we're left out and I don't know how we're going to connect with them and then by the end of the week I was like, I totally understand why they're like this. We all turned into a community.

In addition, one student shared she felt like an outsider being from Marshall University, while most of the other volunteers and staff were from West Virginia University. She shared she was scared she was not going to make any friends, and by the end of the week she was second guessing why she thought that. In the end, all students developed beneficial relationships with

campers, counselors, staff members, and volunteers and identified as part of the diabetes camp community. One student shared, “I can’t even believe how close you can get with people in just a matter of a week.” She reported this experience helped her to have a new appreciation for the disease. In addition, the dietetics students developed close relationships. Three of the students noted regularly talking with each other after the camp experience and developed close friendships with each other.

While there were other volunteers, medical staff members, and counselors who did not have diabetes, the students reported that at times they felt like an outsider when being asked about “their diabetes” from campers. One student noted, “I remember one of the campers asking me what kind of insulin pump I have? I replied with, oh, I don’t have type one diabetes. Then the camper asked why are you here then? I was like, oh sorry, I’m just volunteering, I’m not a camper.” This feeling did not seem to affect the students as much as the outsider relationship they felt with the other medical staff members and volunteers when they were finding their “place” during the first few days at camp. By the middle of the week, students felt they became an important member of the camp staff and began feeling like an insider.

Anxiety

Students shared they had anxiety when first checking their blood sugars at camp. After the experience, students noted it was not as bad as they thought, but the next time they went to check their blood sugar the anxiety returned. One student noted, “After I pricked my finger the first time—I said, oh that wasn’t bad, but then I went to check my blood sugar again the next day I was like why am I nervous again?” Students were able to empathize with the campers as they felt anxiety to check blood sugars, give injections, or change pump sites. Students were able to see with their own eyes that anxiety can be a huge barrier to care for the disease and realized this

must be taken into consideration with care and people living with type one diabetes should not be forced or traumatized in situations.

What you do today, won't work tomorrow

One recurring theme during the focus group, and the week of camp, and a wonderful learning opportunity for the students began with this quote from one of the volunteers “what you do today, won't work tomorrow.” One student noted, “That's how I think of the whole week. What you do today, won't work tomorrow. It's different every single day.” Another student shared, “Makes you love your pancreas a little bit more,” while another student noted, “It really makes you think about how much management type one diabetes requires.” A conversation about this quote brought the students common ground when talking about managing high and low blood sugars, specifically noting that one treatment worked one day, but not the next [in regard to managing campers' blood sugar levels]. This conversation really opened the students' eyes to how difficult the disease can be to manage.

Real life with type one diabetes

Students were able to identify what is needed to successfully manage diabetes. Many supplies including blood sugar meters, test strips, syringes, insulin, pump supplies, snacks, treatment for low blood sugars, ketone strips, and the newest technology available are important in managing type one diabetes. By starting each day with blood sugar checks, breakfast, and insulin dosing, students were able to see a wealth of information in just over two hours. The day continued with morning activities and a mid-morning snack, in addition to food for treating low blood sugars as needed. After lunch and afternoon activities, students would observe dinnertime blood sugar checks and insulin dosing. After dinner, students would help teach education sessions on nutrition and healthy eating with type one diabetes. Following education, the

students were able to participate in evening activities and then observe bedtime blood sugar checks and a bedtime snack before settling down to sleep. In addition, each student had the opportunity to observe midnight and three o'clock AM blood sugar checks and treatment as needed. Camp is, of course, not a typical day in the life of diabetes, but it was beneficial for students to see how to manage blood sugars in highly active kids. Throughout the week, students were educated on the difference in treatment at camp versus a summer day at home with limited activity. In addition, students were able to talk with campers about their daily lives and how they manage diabetes at home.

In addition to the medical treatment of diabetes, students were able to see what is important to the campers—being a real kid who fits in and has fun. Students noted they were happy to see how these kids live on a daily basis and how they interacted with others just like them. One student in particular stated—“you’re all the same to me”—recognizing they are just a regular kid. Some of these kids have never met anyone with type one diabetes until they attend camp. In addition, activities helped campers to understand they have no limits on what they want to do, but may involve additional resources to keep them safe. One student recognized the kids get excited for camp every year and this is “their week”; their week to have an outlet. One student noted, “Just seeing them [the campers] living life to the fullest that whole week, knowing that everyone there is just like them, was probably the best part.” Another student noted, “[camp] seems small, but it’s the whole world to them.”

Food insecurity

Although not expected by the researcher, the students’ perceptions of food insecurity and type one diabetes changed. All students had opportunities to observe and talk with campers who had certain foods available to them at home, through insecurity or availability. Through

discussions and observations with campers and staff, the students were able to educate campers on making appropriate choices on the foods they have available at home. In one case I observed at camp, one student was able to talk with a camper who was eating excess portions at all camp meals, which was concerning to the medical staff in the cabin. After the student talked with the camper, she was able to better understand he did not have many foods available at home and enjoyed all the food at camp, which led him to choose larger portions. After a discussion on portion size and carbohydrate counting, the student ate meals with the camper and was able to help with carbohydrate counting and portion control, which led to better blood sugar control for the week. Another student shared,

It makes you think about the food deserts in West Virginia. I knew how big of an issue it was, but then you bring a kid with type one diabetes into a food desert and it just becomes a whole new issue.

A food desert is a term used to refer to a geographical area that has limited access to affordable and healthy foods (Pope & Nizielski, 2019). All of the students were able to identify the need for safe and available food, especially in managing chronic diseases.

Food insecurity and type one diabetes was an unexpected theme identified by me. Food insecurity affected 40 million Americans in 2017, and is defined as “a lack of consistent access to enough food for an active, healthy life” (Feeding America, 2019). While food insecurity is a major issue in nutrition, I did not expect this topic to arise during the camp learning experience. I am grateful this theme emerged in the data, as food insecurity plays a major role in diabetes care and management as identified in the experiences at camp.

Research Question Six

How can immersive experiential learning at a residential diabetes camp improve empathy for those living with type one diabetes?

Overview

All students noted a change in empathy towards type one diabetes, especially after they learned more about the disease. Students realized they now empathize with and have more admiration for the disease. In addition, students feel they can better understand how secluded the campers must feel in everyday life and have more empathy toward this as well. One student shared she could not imagine how seclusion [in regard to living with a disease] must feel. Another student recognized her empathy not only improved for type one diabetes, but type two diabetes as well, which was unexpected. One student mentioned, “I always had empathy for type one diabetes, but I never understood it. So now I feel like I can really empathize with people and I really have a lot of admiration for them.” Students noted their hardest part of camp was realizing some campers do not receive the care they need [at home] and recognized some of these kids come from difficult home lives—some from foster care families. In addition, students felt empathy seeing campers having to sit out of activities (and feeling bad) with high and low blood sugars. One student shared she now has more empathy and admiration for people living with the disease since she understands it better.

Passion

Students realized how much their passion for the disease changed. This change was unexpected for two of the students, while one student shared she was not sure how she became more passionate for a population she previously had so much passion for. She stated,

Actually day three, on July 7th, my exact words were “wow, today was mind blowing for me. My love for this autoimmune disease has increased by 150%. Just that whole day—I was like wow, this is genuinely something I am passionate about.”

The other students agreed with this statement. Another student acknowledged, “I became more passionate about the disease in general.” One student shared she now has the same passion for

diabetes as she does for sports nutrition. This student expressed becoming a sports dietitian nutritionist was her ultimate goal as a dietitian during the one-on-one interviews before the camp experience. She recognized,

I felt that same passion that I feel for the field in general and that I felt when I started getting involved in sports. And for me it was like wow, I had no idea that this was going to develop so much for me and I'm really glad that it did. It just kind of gave me something else to work towards and something else to learn about.

After the camp experience, she is excited to pursue a career in diabetes, which was never a thought for her previously. She is excited she took herself out of her comfort zone and was able to find her passion for other areas of dietetics. Even those who had a passion for diabetes before the experience found themselves eager to dive in and soak up the camp experience. Students recognized they love the excitement of the disease and how treatment and care is always improving. All students reported this experience will make them a better registered dietitian nutritionist in the future.

Sad

Students noted many somber feeling during the focus group, especially when discussing parental care and knowledge regarding campers and the disease. In addition, students recognized sad feelings when talking with two parent volunteers at camp about the cost of managing the disease and their struggles with the disease on a day-to-day basis. Students discussed the costs to managing the disease are unreasonable and people living with type one diabetes are an in need population. One student shared after a conversation about the expenses of a new insulin pump,

It was so sad to me because that's something that he needs. And it's something that is such a basic level of care for someone with type one diabetes and for it to be that expensive it just makes you wonder like how can that work? I don't know, I feel like it's so unreasonable to ask that of somebody who can't help that they need it.

Students expressed sadness when discussing how some parents are not as knowledgeable or caring as they should be, while other parents do all they can to manage the disease, even

though the disease “runs its own course” many times. One student noted, “It had me holding my tears because it’s sad to see that some parents don’t even know their child’s insulin-to-carbohydrate ratio.”

Students expressed sadness when hearing stories from campers about getting wrong information regarding their care from health care providers. Another aspect of sadness experienced at camp was noted when the students realized many campers get better care at camp than they do at home, bringing tears to some of the students’ eyes. One student shared, camp made her realize she wants to do more to help and another recognized it was hard to let the kids leave camp knowing they may not get proper care [at home]. One student stated she felt sadness after talking with a camper about her home life,

That really kind of made me sick to my stomach. And she told me that she sleeps on an air mattress at home. She doesn’t have a bed so she was really excited to sleep in a bed at camp because she doesn’t have a bed at home. So it’s just like you don’t think about—like little simple things that we are giving to them for a week. They look forward to that week all year. It seems small, but it’s the whole world to them.

This student also acknowledged, “It just kind of made you stop and think about what was going on for them at home and how they might not be getting cared for the way that they’re getting cared for here [at camp].”

The amount of knowledge kids need to care for the disease was also expressed through sadness by the students. Students determined it was hard to see the campers have to manage so much, but were motivated to hear the campers talk about their knowledge. In addition to sadness, anxiety was a common emotion as noted in the above research questions. In some situations, such as pump changes, anxiety and sadness were both a common theme. Ironically, some of the photos the students took as part of their camp experience were dark after development, some

even unrecognizable. These dark photographs represent a disease that can be dark and sad at times.

Isolation

Students noted many of the campers shared feeling isolated with their disease. Students recognized some of the campers are the only ones in their class, and many times their school, with type one diabetes. One student recognized the sense of community felt throughout the week with the campers was really nice. Campers were not alone and could talk with each other about experiences only they know. In addition, one student heard some of the campers say, “I can’t believe everybody has a pump just like me...” and they can’t believe other people have what they have [referring to type one diabetes]. Another student stated “Just seeing them [the campers] live life to the fullest that whole week, knowing that everyone there is just like them, was probably the best part.”

During many experiences, students felt campers should not be isolated during events. One example used was the denial of birthday cake [during events at home] and how this makes the camper feel isolated. Instead, proper education is needed to allow the camper to have cake in moderation. Another student mentioned a situation with a camper, “All of my friends think I have diabetes because I ate too much sugar. And that’s what all her friends think and she doesn’t know how to explain it to them,” which goes back to better education on type one diabetes for all. All four students noted the importance of having proper resources to care for the disease.

In addition, isolation that the students felt at the beginning of the week, mentioned in research question number five, also changed as they became more comfortable with the disease and camp staff. The students also mentioned they felt isolated when talking with their friends and family at home about their camp experience. One student stated, “they just don’t understand.”

She also noted it felt as if they, her family and friends, were being stereotypical toward her time and experience at camp. She shared,

We are more empathetic because we were with them [the campers] for a week and we know exactly what we had to do for a week, whereas other people thought we were just pricking fingers and giving insulin and handing out snacks, which was not the experience at all.

Conclusion

Students noted they enjoyed playing with the campers and getting to know them during the week. In addition, students enjoyed making friends with the counselors, medical staff members, and volunteers. Students reported they learned so much and have really gotten to understand the disease. All students stated camp was good first-hand experience, which allowed them to learn a lot. The students are excited to come back to volunteer at camp again next year and are looking forward to become more involved in teaching nutritional concepts and supporting the medical staff in the future. Students noted they learned a lot about the medical aspect of diabetes at camp and are excited to learn more about insulin dosing, treating high and low blood sugars, and how to work as part of an interdisciplinary team. The students developed strong relationships with each other and look forward to using each other as resources in their professional careers. The overall conclusion from this chapter identifies a gain in knowledge, perceptions, confidence, and empathy regarding type one diabetes from experiential learning at a residential diabetes camp.

CHAPTER SIX

YEAR TWO: FINDINGS AND RESULTS

Introduction

This study used a qualitative longitudinal case study approach to explore how experiential learning impacts dietetics student knowledge, perceptions, confidence, and empathy of type one diabetes. Photovoice, participatory action research, was used to engage students through data collection and dialogue to reflect on how different educational strategies can benefit dietetics students. Research participants focused on their experience of hands-on involvement with type one diabetes and what they learned at a residential diabetes camp that cannot not be learned in a classroom. The aim of the study was to identify if experiential learning makes a difference in student knowledge, perceptions, confidence, and empathy with type one diabetes. This study adds to the small body of knowledge concerning experiential learning in dietetics students. Data were collected over two years at Camp Kno-Koma, the diabetes camp of West Virginia. Research participants attended both years of camp and participated in all data collection methods. In this chapter, I will discuss the results and findings of data collection in year two.

Unexpected Issues that Arose During Research in Year One

It is important to note that disposable cameras are an item of the past and one-hour photo developing is as well. For timely photograph development in year one, the researcher had photos developed in Columbus, OH (a three hour drive) so the focus group could be completed the week after camp. Photograph collection is important to take into consideration with future research; photograph developing strategies should be researched and identified before the research takes place. In addition, it is important to note that participants shared in the focus group, after reviewing the pictures, thought they were getting more in the photograph with the disposable

cameras than what they saw in the pictures. The research participants are also important to consider when selecting research methods, as most of these participants have grown up with digital and phone photography and not disposable cameras. Another consideration is that some photos from the disposable cameras were underexposed and were not able to be developed, which led to the students having fewer pictures to represent their learning experiences. Underexposure of the photographs was not anticipated by the researcher. Pictures for each participant ranged from 10 to 18. Pictures from disposable cameras are of poorer quality than digital photos, which should be considered for the purpose of the research. Photovoice was a supplemental data collection method in this study and the photographs worked for this purpose. To help resolve these issues, digital cameras were used for data collection in year two.

Data Collection

As in year one, data were gathered through one-on-one interviews, participatory action research through Photovoice, observations and notes by the primary researcher at camp, and a focus group. In addition, research participants were provided a journal to record their thoughts about the photographs that were taken and their learning experiences at camp and used these during the reflection of photographs at the focus group. Data review and analysis, and the majority of data collection methods, remained the same as year one; however, a few changes and additions were made to enhance and simplify data collection for year two.

First, disposable cameras were not used; instead digital cameras with an SD card for photo storage were used for photograph collection. As in year one, research participants were instructed to limit photographs of people and were encouraged to focus more on learning experiences. Participants were asked not to photograph the face of anyone attending Camp Kno-Koma. If a photograph was taken that contained faces, the photograph was deleted and not used

in research. One picture taken and selected as a significant photo by one research participant included side profiles of some campers and staff and was blurred to protect individuals in the photo. Participants were required to ask permission when taking photographs of individual's personal items. This data collection method was approved by the Camp Kno-Koma Board of Directors for the study as campers are asked to bring disposable or digital cameras for picture taking and this complies with the technology requests for camp.

In year two, research participants were asked to take as many photographs as they saw fit to collect appropriate data with the digital cameras. During the focus group following the camp experiences, participants identified the three most significant photographs that resonated with them and used the photographs to describe their experiential learning at camp. Participants were asked to provide a caption for each of the three photos. Participants used the SHOWeD method when discussing their photographs (Appendix F) (Dahan et al., 2007; Hergenrather et al., 2009; Wang et al., 1998). The SHOWeD analysis included:

1. What is Seen here?
2. What is really *Happening*?
3. How does this relate to *Our* lives?
4. Why are things this way?
5. How could this image *Educate* people?
6. What can I *Do* about it? (Dahan et al., 2007).

Probing on the photographs with the focus group participants was completed to identify how other students perceived the image. Images were not displayed in a formal manner, but were shared with all participants during the focus group discussion. Images were displayed from the digital cameras during the focus group discussion and were passed around for each participant to

view the photo. Year two's focus group did not have a set time allotment; it lasted about two hours. The focus group was completed the day camp ended and was guided by focus group questions and probing, as needed (Appendix J). In order to meet the needs of the research participants' schedules, it was decided to hold the focus group as soon as camp ended, which was not only a benefit to meet scheduling needs, but also to discuss experiences while they were fresh in the students' minds.

Second, journals kept by the research participants in year two were collected for review. In year one, journals were not collected, but were used by the participants to recall learning experiences during the focus group. These journals remain property of the research participants. New journals were provided by the researcher for year two data collection. Journal collection for year two was amended with the Institutional Review Board (IRB), and was approved. The reason for journal collection was to help increase validity of photograph data collection, as participants were to journal their learning experiences, as well as their thoughts about the photographs they were collecting.

Lastly, interview and focus group guides for year two were created and used in data collection (Appendix I & J). Since this research was collected through longitudinal data with the same research participants, different questions were needed to guide a more in depth conversation of their learning experiences.

As discussed here, data collection tools were changed to better meet the needs of data collection and appropriately answer the research questions. Learning from experience is essential and through experiences in year one, I enhanced the data collection methods for year two.

Demographic Information

The same four research participants that participated in the first year of research also participated in the second year of data collection. At the time of data collection, one student was completing her undergraduate degree in dietetics at Marshall University. Another student was completing her undergraduate degree in human nutrition and foods at West Virginia University. One student completed her master's in food and nutrition and her dietetic internship; she completed her non-thesis defense on type one diabetes and eating disorders and is studying for her RDN exam. Over the last year, the final participant passed her RDN exam and was working as a registered dietitian nutritionist. She has worked as a pediatric clinical dietitian and an eating disorder dietitian. She was recently accepted into medical school. All students volunteered their time during the camp experience, as in year one.

Emerging Themes

Just as in year one, all students took pictures for participation in action research and Photovoice. The major data collection completed in this study was dialogue and observations, with photographs supplementing the dialogue. The three most significant photographs that captured diabetes camp were selected by each participant and discussed using the SHOWeD method for analysis. Research participants also compared their three images from year one to their three images from year two.

During the interviews, thick, rich discussion uncovered important details of their previous camp experience and their experiences over the last year. Since all of the participants were in different stages of their education, there were some differences in their current knowledge level, confidence, perceptions, and empathy regarding type one diabetes at the time of the pre-camp interviews for year two. From the pre-camp interviews, all students noted that an increase in type

one diabetes knowledge leads to an increase in care and management for the disease, an increase in confidence regarding the disease, more interest for the disease, and an increase in passion for the disease. In addition, all students identified more excitement and eagerness (and less nervousness) to attend diabetes camp for a second year.

In general, the interviews were able to identify topics important to the students: the importance of the students' voice in the interdisciplinary team, the importance of experiential learning in their own education, the importance of teamwork and communication skills and how their skills were enhanced by this experience, the difference in diabetes care and management in the diabetes camp setting versus the clinical hospital setting, and the students' empowerment to share their knowledge on type one diabetes and their initiative to learn more. Overall, research participants were motivated and inspired by their camp experience in year one and were focused on more detailed learning in year two.

After completion of the interviews and the focus group for year two, and reviewing the transcription of our discussions, the photographs, participant observation notes from camp, and the analysis of their photographs with the SHOWeD method, I was able to confirm the themes identified in year one and developed four additional themes for year two. In addition, I found many important topics to help explain each theme. The four themes for year two are represented in Table 2:

Table 2. Emergent Themes Identified by Researcher – Year Two

This table represents the emerging themes identified by the researcher through interpretation and analysis of year two data.

| Emergent Themes |
|---|
| Importance of teamwork and communication: My voice is important |
| Importance of the Registered Dietitian Nutritionist at camp |
| As nutrition professionals, we are empowered to make a difference |
| Learning at camp increases confidence in the field and classroom |

Participants ranked the photographs taken at camp to pick the top three significant photos that showed their learning experiences. In addition, each student labeled their top three photographs with a caption. The pictures and titles for all photographs taken in year two are available for review in Appendix L. Commonalities and individualities were noted during data analysis. The top three photographs for each student in year two are shown in the following figures. Each photograph was titled by the student who took the picture.



Figure 23. “Glucometer 103”- Participant One

This image represents participant one’s number one image in year two. This is an image of the glucometer after participant one checked her blood sugar at camp. *Glucometer 103* (2019), Participant One.

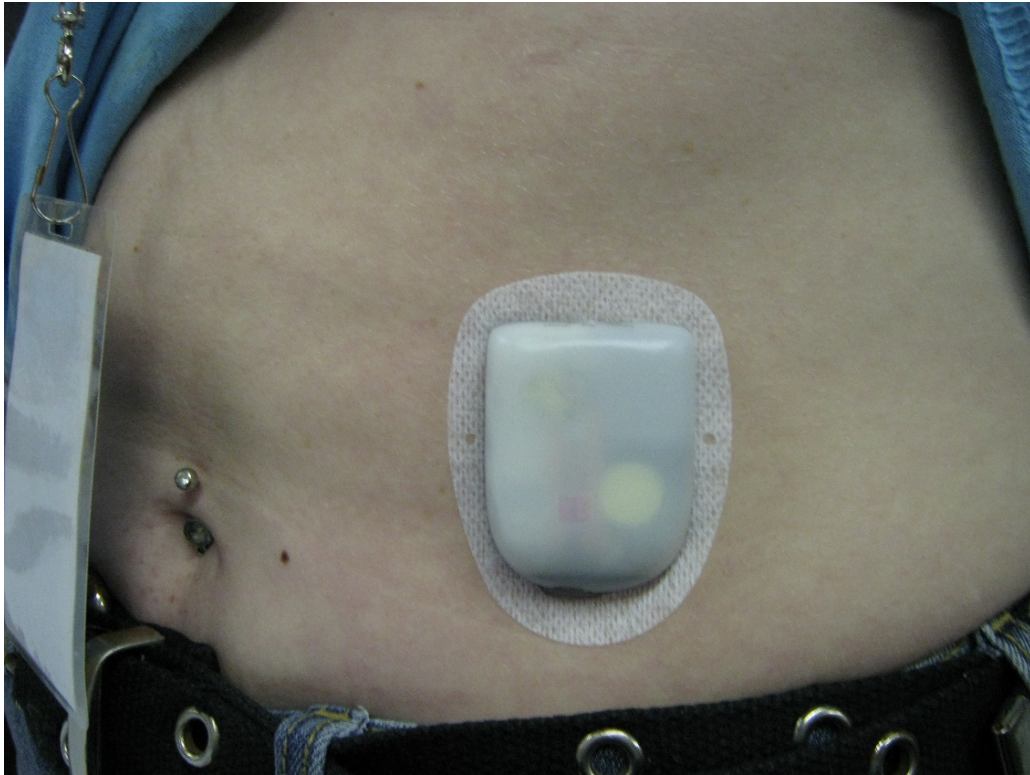


Figure 24. “OmniPod on Stomach”- Participant One

This image represents participant one’s number two image in year two. This is an image of participant one wearing an insulin pump, OmniPod, on her stomach. *OmniPod on Stomach* (2019), Participant One.



Figure 25. “Archery”- Participant One

This image represents participant one’s number three image in year two. This is an image of campers shooting bows and arrows at the archery activity. *Archery* (2019), Participant One.

Camp Kno Koma @ Greenbrier Youth Camp
 Tuesday July 10, 2019

| | Portion | Carb Choice | "g" | I ate |
|--------------------------------------|------------|--------------|-----|---------------|
| Dinner 5:00 pm | | | | |
| Hidden Cove Tacos (2) | 5" Shell | 2 | 30 | — |
| Meat Filling | 1/2 c each | 0 | | |
| Lett/tom/cheddar/sour crm/taco sauce | | | | |
| Corn | 1/2 cup | 1 | 15 | — |
| Lettuce Spring Mix | 1 cup | 0 | | |
| Ranch/FF Italian | 1 pkt | 0 | | |
| Ice cream | 1/2 C | 1 | 15 | 15 |
| Strawberries | 1 cup | 1 | 15 | 15 |
| Milk (1% or <) | 8 oz | 1 | 12 | 12 |
| Crystal Lite lemonade, tea, water | | | | |
| Black Beans (bar) | 1/2 cup | 1 | 15 | — |
| Name _____ | | | | |
| | | Total | 45 | 30 |
| | | | +15 | 45 |

Insulin: Carb Ratio

___ unit to ___ grams

Total grams _____

Divided by ___ units

I should take ___ units

Or

___ Carb Choice to

___ units of insulin

Total Choices _____

Multiply by ___ units

I should take ___ units

Figure 26. "Meal Ticket"- Participant Two

This image represents participant two's number one image in year two. This is an image of a campers completed meal ticket to identify how many grams of carbohydrates were eaten at the meal. *Meal Ticket* (2019), Participant Two.



Figure 27. “OmniPod”- Participant Two

This image represents participant two’s number one image in year two. This is an image of participant two wearing an insulin pump, OmniPod, on her stomach. *OmniPod* (2019), Participant Two.



Figure 28. “Lows Box”- Participant Two

This image represents participant two’s number three image in year two. This is an image of a lows box used during the week to treat low blood sugars. *Lows Box* (2019), Participant Two.



Figure 29. “OmniPod”- Participant Three

This image represents participant three’s number one image in year two. This is an image of participant three wearing an insulin pump, OmniPod, on her arm. *OmniPod* (2019), Participant Three.

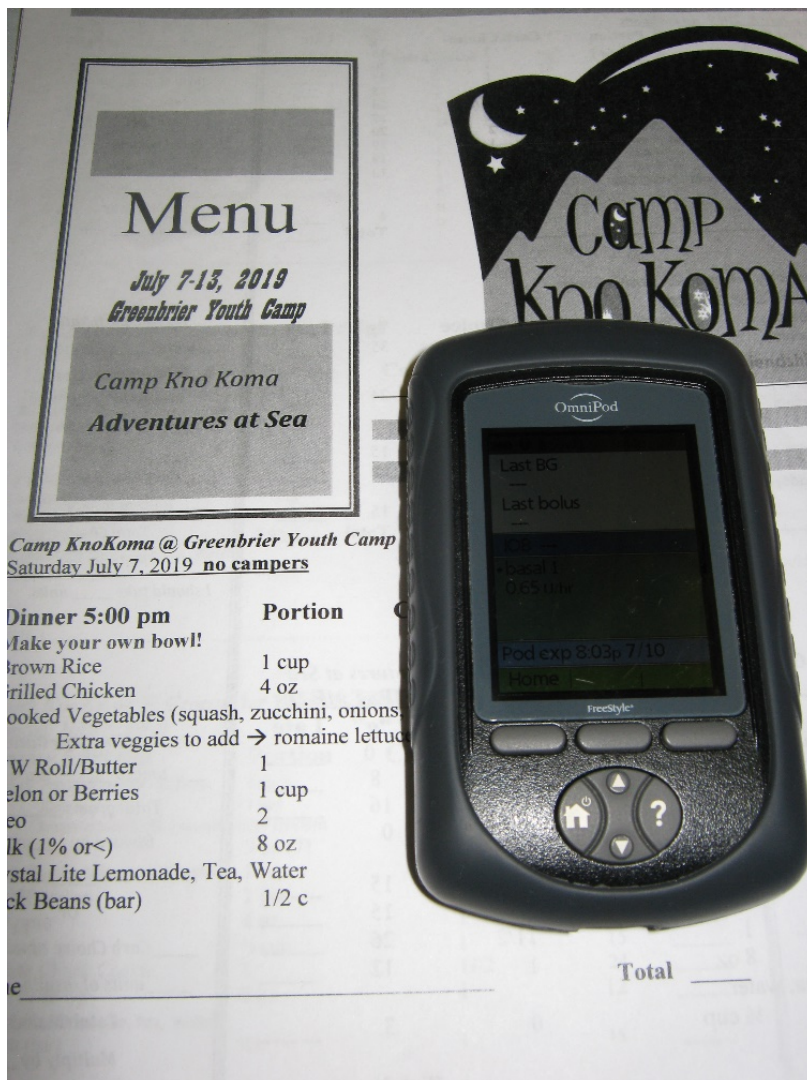


Figure 30. “Personal Diabetes Manager (PDM) and Menu”- Participant Three

This image represents participant three’s number two image in year two. This is an image of the Personal Diabetes Manager (PDM) that is used to deliver insulin for the OmniPod insulin pump, along with the camp menu that is used to count carbohydrates for meals. *Personal Diabetes Manager (PDM) and Menu* (2019), Participant Three.

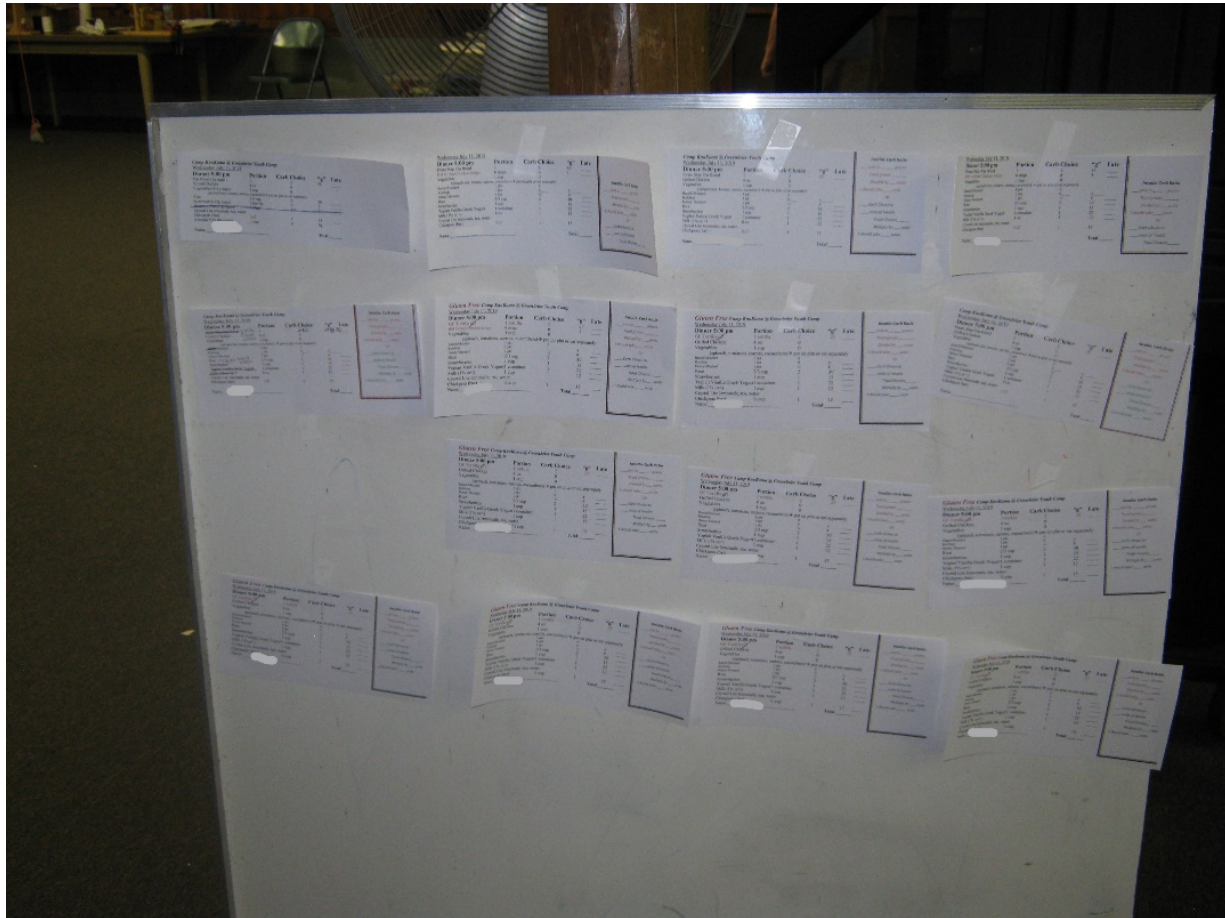


Figure 31. “Menu Board”- Participant Three

This image represents participant three’s number three image in year two. This is an image of the menu board where campers who have food allergies or intolerances can find their menu for each meal. *Menu Board* (2019), Participant Three.



Figure 32. “Learning about Insulin Pumps”- Participant Four

This image represents participant four’s number one image in year two. This is an image of the Personal Diabetes Manager (PDM), alcohol swab, and pod before participant four filled her pump with insulin and placed it on her arm. *Learning About Insulin Pumps* (2019), Participant Four.



Figure 33. “Foodservice Management”- Participant Four

This image represents participant four’s number two image in year two. This is an image of the snacks for the week of camp. *Foodservice Management* (2019), Participant Four.



Figure 34. “Research Prizes”- Participant Four

This image represents participant four’s number three image in year two. This is an image of prizes used by psychology students for a research project at camp. *Research Prizes (2019)*, Participant Four.

Collectively, the pictures represented the students’ insulin pump experience and the importance of their experience when educating patients, the importance of the registered dietitian nutritionist for camp success, the importance of always being prepared with food for low blood sugars, and the importance of carbohydrate counting and insulin dosing. Participant four took one picture of prizes that were used by psychology students in a research activity with the campers. This photo shows individuality in data collection with the photographs. This student enjoyed that research was being conducted with the campers to look at improving the quality of life for people living with type one diabetes. All students took similar photographs to identify their learning experiences.

In year one, students captured experiences of checking and observing blood sugars, the amount of snacks and insulin supplies needed for camp, insulin pump site changes, wearing an insulin pump, and camp life, which are similar to experiences photographed in year two. During the second year of learning at camp, students mentioned they learned more specific concepts related to type one diabetes. They noted a more general learning experience in year one. This data were not only collected through dialogue in the focus group, but also through their photographs. Students acknowledged last year they took pictures to familiarize themselves with camp. Students reviewed all photos taken in year one during the focus group for year two. All students were able to remember why they took each picture in year one and the specific learning experience that was taking place, even without their journals written in year one. Although similar pictures were taken in both years, students shared different meanings behind the photographs. One student noted,

I think mine [pictures from year one and year two] are similar in the aspect of I can remember what I was doing at the time and what I was trying to accomplish. I think they're different in the aspect of I think these, the ones from last year, are a lot more general. The ones from this year I feel like I took with a more specific intention. Last year, I was familiarizing myself with the camp. Whereas this year, it was more like I'm taking a picture of this because I know what it's used for or I know why it's here.

This student recognized she took a picture of the snack corner both years. She shared her year one picture was a general picture of all the snacks needed for camp right after they were unloaded. She stated,

I'm remembering just seeing the snack corner last year. I was thinking this is awesome, there's so much food here. Whereas this year I have a picture of the snack corner and I see the separation. I took it so you could see the gluten free and you could see that we had separated it out for different cabins on different days depending on the activities. Whereas this [referring to her picture from last year] is just once everything was all inside.

She recognized she had a more specific thought process and intention when taking this photo compared to the one from last year. One student noted she had no idea what to take pictures of last year and this year she was more focused and detail oriented in what she wanted to represent.

Participants were asked to take as many photographs as they desired during year two. Theoretically, the number of pictures they could take on the digital cameras were unlimited, with a maximum of 500 photos that could be stored on the SD cards that were used. The number of pictures taken ranged from five to 17. The small amount of pictures taken in year two was unexpected for the researcher. With an unlimited amount of photographs, I thought they would have taken many more. Six photographs were deleted in year two data as they contained faces of people at camp. I was surprised six photographs contained faces, as with digital cameras these photographs could have been deleted before the focus group discussion. One picture taken and selected as a significant photo by one research participant included side profiles of some campers and staff and was blurred to protect individuals in the photo. In regard to photo collection, obviously using digital cameras provided better quality photographs in year two, an important concept to think about in data collection.

Journal Themes

Journal collection for year two provided additional sources for data collection. Students identified differences in their journaling techniques between year one and two. One student shared she felt her journal guided her pictures for year one, while for year two she felt as if she was journaling to her pictures. She stated,

Last year I almost feel like I was journaling and then going through my journal and thinking—oh I wrote about this, I should take a picture too. I feel like this year I was journaling more to my picture, like I would take a picture and then journal about that. I feel like this year the pictures made me more organized in my journaling, whereas last year I was more piggybacking off of my journal for the pictures.

Another student noted that her journaling and pictures were two different experiences and felt she was more detailed in her journaling for year two. During the focus group discussion, we discussed that some of the students were more visual learners with the pictures, while others preferred textual data (in regard to this specific type of data collection). All students noted using digital cameras and being able to review photos on the cameras helped them to journal about their experiences.

Data collected from the journals supplemented the emerging themes for year two, as well as the data to answer the research questions. An overview of the journal themes is as follows: experience of wearing an insulin pump, experiencing life with diabetes, details of treating low blood sugars, connecting with campers from year one, excitement for the year two experience, more confidence for the year two experience, thoughts of never being able to fully understand what someone with type one diabetes goes through on a daily basis, individualization of insulin dosing and diabetes management, effect of physical activity on blood glucose levels, confidence in learning more about type one diabetes, and making more connections with medical staff members. After reviewing the journals and photographs, I noticed that students journaled more about their overall experiences rather than on specific pictures that were taken; this was not expected by the researcher.

As a suggestion for future research, I would recommend journals be collected for all years of data collection. While the journals provided a small amount of data, they were helpful in identifying major themes in the research.

RESEARCH QUESTIONS/QUALITATIVE DATA ANALYSIS

Research Question One

How do dietetics students identify their role in type one diabetes management?

Overview

Through data collection in year two, students continued to identify their roles as an educator, meal planner, supporter, and advocate in the management of type one diabetes. In addition, students shared they play an important role as a mentor by listening and building relationships. Students recognized they have many roles in diabetes management and their roles change depending on the situation. One student noted, “I think we have a lot of jobs and I feel like especially after this [camp experience] I’m always finding something new that I can do better.” At camp, students discovered their roles were always changing. Another student noted, “I feel like every day I had a different role here, which I like. I think it keeps me on my toes and I feel like I’m always learning something when I’m here.” Students used ally, patient advocate, educator, supporter, encourager, and mentor to define their roles. One student identified her role as a mentor and advocate, “Listen to them [your patients/clients], build a relationship with them, and then take what they do and help them get better.”

In year two, students had a better understanding of their role in the interdisciplinary team and viewed themselves as an important professional in the medical team. In addition, students realized they fit into conversations better with the medical team compared to year one. One student noted, “I feel like more nursing students and pharmacists were coming up to me asking me questions about the menus.” She felt confident to reach out to medical staff members and said,

I know I said to a bunch people, if you have any questions or if you need anything please come find me. I'm happy to help. Being able to have that conversation kind of re-gears people into—they're resource not just an extra body for things.

Students currently completing their undergraduate and dietetic internship programs at the time of data collection described themselves as a resource for their classmates, both nutrition majors and other health care majors [namely nursing majors], regarding type one diabetes. The students' classmates viewed the research participants as a resource for diabetes information. Students shared camp was a major talking point in conversations following year one, which allowed their classmates to learn from them. One student stated,

I was able to experience it [type one diabetes] firsthand and I've realized that since I've been at camp learning about diabetes, in class it's just like—okay, I know this and I'm just sitting there like, this is cake to me. And then I'll have classmates come up to me (asking) can you please explain this to me?

Students reported feeling comfortable with answering questions regarding type one diabetes from their peers.

One student identified herself as being able to confidently educate dietitians and health care professionals on type one diabetes. She noted,

A few times when we would have pre-rounding, like sit down rounds, it would be with medical students. One instance in particular, the attending physician was asking everybody in the room where the glucometer can be used to check blood sugar and nobody really knew the answer. He's trying to explain it and didn't explain it well. I was like, well you can use the hands (shows palms facing together) and anything you can see you can test except for the tip top and everybody is like that's such a good reference.

All participants acknowledged being a resource for type one information and recognized confidence in their future and current roles as an educator. One student identified herself as having a more supportive role in type one diabetes, compared to seeing herself as more of an educator when talking with patients who have type two diabetes. Another student shared this

same role when discussing type one and type two diabetes. The students' perceptions of their different roles in type one and type two diabetes was an unexpected find for the researcher.

Education at Camp

During the students' time at camp in year two, they were provided with opportunities to provide nutrition education to campers, staff, and volunteers. Students were responsible for developing and implementing educational games for campers. Students developed a Jeopardy game for older campers, and a carbohydrate version of red light, green light for the younger campers. Students shared that developing the educational games provided them with a good refresher on type one diabetes management and nutrition education.

While the students mentioned they did not learn new knowledge regarding type one diabetes during game development, they noted that implementing the games increased their knowledge on how to educate people, particularly kids, and the importance of wording questions and information for their audience. One student noted,

What I noticed with education is that the way it's worded—we kind of had broad ideas, but with one of the questions we got a lot of specific answers, which could be an answer, but we were looking for a general answer. It opened my eyes that there were multiple answers that fit with what we had on the card.

During the educational games, I noticed the students re-wording questions or concepts to help the campers understand them better. During the focus group, we discussed the importance of how this process is making them better educators.

The students recognized they have many important roles as an educator at camp, not only to the campers, but also to the medical staff. Students shared they had many people, both campers and staff, ask them nutrition questions during the week; this not only increased their knowledge, but also their confidence as an educator. Students noted they wanted to look for concepts to teach the campers information they were not familiar with. In addition, one student

noted that the campers are kids and it is our job to help “guide them down the right path in regard to diabetes management.” Another student recognized that overeducation is best in regard to nutrition management and continuing education is key. This student also realized the camper’s age and length of diabetes diagnosis affects their need for education. She noted,

I think a big component of education is how long they’ve been diagnosed. One of the campers that I was working with was just diagnosed a few months ago [before camp] and was reading through the carb list and she’s like oh, that’s bread with butter. I had the butter, so I don’t have to count it. And I was like no, the bread is the one that has carbs. And so I think as a dietitian in general overeducation is always best. I was always surprised, still surprised to this day, how little people know about nutrition and the food that they’re eating. And so I think a lot of times I just look at these kids and I’m like—oh they know it all, they’ve got to do this on a daily basis, but they’re all at different stages of their disease and as far as when the diagnosis started and sometimes they need that education.

All dietetics students agreed that attending camp and being exposed to this atmosphere increased their confidence in educating people with type one diabetes.

In addition to being an educator for campers and staff, all students were resources and educators for the first year dietetics students who attended camp in 2019. Three dietetic interns attended camp to learn more about type one diabetes. Two of the students in this research study taught these students how to check their blood sugar levels. Through step-by-step instruction, they provided education without the need for intervention from camp medical staff as observed by me at camp. These two students were impressed they were not anxious or fearful, as they were last year, to check their blood sugars and were also impressed they remembered each step well enough to teach the process to someone else.

Our Role in Diabetes Management

All students agreed that registered dietitian nutritionists play a large role in diabetes management with not only education, but support, advocacy, and mentorship. Students determined they are empowered to make a difference with education and support in diabetes care

and management. Students reported feeling empowered to share their knowledge and initiative to learn more about the disease. One student noted,

Oh, I brag about those kids all the time. I mean, I do, I brag about them all the time. And now that it's coming up I've been talking about it all the time with my co-workers and with other patients too that don't even have diabetes or anything... it just kind of comes up.

After the second year of camp, students were better able to identify their role in diabetes management, which also led to empowerment. Students used ally, patient advocate, educator, supporter, encourager, and mentor to define their roles in type one diabetes.

Research Question Two

How confident are dietetics students in caring for patients with type one diabetes?

Overview

Data collection and analysis for year two was able to expand on the findings for the second research question. Each student reported their confidence level of caring for patients with type one diabetes higher (on a 10-point scale) than the pre-camp interviews for year one, as expected. During the pre-camp interviews for year two, students ranked their confidence levels between an eight and 10 on a one-to-ten scale. This confidence level was similar across all students. One student, who was currently working as a registered dietitian nutritionist at the time of data collection during the pre-camp interviews, ranked her confidence level at a 10, reporting she is now able to share knowledge that she would not have understood before the camp experiences. This student noted that becoming a dietitian nutritionist provided her with more confidence overall. The students, who were completing their undergraduate education at the time of data collection, ranked their confidence level as an eight, but noted they felt comfortable educating and caring for someone living with type one. One student noted stepping out of her

comfort zone was very beneficial and encouraged experience to enhance learning. All students recognized that their increase in confidence helped to increase their knowledge of the disease.

Difference in Confidence after Year Two

As noted previously in data collection for year one, students acknowledged they thought they knew more about diabetes (than they really did) before attending diabetes camp. Following two years of learning experiences at diabetes camp, students rank their confidence level between seven and 10 on a 10-point scale. This ranking was somewhat surprising to the researcher as most of the students ranked their confidence as an eight during the pre-camp interviews for year two, showing a decrease in their confidence levels reported at the focus group for year two. I can assume the students had difficulty in remembering how they ranked their confidence levels between the interview and focus group, which leads me to believe their overall confidence increased [not decreased] after the second year experience.

Overall, the dietetics students mentioned being more comfortable and confident in the nutritional management of type one diabetes (ranking an eight to 10 on a 10-point scale), as expected. Students recognized they feel pretty comfortable (a seven or eight on a 10-point scale) they could provide an insulin injection to someone, even though they reported never doing it. All students realized they would not be able to rank themselves at a 10 for confidence, since the disease is so individualized for everyone. This realization was also mentioned in year one data collection. Students noted they would feel confident and comfortable to be put in a situation to manage diabetes. Students determined from their knowledge in school and their experiences at camp, they would be able to figure out a situation, make an educated choice, and take care of someone. One student shared,

I could definitely help figure out an insulin dose and count the carbs. I could 100% care for somebody with diabetes and I know that if I was put in a situation I would be able to

figure it out. I wouldn't be afraid of the situation. I would say based on the knowledge that I have from school, combined with all of those things I've learned here that I could figure out the situation, and make an educated choice and take care of somebody.

All students reported more confidence in nutrition management and less confidence in the individualization of managing the disease medically. One student noted,

As a dietitian working with diabetic patients, I feel probably like a 10 (on a 10-point scale), I feel very comfortable. I've worked with a lot of type ones over the last year, especially new diagnoses. But if it was like the overall management, like if I had a friend with diabetes or myself was diagnosed and I had to deal with a whole compass of things, probably like an eight. So I'm familiar with all the terms and the protocols, but a matter of like the trial and error part of it is a learning curve—that's going to take a while to get.

All students noted the medical component of diabetes will take a while for them to fully comprehend. While these students have increased their knowledge regarding type one diabetes, continued learning about the disease is still needed.

Increased Confidence Equals Increased Knowledge

Students acknowledged that as their confidence of type one diabetes management increased, their knowledge of the disease did as well. In regard to diabetes camp, students felt when they became more comfortable with a general concept of type one diabetes, their knowledge to learn a more specific concept increased. One example provided during the focus group was as their confidence increased with checking their blood sugar, they wanted to learn more about and personally experience wearing insulin pumps. This situation led to all students wearing insulin pumps during their week at camp to enhance their knowledge and confidence in this area of diabetes management. One student discovered her confidence,

I guess I noticed a really big difference in myself. Last year I was afraid to prick my own finger and this year I wanted to check my blood sugar. Then I jumped at the opportunity to change a pump site. Last year I felt like I didn't know enough about type one diabetes and I felt like I had a really big gap between type one in action versus type one in a textbook. It's not even close. This year I came back and I was more focused on individual people rather than learning type one as a whole.

Research Question Three

How can immersive experiential learning at a residential diabetes camp improve knowledge in the management of type one diabetes?

Overview

All data collection methods for year two helped to expand on data collection for year one in regard to research question three. As mentioned in research question one, students became resources for their classmates in regard to type one information. The undergraduate students reported feeling one step ahead of their classmates in regard to diabetes knowledge, following their year one experience. From the first year camp experience and the students' continued learning and experiences over the last year, students reported as their knowledge of type one diabetes increased, so did their confidence. In addition, students realized as their knowledge increased, so did their interest to learn more about the disease. One student recognized that her learning layered; each time she learned something new about diabetes, her knowledge and confidence added another layer; in education we refer to this as scaffolding. Another student added, as she continues to learn, she is discovering her areas of interest in dietetics. She shared,

Like I said this year, I came back because I loved it [camp] so much last year. I found an interest that I didn't know that I had. So now it's just feeding into that interest and mixing it with my other interests. I had a long talk with (camp doctor) about sports and type one diabetes. It's really interesting for me to be able to tie these things together. I feel like there are a lot of things that I never thought about until I came to camp.

During the second year of learning at camp, students recognized they learned more specific concepts related to type one diabetes. Each student had a more general learning experience in year one. One major learning experience, noted from all students, was being able to wear an insulin pump for the week. Students acknowledged an increase in knowledge, perceptions, confidence, and empathy during this experience. In addition, they obtained a better

understanding of the role of the registered dietitian nutritionist at diabetes camp and participated in many different significant learning experiences. Students were able to spend time rotating with different cabins during the week to obtain a variety of learning experiences with different age groups and genders. Students noted no difference in the management of type one diabetes between male and female campers during the week.

Coursework versus Experiential Learning

Students recognized their coursework plays an important role in their education to provide a baseline of knowledge and what to expect in the management of disease states; however, experiential learning helps put reality into the coursework. One student determined that a general understanding of diabetes is needed before digging deeper into more detailed concepts. For example, she mentioned when learning about diabetes in her medical nutrition therapy course, after the first year camp experience, she was able to better understand the content and dig deeper into learning and asking questions. She mentioned she was able to have more detailed conversations [regarding type one diabetes] with her instructors than her fellow peers. She noted confidence in raising her hand in class to elaborate on concepts about type one diabetes that she felt were not fully described in their class discussions. She stated,

I feel like being at camp last year I learned so much. I feel like I was a little ahead of everybody else [in courses]. Before camp I really didn't...we really never talk about type one. I mean it's one of those things where you spend 15 minutes. Before you really start your lesson, you spend 15 minutes talking about type one and then you really delve into type two and gestational diabetes. I felt like I knew a little bit more, but even my classmates were like—how do you know that? It all came back from camp. One of my comments or criticisms of classes is the lack of emphasis on type one. My professors were kind of tiptoeing around subjects because they didn't know what to say or didn't know how to say in a way that wasn't going to confuse everyone. I feel like I kind of intervened in those situations and I felt more than confident. I did on multiple occasions raise my hand and elaborate on things that I felt weren't answered in their fullest capacity.

This student noted that the full disease cannot be taught in the classroom and that students need to be face-to-face with the disease on a day-to-day basis to see how every day is different. This student discussed that she used to be a person who did not want to be asked any questions about diabetes. She is now known as “the diabetes girl,” which she takes as a compliment. The level of confidence their fellow students put into the participants regarding diabetes knowledge, after the first year of data collection, was unexpected for the researcher.

Another student shared,

When I first came [to camp], I was like what is happening? I had only taken introduction to nutrition, introduction to foods, and I think research in dietetics and nutrition education and counseling. Now I’ve had medical nutrition therapy and I felt more prepared educationally, but then from experience too.

One student mentioned she felt like a different person [when educating about diabetes] after the first year experience. She stated, “When I was going in to educate on diabetes, I didn’t even feel like I needed to prepare. It felt like second nature to me,” describing confidence in her role as an educator for type one and type two diabetes. She also noted, “I kind of turned into the go to person for diabetes,” which made her excited. In addition, students realized the difference in education for type one and type two diabetes after their first year experience. Students, who had completed their dietetic internships at the time of data collection, shared that understanding specific concepts and situations (example given of a low blood sugar treatment) helped them to practice in the clinical setting.

In the pre-camp interviews, all students mentioned being excited and eager to return to camp, with one student acknowledging, “I feel like the mindset that I’m going into camp with this year is totally different than last year. With more education, I’ve got a totally different mindset of how I’m going to use this experience.” All students reported more confidence entering their second year experience and determined that hands-on experiential learning is

beneficial and needed in education. In addition, students shared their experiences at camp helped them to build teamwork and communication skills. One student noted, “I can rely on other people. I don’t have to have all of the answers. I can work in a team.”

In addition, students, who were completing their undergraduate degrees at the time of data collection, acknowledged that the camp experiences helped them academically. One student stated “[at camp] I learned diabetes kind of at my own pace, like my own way. Instead of sitting in the classroom and learning it through slideshows.” Students continued to reiterate that more education is needed in the dietetics curriculum for type one diabetes. In addition, as in year one’s results, they continued to share that everyone needs to be educated on type one diabetes, not just health care professionals, people living with the disease, and family members of those living with the disease.

Students discovered that the camp experience in year one related to their coursework, internship, and work experience. Students discussed gaining knowledge and experience from their camp experiences that could not be learned in a classroom. One participant, who is now a registered dietitian nutritionist, reported that camp helped her the most with the amount of resources she has at her disposal, and she now thinks of herself as a diabetes resource. All students recognized that camp comes up in many of their conversations at work, with friends, and with family members and that diabetes has become a part of their lives.

Importance of the Registered Dietitian Nutritionist at Camp

Students gained a better understanding of the registered dietitian nutritionist’s (RDN) role at diabetes camp after year two. After familiarizing themselves with the camp in year one, students had an overall better learning experience of the RDN’s responsibilities in year two. This

year one student noted that learning about the RDN's role at camp was one of her most significant learning experiences. One student noted,

I feel like last year I was more kid focused. I wanted to see how they managed their diabetes and to what extent they did it on their own. Whereas this year, I was more focused on the registered dietitian nutritionist and the medical staff in general, but specifically the RDN. The role of nutrition and the campers' diabetes and how we triple and quadruple checking menus and adjusting carbohydrates. Like was said this morning that it could be a big deal for someone who has a really low insulin-to-carbohydrate ratio. And so I feel like I was more focused on the RDN intervention side of type one diabetes. When before I was, well I know what type one diabetes is, but what is type one diabetes in action, like what does that look like on a person (compared to) in a textbook.

She noted she never realized how a difference in three grams of carbohydrate in a food could affect diabetes management and the importance that carbohydrate counting has on insulin dosing. This learning experience not only changed her knowledge, but also her perceptions of the disease. This student determined that "Dietitians are the segue between the kitchen and the doctors, pharmacists, and nurses. We are the translator between those two totally different worlds." Another student realized "The kitchen is the unsung heroes of camp. No one really knows all the work that goes into it. There's a lot of work and organization."

An unfamiliar situation occurred for one student at camp when she was involved with witnessing a seizure (from a low blood sugar). This student arrived on scene with the camp RDN, who is also a certified diabetes educator (CDE), to deliver the ATV (as asked over the camp radio) used for transporting water and snacks around camp. This ATV is also used for transporting people across camp as needed. The RDN, CDE and student arrived on scene at the end of the seizure, not knowing what had just occurred. This student noted that it was "pure chaos" when she arrived to the scene and it was a much different atmosphere than she expected. She realized the need to be calm during emergency situations and how emotions can cause panic in bystanders. This student helped the RDN, CDE, who was checking camper's blood sugars, by

providing snacks to those with low blood sugars and water to those with high blood sugars.

While checking blood sugars and treating high and low blood sugars are not a main role of an RDN, it is important to understand how the RDN works within the medical team. This event was a great learning experience for this student as she asked—how can I help in that situation? She explained the situation as,

When I see the archery range now, when I was flipping through the pictures I remember when we got called out there. We got called out to the archery range and there was a camper having a seizure. So I firsthand saw how people reacted in that moment. It was different than what I was expecting because it was pure chaos and I was like what is happening? I feel like we were the calmest people there. (The camp dietitian) was like okay let's have everyone else check their blood glucose levels, because everyone else [campers] was scared thinking that they were going have a seizure too. So then we just lined them up and checked their blood glucose. I went and grabbed snacks just in case anybody was low at the time, but it was a learning moment for me there to see how it was when someone's having a seizure and it was kind of...it was intense, but I learned that you have to keep your guard up because your emotions affect everyone else's emotions too.

Wearing an Insulin Pump

One major learning experience noted from all students was being able to wear an insulin pump for the week. Students identified an increase in knowledge, perceptions, confidence, and empathy during this experience. One student recognized that becoming familiar with the device will allow her to provide better education and advice regarding insulin pumps in the future.

Another student discussed that the pump was a great learning tool and was exciting to wear. All students reported they now know firsthand how to use a pump and feel more comfortable with their knowledge in this area of diabetes management. A few students shared they sometimes forgot to take their insulin (saline) with meals and snacks, noting that seeing the campers use their pumps reminded them to take their insulin. One student stated, “I can forget, they can't” in regard to her change in perception. One student remarked,

The pod was definitely the most influential part of camp for me. To have that hands on experience with it and kind of understand. I think it's a great learning tool. We'll use it with patients in the future. I really enjoyed it.

Another student noted, "For me it was a good learning experience, familiarizing me with the device as well as feeling how they [campers] feel on a daily basis." These findings are similar to Vogt et al. (2011), as students "lived with diabetes" they were able to increase their knowledge and confidence of the disease.

One student had the opportunity to wear an insulin pump for the second time (she wore one during her first year at camp). She noted that she was able to try the pump in a different location, which provided her with more personal experience and guidance to help educate her future patients. She noted,

Last year I wore the OmniPod on the back of my arm. So this year I tried a different site, I went for my stomach to see how it would feel to have a pump on my stomach. Having personal experience of wearing the OmniPod on my arm and my stomach, which are popular site locations, will help me better educate patients in the future.

As noted in year one, and important to know for year two, there were no insulin pump fails during the week.

Significant Learning Experiences

All four students noted their significant learning experiences for the week, which were all different. One student identified two significant learning experiences: wearing an insulin pump for hands on experience and understanding how insulin doses are adjusted for camp activities. She learned that there are protocols for adjustments and had conversations with medical staff members to understand the different ways insulin doses are adjusted. As mentioned previously, one student recognized the RDN's role at camp as her most significant learning experience. This student shared she was more kid focused last year and wanted to understand how they live with diabetes and what diabetes looks like on a person compared to what she knew from a textbook.

After learning the overall concepts of living with type one diabetes, this student wanted to understand the role of the medical team, mainly the dietitian nutritionist. This learning experience increased both her knowledge and perceptions of type one.

Another student noted injecting an insulin pump for a counselor to be her most significant learning experience. She noted she felt confident, and the counselor trusted her, in this situation. This year she was focused on how individual people manage type one diabetes rather than understanding diabetes as a whole, as she did in year one. She was excited to see people she met in year one and talk with them about their lives over the past year. She shared she loved camp so much in year one that she came back this year. She realized this experience provided her with an interest she did not know she had. Since last year, she has been learning about type one diabetes, and her other interest, sports dietetics, and tying the two together. She has seen an increase in both her knowledge and confidence with type one. The final student identified two significant learning experiences for year two: working with the camp medical staff to learn how insulin is adjusted for camp activities and understanding the RDN's role at camp and how the dietary staff and kitchen staff work together. These experiences not only increased her knowledge, but also her perceptions of type one.

In addition, a major topic of conversation for the week was how physical activity affects blood sugar levels. Students participated in discussions with the registered dietitian nutritionist and a pediatric endocrinologist at camp on this topic. In addition, students worked with nurses and pharmacists on the medical team to adjust insulin levels for campers during the week. Students agreed this area of diabetes management is overwhelming to them; however, they feel more competent on the topic after their discussions and experiences with the medical team.

Research Question Four

How can immersive experiential learning at a residential diabetes camp improve confidence in the management of type one diabetes?

Overview

Students continued to identify, through all data collection methods, the benefits of experiential learning in increasing their confidence of understanding and caring for type one diabetes. As mentioned in the results of research question two, during the pre-camp interviews for year two, each student reported their confidence level of caring for patients with type one diabetes higher (on a 10-point scale) than the pre-camp interviews for year one, as expected. Students identified their confidence level to be between an eight and 10 on a one-to-ten scale at this time. This confidence level was similar across all students. One student ranked her confidence level at a 10, reporting she is now able to share knowledge that she would not have understood before the camp experiences. The students, who were completing their education at the time of data collection, ranked their confidence level as an eight, but noted they felt comfortable educating and caring for someone living with type one.

As noted previously for data collection for year one, students realized they thought they knew more about diabetes (than they really did) before attending diabetes camp. Following two years of learning experiences at diabetes camp, students rank their confidence level between seven and 10 on a 10-point scale. This ranking was somewhat surprising to the researcher as most of the students noted their confidence as an eight during the pre-camp interviews for year two, showing a decrease in their confidence levels reported at the focus group for year two. I can assume the students had difficulty in remembering how they ranked their confidence levels

between the interview and focus group, which leads me to believe their overall confidence increased [not decreased] after the second year experience.

Overall, the dietetics students described being more comfortable and confident in the nutritional management of type one diabetes (ranking an eight to 10 on a 10-point scale), as expected. Students shared they felt pretty comfortable (a seven or eight on a 10-point scale) they could provide an insulin injection to someone, even though they reported never doing it. All students noted they would not be able to rank themselves at a 10 for confidence, since the disease is so individualized for everyone. One student stated, “I still feel like there’s always something that I can learn.” The need for continual learning with diabetes was also discussed in year one data collection. Students described they would feel confident and comfortable to be put in a situation to manage diabetes. Students determined from their knowledge in school and their experiences at camp, they would be able to figure out a situation, make an educated choice, and take care of someone. All students reported more confidence in nutrition management and less confidence in the individualization of managing the disease medically. Students noted the medical component of diabetes will take a while for them to fully comprehend. While these students have increased their knowledge regarding type one diabetes, continued learning about the disease is still needed.

All students acknowledged their increase in confidence helped to increase their knowledge of the disease. One student, who previously described herself as shy and soft spoken reported she feels more confident asking questions in her dietetics classes, to her fellow students, and to her professors. She shared the camp experience increased her maturity, made her more outgoing, and increased her involvement in school and campus organizations, stating, “it pushed me to get more involved.”

Fear Today, Comfort Tomorrow

In their pre-camp interviews, students discussed many of the camp experiences from year one. One student mentioned her fear during learning experiences at camp [providing an example of checking her blood sugar last year] helped her to gain confidence, which has provided her with comfort in diabetes knowledge. She noted the camp experiences have increased her confidence, which resulted in increased confidence in herself. She stated,

I was a little bit less timid in terms of asking questions [in the clinical realm], because I felt like I had experience and I had seen it and I had dealt with it and I had managed it and I had learned about it, read about it, and so I'm like okay—I have questions. Can we talk about them? And I just I feel like it made me a better learner and student.

Another student described being able to see type one diabetes management every day at camp in both experiences gave her a different perspective of being able to deal with the disease.

After the camp experience in year two, students discussed additional experiences they wanted to try to increase their confidence and comfort with type one. Through camp observations students felt comfortable in checking their blood sugars at camp this year, with no anxiety or nervousness. As mentioned previously, two students taught the first year dietetics students how to check their blood sugars for the first time. All students discussed they wanted additional camp experiences, like checking their blood sugar last year. All students wore insulin pumps during their week at camp in year two. Observations determined all students showed excitement and confidence to fill the pump with insulin, prepare it for insertion, and insert the pump. Students reported little to no nervousness or anxiety for this experience, nothing compared to their anxiety checking their blood sugars last year. Students noted starting small and working up (in regard to medical devices) helped them to find comfort.

Increased Knowledge Equals Increased Confidence

Students declared, in all data collection methods for year two, that learning at diabetes camp has given them more confidence in their field, whether it be the clinical setting or the classroom setting. One student reported, "...one of the best ways to learn about it is to truly get involved." When asked what suggestions they have for students who are hesitant to attend a medical camp, all students agreed "go for it." One student said, "jump on it, I did and I don't regret it at all." Another student mentioned it gives you a different perspective, with another sharing it's only going to benefit you—camp not only allows you to make friends, but also provides further learning. She stated, "I would say that there's two components to it. You can be there to make friends and meet new people, but you can also go for yourself and I think it's an important component. It's like further learning." Another student noted it opened doors and options for her. Two students realized that the camp experiences opened other areas of interest for them and helped to show them the direction they want to take in dietetics. When asked what they gained at camp, they replied, "friends, resources, unexpected knowledge, and the drive to become involved in organizations at school."

Students shared they had a plan coming into camp this year. One student said she "hit the ground running." Another student recognized she knew what she wanted to accomplish and had goals for the week, noting it was much different from last year; she had a game plan and sought out learning experiences more aggressively. She shared, "I had a game plan and I walked in this year like ready to hit my marks. I sought learning experiences out a little more aggressively than I did last year." One student mentioned she felt more prepared educationally after having some additional classes in her undergraduate program and from her experiences over the last year. She noted this year she knew what to expect, and would no longer have the "deer in headlights"

feeling as in year one. This student noted year two was much different than year one regarding the experiences she had and the learning she obtained, stressing that all learning experiences are beneficial. She noted, “I know what I’m getting myself into this year, I know what to expect. But also this year has been so much different than last year, just altogether.” All students agreed their camp experiences were beneficial for learning and increasing their confidence in diabetes.

I Have a Place Here

All students agreed that everyone has an important role in the interdisciplinary team, and they were able to find theirs. All students agree they play a vital role in the team as a nutrition professional. One student shared she was excited to see all parts of the team working together during her experiences, and she now understands her role. Another student realized through this experience and her dietetic internship, working in an interprofessional team made her less soft spoken. She understands it is okay for her to disagree, want to ask a question, or make a different suggestion. In addition, she reported the team made her a more assertive learner and a better educator, noting,

If you want to learn something you have to take the initiative. It’s like you get to a certain point and people stop teaching you. They don’t just hand you things and teach you things. You can learn if you listen or you can learn if you pay attention or if you read or if you ask questions. And so I think it [working in an interprofessional team] made me a better learner, a more assertive learner.

One student noted confidence in interacting with the team and is more comfortable speaking up. Another student has not worked interprofessionally outside of the camp environment, but feels she is more assertive and confident in working with her classmates in group assignments. Students stated that the camp experiences opened their eyes to see how everything works together and shared the importance of understanding everyone’s role in the

team. One student shared, “I’m not an expert in that, but they are” when discussing that a team environment is really the best for patient care.

One student acknowledged that people who help at camp are educators and innovators; noting they want to teach, but they also want to learn. The nutrition team at camp was accommodating and helpful to the medical team and campers during the week of camp. Students described they worked as part of the nutritional team by providing food for snacks and low blood sugars as needed, worked together to provide nutrition education to campers, and worked within the medical team to provide nutrition information to campers and medical staff as needed. One student observed that all of the students were an extension of the RDN for the week of camp.

Students noted during their second year of camp, they were asked more questions from the medical staff, mainly from nurses, pharmacists, nursing students, and pharmacy students.

One student shared,

I had more than one person walk directly up to me and ask me a nutrition question. I guess it’s like people recognize what you’re here for and they come up to you because they trust you and they know that you know how to help them. I feel like when somebody approaches you, that it increases your confidence.

Students felt as if they had a stronger presence this year at camp, mainly because it was their second year and we had more nutrition students at camp this year than last, a total of seven. They thought being strategically placed with cabins helped provide them with more exposure. (They were also placed with cabins last year; however, I assume their increased comfort being at camp helped provide them with increased confidence to be more exposed as a nutrition professional.) One student discussed she made sure to introduce herself as a dietetics student and encouraged the staff and campers to ask her any questions they had about nutrition.

All students recognized building relationships with medical staff members and campers last year helped increase their exposure as a professional in the medical team; however, they

noted there is still a knowledge barrier to the complete role of the RDN at camp. One student shared,

They totally understand we're snacks, we're food, but I don't think they understand how to utilize us when we're sitting at the table and they're (members of the medical staff) eyeing someone getting seconds who shouldn't be getting seconds... it should be like, (name of student) go over there and have the conversation. There're some things that they don't know we can do that I think they would utilize if they did. People also don't understand the role of the dietitian in general.

One student noted she was asked her professional opinion from a medical staff member on nutritional information during the week noting, "moments like that—they make it worth it." In addition, students realized they fit into conversations better with the medical team compared to year one. This year's experience showcased the importance of self-promotion of the RDN in the medical team for the students.

I am Empowered

Students discussed they are empowered to make a difference with education and support in diabetes care and management. Students reported feeling empowered to share their knowledge and having initiative to learn more about the disease. One student shared,

I feel I could explain it [referring to type one diabetes] on the textbook level, the informed patient who's had it for years level, the person who's never seen it, and a person who has family members [living with the disease], so they're kind of exposed.

After the second year of camp, students were better able to describe their role in diabetes management, which also led to empowerment. Students used ally, patient advocate, educator, supporter, encourager, and mentor to define their roles in type one diabetes. One student noted,

This year I asked more questions to the medical staff members at the tables I was sitting at. (Camp pharmacist) would walk me through his thought process on how to change insulin for activities. And then I asked (camp nurse) the same question and she was like I cut it back by a percentage. And then looking at her doing percentages and then (the pharmacist) removing carb choices was different, but neat to see two different ways. And then other things I learned was watching the dietitian do the menus, but then also a

volunteer showing us the food service management aspect of it—showing us the different aspects of dietetics that we learn in class.

Automation versus Communication

One student noted the interprofessional team at camp is more hands-on than interprofessional teams in clinical settings. She acknowledged there is more communication and crossover within the team at camp. This student particularly stated she saw a lot of automated communication through nutrition consults and computer messages in her clinical experiences. For her, she realized there is more automation than communication in health care, and noted from her experience, this is a barrier to care. She shared,

You know it wasn't like I had a great conversation with the cardiologist today like, no I never saw him. He sent me this request. It's like okay, the dietitian gets a consult because it's required before discharge or you know we get flagged in the system for certain things. It's all automated.

Diabetes camp is held in a location that has minimal cell phone service or internet connection. For communication, camp uses radio and face-to-face communication to talk with each other. This student realized that more communication and less automation is needed in health care, which is the current strategy at camp. She discussed a situation she observed, during her internship, where poor communication led to decreased credibility, rapport, and trust.

Research Question Five

How can immersive experiential learning at a residential diabetes camp enhance perceptions of type one diabetes?

Overview

Through continued experience and observations at diabetes camp, all four dietetics students identified changes in their perceptions of the disease. Through year two data collection, students perceived themselves as professionals, a little different from their perceptions in year

one. As students continue to increase their knowledge and confidence, they are beginning to find their place as a nutrition professional. Through the experience of wearing an insulin pump during year two, students were able to identify a difference in their perceptions of the disease and understand that they will never know what it is *really* like to live with type one diabetes.

Wearing an Insulin Pump

All students shared that wearing an insulin pump gave them a different perspective of diabetes. All students were excited to wear the pump and mentioned they were able to understand the campers a little bit better after wearing it. Two students shared that campers were excited to see them wearing insulin pumps to better relate to the disease and people living with type one diabetes. All students noted they felt like they fit in at camp better when wearing an insulin pump. Two students shared they thought wearing the pump made them feel cooler and they got more attention with it on. One said, “When I had this on I felt cooler. I’m like one of the gang.” Students expressed thoughts of how they needed to change their meals and daily routine when wearing the insulin pump. One student mentioned she caught her insulin pump on things and one time knocked it on a door frame, which gave her a different perspective of obstacles when wearing a pump. She stated,

I caught it [the pump] on a couple of things, I ran into a wall with it, and so it gives you a better understanding, gives you a little bit of empathy because obviously I’m wearing it to educate myself, but they [campers] have to wear it in order to receive insulin. So, it was humbling.

While these students felt cooler and part of the gang when wearing insulin pumps at camp, the reality for campers is that insulin pumps make them feel out of place in everyday life. During one of the cooking activities during the week, one of the students sat in on a discussion of the campers’ biggest challenges at school. Some of the campers mentioned they get treated like outcasts by teachers and classmates when wearing their pumps. Campers noted they get treated

differently because people think they are going to die or they are dangerous because they have needles with their pump, common misconceptions with the disease. This student shared her experience listening to the campers, “Classmates think I’m weird or my teachers think I’m a hazard or a liability. I don’t get to go on field trips because I have type one diabetes and the school won’t let me go.” The student listening to this conversation mentioned how sad and irritated she was that these kids were treated differently in school, when some basic education could help everyone understand the disease correctly.

Kids First, Diabetes Second

While students identified this concept in year one of data collection, all of the students continued to discuss how kids living with type one diabetes need to be thought of as kids, rather than a person living with a disease. While the independence of campers stands out in data collection, the students continue to understand that they are “just a kid.” One student noted, “If a seven year old can do it, I have no concerns for anyone else that has type one diabetes” [referring to talking to an older patient living with diabetes].

All students acknowledged they thought they knew about diabetes before coming to camp, but when they arrived, it felt like culture shock to them. One student mentioned that diabetes is not black and white and there is no one right way to care for the disease, she noted, “I feel like everything with type one is gray.” This concept is interesting as the awareness ribbon that represents diabetes is gray with a red blood drop.

I Don’t Really Know

While these students have completed experiential learning during two years at diabetes camp, they continued to share that they do not really know what it is like to live with diabetes. One student mentioned, “I can’t even understand the feelings of the highs and lows...I’ve never

felt them.” Even though students have enhanced their perceptions of the disease through learning, they reported they will never *really* understand what it is like to live with diabetes. In addition, the students shared it must feel frustrating to be stereotyped living with type one diabetes, which was a large part of the findings in year one and year two.

Insider/Outsider Perspective

During the beginning of the experience in year one, students reported a sense of feeling left out as everyone on the camp staff or volunteering seemed to know each other. The students were unsure how they were going to connect with everyone; however, by the end of the week they felt belonging. When the students arrived at camp for year two, they had no feelings of being an outsider, and noted they identified as an insider in the camp environment. Students noted they instantly felt as if they fit in. One student noted,

I felt like this year I knew a lot more people here. So people know why we’re here. Last year it was getting to know people and making friends, whereas now everybody knows us and everybody knows why we’re here.

In addition, and previously discussed, the students noted that being able to wear an insulin pump during the week made them feel a greater sense of belonging at camp.

Diabetes Education for Dietetics Students

Students realized during their camp experiences that they have learned more at camp than they could in a classroom. Students noted that currently, education in the classroom does not brush the surface of what diabetes is really like in day-to-day management and the classroom cannot provide detailed experiences like camp can. One student shared,

I feel like education in a classroom setting really doesn’t even brush the surface of what diabetes really is like day-to-day, which it really can’t. That’s not even a flaw in the education system, it’s just that it’s so complex and it’s so individualized. It’s different for everyone. Although there are similarities, it’s usually very different and the things that work for one person don’t really work for another.

Students recommended learning experiences outside of the classroom to gain more detailed knowledge of diseases. In addition, students noted that out of class learning experiences should be electives for students in their undergraduate dietetics education. Students believe these learning experiences should be offered during the junior or senior year of the undergraduate program or the dietetic internship. Two of the students attended camp for experiential learning before learning in depth concepts about diabetes in their courses. These students acknowledged the experience was helpful before these courses, but would have been more beneficial later in their coursework. One student noted,

Being so young mentally and so new in the major—I feel like I wouldn't know what things to grasp and what things to take away. I feel like being in college a few years, doing the program for a while, having a baseline made me know what to do—made me kind of ask myself what do I want to take away from this experience.

From their experience, students suggested courses on diabetes be offered in the dietetics curriculum and that education on the disease needs to be more than a few weeks in a course. Assignments that allow students to practice living with diabetes and reflections on their experiences should be a major part of the course; however, students noted that wearing a pump and checking blood sugars with a glucometer would be hard to do in this setting. In addition, students noted that learning would not be as personal without the camp experience, and that camp helped them retain information, as their memories are attached to people and certain experiences. Students encourage learners to participate in the camp experiences to fully understand type one diabetes. One student noted, “I feel like I treated this as an opportunity to really educate myself and take away from this experience.”

Food Insecurity

Students recognize that food insecurity is prevalent in many parts of West Virginia, and since there were many returning campers from year one, they understand it is still a problem [for

some of the campers]; however, they encountered no specific situations with this topic in year two. The lack of discussion regarding food insecurity in year two was unexpected for the researcher as this theme was prevalent in year one.

Research Question Six

How can immersive experiential learning at a residential diabetes camp improve empathy for those living with type one diabetes?

Overview

All students noted they found themselves more passionate about type one diabetes since their experience in year one. One student noted that camp really affected her life. She stated,

I'm learning about all of these problems that people run into—like with insurance companies and not being able to afford a new insulin pump or not even being able to get insulin and it makes me want to bring awareness. It makes me want to use my voice, especially as somebody who's going to be a dietitian someday. I can do something and I can help. It made me more aware that I do have a huge role and that I can make a difference and that I can help.

The level of passion from this student was a surprising find for the researcher. This same student shared that camp has motivated and inspired her and is grateful she decided to go to camp, which was outside of her comfort zone. In my opinion, this student had the most change in empathy of the four.

In year two, students were more comfortable and confident in their role as a dietetics student at camp. Different experiences in year two caused the students to feel many different emotions. Students realized after the camp experience for year two, they are more excited and passionate to continue working with type one diabetes in their education and professional careers. Sadness and isolation were more common themes in year one; however, they were still noted in year two.

Passion

As described in year one, passion was a major feeling in year two data collection.

Students continued to explain how their love and passion for type one diabetes has grown after this experience; one stated, “It’s just something I love” and “It pulls my heartstrings being here, being around people, making friends with people who have type one. You’re their ally. You’re their voice when they’re not around.” Another student shared a situation she experienced as a registered dietitian nutritionist in the clinical setting where she was able to talk with a patient about her continuous glucose monitor, to have someone who understands was a big deal for this patient. She described this situation,

One of my eating disorder patients I dealt with also had type one and no one in my office knew much about it. They had no idea what she was talking about with certain things. She had a continuous glucose monitor and I was like, let me go up and talk to her. She was so excited that somebody understood what she was talking about and it was a big deal to have someone that understands. They really do see you as an ally.

This student noted, it makes the disease more personal for her stating, “The more people you meet [with type one diabetes], the more attached you get to it.” Students continued to discuss how impressed they are by the kids and their management of the disease, as noted in year one. One student recognized this experience showed her where she wants to go in her career as a registered dietitian nutritionist,

Camp definitely showed me the direction that I wanted to—I mean I wanted to be a dietitian, I knew that. But there are so many different ways you can go with it and I feel like camp really like slapped me in the face in terms of like you want to do this—this is exactly what you’re made for.

Another student shared, “I was very interested and passionate before [camp], but now it’s just continued to grow and I’m more interested in the details because I feel like I’m getting comfortable.”

Isolation and Sadness

During one of the cooking activities during the week, one of the students sat in on a discussion of the campers' biggest challenges at school. Some of the campers mentioned they get treated like outcasts by teachers and classmates when wearing their pumps. Campers noted they get treated differently because people think they are going to die or they are dangerous because they have needles with their pump. In addition, the campers noted their teachers think they are a liability, and other kids think they are weird. Campers also mentioned they do not get to attend school field trips since their school won't let them. The student listening to this conversation mentioned how sad and irritated she was that these kids are treated differently in school, when some basic education could help everyone understand the disease correctly. This conversation ties back into many of the discussions of stereotyping diabetes in year one and the pre-camp interviews in year two.

One student noted sadness after arriving to the archery activity in the middle of a seven year old girl having a seizure. The student noted there were many emotions happening in this situation. Campers were scared and sad. Members of the medical staff were scared and sad. This student noted it was "pure chaos" when she arrived to the scene and it was a much different atmosphere than she expected. She realized the need to be calm during emergency situations, as she did when helping with the situation, and how emotions can cause panic in bystanders.

One camper who participates in camp lives with glycogen storage disease, a rare disorder in which the body cannot form glycogen (the stored form of glucose) (U.S. National Library of Medicine, 2019). This camper has a very restrictive diet, which brought sadness and empathy from the students. The goal for this child at camp is to fit in, which we help with as a dietary team by preparing foods as close to what the other campers are getting, as much as possible.

Students were very interested in learning about this disease and helping to make the camp experience normal for this camper.

Wearing an Insulin Pump

The experience of wearing an insulin pump for these students not only increased their knowledge, perceptions, and confidence with type one diabetes, but also their empathy. Students stated wearing the pump provided them with a feeling of how people live with type one diabetes, noting it gave them a better understanding of the challenges with the disease. One student shared it was a humbling and challenging experience, as she got her pump caught on a door frame when walking into a room. She was able to gain more empathy for the disease from this experience. This student described a conversation she had with a camper, who wears the same insulin pump she was wearing. She stated,

I had one little girl say I have the OmniPod, too. And I was like—we match. I didn't want to tell her that I don't really have diabetes, but it was cute that she was excited that we had the same pod on—made me happy.

This situation, which occurs for many type one kids when they see someone else with diabetes, really touched the student as she understood how important it is for these kids to fit in.

As mentioned previously, students were able to gain personal experience wearing a pump, remembering to dose insulin, and overcoming day-to-day challenges of type one diabetes. This experience gave the students a whole new level of understanding and empathy for type one diabetes. One student shared, "I was put in their shoes." While all students were excited to wear the pump for three days, I can imagine they would have a different feeling relying on the pump for survival in everyday life. Students realized that an increase in their knowledge and confidence throughout all their camp experiences has increased their passion for the disease.

Future Plans

I asked the students “when I say type one diabetes, how do you feel,” they replied with excitement, I think about people instead of terms, it has a face, I think of everybody I know with type one, it’s more personal for me now, it holds a lot more value, it makes my heart beat a little harder, it makes me think of everybody I know that has it and makes me want to do better for them, and I think of camp.

As noted previously, all four students continued to recognize interest in becoming a certified diabetes educator (CDE) and learning more about diabetes and endocrinology. Three of the four students are interested in becoming CDEs, while the fourth student is currently attending medical school with a goal of pursuing a career in pediatrics, and possibly the field of endocrinology. One student noted she wanted to become a nurse practitioner after her undergraduate degree in dietetics, but has decided she wants to become an RDN and CDE and work in the field of diabetes. Students have continued to build their relationships with one another and look forward to using each other as resources in their professional careers. In addition, they identified each other as friends and look forward to staying in touch with each other in the future. In addition, students shared they continued to develop relationships with counselors and members of the medical staff and look forward to keeping in contact with them in the future. All four students expressed they feel comfortable moving forward in their education and careers regarding type one diabetes care and management. In addition, all students voiced interest in returning to camp in the future, two of them noting specifically they would like to be registered dietitian nutritionists at camp.

Conclusion

Students confirmed their continued diabetes camp experiences will be beneficial in preparing them to be successful registered dietitian nutritionists. Students identified their roles as educator, meal planner, supporter, and advocate in type one diabetes. Experiential learning at camp was beneficial to gain knowledge and confidence that could not be learned in a classroom. In year two, students obtained deeper understanding and experiences through wearing insulin pumps and continued to work as part of the medical team at camp. In addition, students became more immersed in the education of diabetes to campers and medical staff members.

Students continued to gain confidence in their role as a nutrition professional in diabetes management and look forward to continuing to gain more knowledge on the disease. Following the camp experiences, students are empowered to make a difference in the lives of those living with diabetes. In addition, all students feel more comfortable in their role in the interdisciplinary medical team. While students realized they will never understand what it is *really* like to live with type one diabetes, they feel the camp experiences gave them a better understanding. The overall conclusion from this chapter identifies a gain in knowledge, perceptions, confidence, and empathy regarding type one diabetes from experiential learning at a residential diabetes camp. In addition, this chapter provides results that two years of experiential learning at diabetes camp provides a deeper understanding of the disease compared to just one year of learning.

CHAPTER SEVEN

SUMMARY DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

This study used a qualitative longitudinal case study approach to explore how experiential learning impacts dietetics student knowledge, perceptions, confidence, and empathy of type one diabetes. Photovoice, participatory action research, was used to engage students through data collection and dialogue to reflect on how different educational strategies can benefit dietetics students. Research participants focused on their experience of hands-on involvement with type one diabetes and what they learned at a residential diabetes camp that cannot not be learned in a classroom. The aim of the study was to identify if experiential learning makes a difference in student knowledge, perceptions, confidence, and empathy with type one diabetes. This study adds to the small body of knowledge concerning experiential learning in dietetics students. Data were collected over two years at Camp Kno-Koma, the diabetes camp of West Virginia. Research participants attended both years of camp and participated in all data collection methods. This chapter will focus on conclusions, discussion, and further recommendations identified from this research.

Summary of Purpose

The purpose of this study was to determine if educational experiences at a residential camp for children with type one diabetes changes knowledge, perceptions, confidence, and empathy of the disease for dietetics students. In this chapter, I will discuss the conclusions, implications, and recommendations of this study, which were founded on these six research questions:

1. How do dietetics students identify their role in type one diabetes management?
2. How confident are dietetics students in caring for patients with type one diabetes?

3. How can immersive experiential learning at a residential diabetes camp improve knowledge of type one diabetes?
4. How can immersive experiential learning at a residential diabetes camp improve confidence in the management of type one diabetes?
5. How can immersive experiential learning at a residential diabetes camp enhance perceptions of type one diabetes?
6. How can immersive experiential learning at a residential diabetes camp improve empathy for those living with type one diabetes?

In addition, I will provide suggestions for future research and discuss how this study adds to the body of knowledge concerning experiential learning in dietetics education.

Experiential Learning at Diabetes Camp

Students learn in many different ways, with one of the most helpful strategies being experiential learning. In dietetics, most education is provided through direct instruction, also known as lecture-based learning. Education needs to be interactive and hands-on, especially for students who will work in health care fields. Students need to be engaged to build on their current knowledge and experience in a conducive learning environment (Gilboy et al., 2015). To do this, experiential learning is an opportunity for students to work in their field to gain hands-on experience and apply didactic learning to real life situations.

Gentry (1990) noted experiential learning is interactive, applied, and participative. It focuses on the whole person, including cognitive, problem-solving, interpersonal, and people skills. All four of these skills were used during the students' learning experiences at camp. Interpersonal and communication skills are enhanced when students engage in problem-solving strategies with others (Johnson et al., 2014). Imbedding students in interactive learning

experiences can greatly enhance their knowledge and abilities. Research reinforces that diabetes camp can be a beneficial learning opportunity where all students can apply and integrate previously learned knowledge (Johnson, 2007). Many benefits to experiential learning include interdisciplinary education and experience, collaboration, teamwork, establishing roles and responsibilities, personal growth, enhancing skills, and opportunities for multiple institutions to collaborate (Illingworth & Chelvanayagam, 2007; Johnson et al., 2014; Vogt et al., 2011). Students experienced all of these benefits during observations at camp by the researcher and our focus group discussions.

All students reported they learn better in a hands-on environment; one noted she likes to learn from a lecture-based setting and then apply her knowledge in an experiential environment. The attitudes from research participants in this dissertation were positive to experiential learning, a difference noted from previous research. Previous literature from Horsburgh et al. (2001) and Kolb (1984) identified one major challenge to experiential learning being negative attitudes that lead to learning in the real world environment being actively rejected. In this experience, students shared they enjoyed being able to learn in a real world setting where they could work as part of an interprofessional team, a difference from current research. Noted in previous research, dietetics students prefer learning styles that include convergence (learning facts, following instructions, and solving problems with one right answer), assimilation (fitting new knowledge into what they already know), learning through thinking before acting, and lecture-based teaching methods. The identification of preferred learning styles, through discussion and interaction, is important for educators to meet the needs of their students (Palermo et al., 2009).

All of the students shared, during the focus groups, they learned immensely at camp from hands-on learning and active learning strategies. Camp provided learning opportunities for real

life situations that arose from living with type one diabetes that students would not otherwise learn.

During this study, several themes related to the diabetes camp learning experiences emerged:

- The differences in diabetes (and management) throughout the lifecycle
- The complex and overwhelming feelings associated with type one diabetes
- Dietetics students and their role in the interdisciplinary team—we fit!
- More education needed on type one diabetes in dietetics curricula
- The influence of this experience on the participant’s future plans in dietetics
- Importance of teamwork and communication: My voice is important
- Importance of the registered dietitian nutritionist at camp
- As nutrition professionals, we are empowered to make a difference
- Learning at camp increases confidence in the field and classroom

Through data collection, interpretation, and analysis, I was able to identify these themes with the help of the active research participants. These themes are representative of the students’ learning experiences and perceptions after camp and identify commonalities and individualities that are noted in current literature.

Summary of Demographics

The participants in this study represented a sample of four dietetics students in West Virginia. The students were in various stages of their dietetics education at the time of data collection. At the time of study completion, one student is planning to graduate with her bachelor’s degree in dietetics. Another student is planning to graduate with her bachelor’s degree in food and nutrition. One student completed her dietetic internship and master’s program and is

studying for her RDN exam. The final participant passed her RDN exam and recently began medical school.

Prior to this learning experience, very few dietetics students attended Camp Kno-Koma for learning experiences. Lack of attendance is partly due to camp being in the summer with all students on break from school. In previous years, dietetics students were very involved with camp; however, with demanding schedules, many students do not have time to attend. These past two years were different. With more recruitment from the camp staff and the interest and availability of students, four students volunteered to attend camp and participate in this study. It is important to note during camp 2018, two additional dietetics students attended, but were not able to stay the entire week. Not being able to stay the entire week at camp made them ineligible to participate in the research. In 2019, all four research participants attended camp for the second year of data collection. Three additional dietetics students also attended, but were not a part of the research study since they did not attend camp in 2018. Through the work of this dissertation, Camp Kno-Koma is now a rotation site for the West Virginia University Dietetic Internship, which will bring more dietetics students into the camp learning environment.

Convenience sampling was used to recruit participants. In the beginning of recruitment, through oral communication with Marshall students, four students applied to be volunteers on the camp website. Three students from Marshall University, one dietetic internship student and two undergraduate students, and one dietetic internship student from J. W. Ruby Memorial Hospital submitted their volunteer applications to attend camp. The one student from Ruby Memorial Hospital was encouraged to attend camp during her rotation at a diabetes center in Morgantown. She was encouraged by the staff and her pediatric patients to attend camp. Due to this, she completed the volunteer form on the camp website and was then asked to participate in this

research. I had no communication with her before her application was submitted for camp. Soon after I received confirmation of their applications, two of the students, one undergraduate student and one dietetic internship student from Marshall University, contacted the researcher to report schedule conflicts and their inability to attend camp. After this, I began more formal recruitment strategies. E-mail and verbal invitations to all Marshall University Dietetic Internship students was completed, along with word of mouth communication and e-mail invitations to the undergraduate and graduate students at Marshall. E-mail invitations and communication were completed to both undergraduate and dietetic internship students at West Virginia University, along with word of mouth communication from WVU faculty members. No communication was completed with the J. W. Ruby Memorial dietetic interns. In the end, one undergraduate student from Marshall University, one undergraduate from West Virginia University, one dietetic intern from West Virginia University, and one dietetic intern from Ruby Memorial Hospital were recruited for the study.

As a recommendation for future recruitment, I suggest formal invitations and communication be completed before any informal communication with students. For me, beginning with formal communication was difficult as I teach the undergraduate and dietetic internship students at Marshall University and camp is a topic of conversation in many of my courses. This conversation leads to questions about how students can volunteer at camp.

Summary of Methods

This study's longitudinal data were collected through individual interviews with each student; observations of students at diabetes camp; Photovoice, a participatory action research method to capture photos and discussions to collect data; and focus groups after the camp experiences with all four students. These research methods were completed for both years of data

collection. Individual interviews before the experiences were particularly important to identify the current level of knowledge of type one diabetes. Interviews were chosen to gather open and honest information about the student's current level of knowledge and confidence in a confidential, trusting setting. In addition, observations were important for the researcher to gather information on specific learning experiences at camp. Using different types of data collection methods was beneficial for triangulation and data saturation.

Photovoice, participatory action research, was used to engage students through data collection and dialogue to reflect on how different educational strategies can benefit dietetics students. Students focused their photographs capturing hands-on experience to identify their most significant learning experiences at camp. The goal of the study was to improve student knowledge and perceptions of diabetes, and increase confidence and empathy in caring for patients with type one diabetes. Photovoice has become a popular research tool in health care; however, no research has been noted on using Photovoice in a diabetes camp setting. Photovoice was an important part of this data collection to provide an alternative to word only data in qualitative research. This research method allowed data to be experienced and perceived in more detail than words alone. With this method of data collection, students were able to identify their most significant learning experiences and use their photographs to discuss their experiences during the focus group. The students enjoyed being able to use their photos to bring back additional memories of camp during our discussion. As noted in the research, these students were able to show concepts that would have been hard to explain with words alone (Nykiforuk et al., 2011). Photographs also helped to deepen their understanding of lived experiences with type one diabetes (Plunkett et al., 2012). This approach was flexible and incorporated creativity and

collaboration with the students (Catalani & Minkler, 2010; Palibroda et al., 2009; Prosser & Loxley, 2008).

Participants selected their top three photographs to show their most significant learning experiences at camp. Photo selection led to an open discussion of the images and additional questions during the focus group. This data collection method enabled the students to reflect on their experiences and promote critical dialogue about important issues related to type one diabetes.

Forty-five images were successfully developed for the first year of this study. All of the pictures were appropriate for research and none were deleted. All pictures from year one are available for review in Appendix H. In addition, the top three photographs for each student in year one are available for review in Appendix G. For year one, it is important to note that all images in the students' top three picks are available for review except one. This image was underexposed and not able to be developed. This image was titled "Memories" as it captured campers watching a slideshow recap of their week on the last night at camp and was discussed by the student during the focus group. Forty-two images were taken with digital cameras for the second year of this study. All pictures from year two are available for review in Appendix L. In addition, the top three photographs for each student in year two are available for review in Appendix K. It is important to note that six images from year two were deleted as they contained faces of people at camp, making a total of 36 pictures for year two.

The focus groups provided the outlet where the majority of data for this research was collected. Focus groups are a positive method for data collection in qualitative research and help to gather more information than an interview. Focus groups provide an environment where participants feel comfortable to express their views. These groups involve focusing on specific

issues with a predetermined group of people with an interactive discussion (Hennink, 2014). Group interaction was used to obtain a variety of perspectives on the research questions. The goal for our focus groups were to explore, understand, and provide insights about how the students perceived their learning experiences at camp and how their knowledge, perceptions, confidence, and empathy regarding type one diabetes changed during their experiences. The focus groups, in addition to the interviews, photographs, and observations, allowed for data saturation.

Unexpected Issues that Arose During Research

As noted in Chapter Six, disposable cameras are an item of the past and one-hour photo developing is as well. For timely photograph development in year one, the researcher had photos developed in Columbus, OH (a three hour drive) so the focus group could be completed the week after camp. Photograph collection is important to take into consideration with future research; photograph developing strategies should be researched and identified before the research takes place. In addition, it is important to note that participants shared in the focus group, after reviewing the pictures, thought they were getting more in the photograph than what they saw in the pictures.

The research participants are important to consider when selecting research methods, as most of these participants have grown up with digital and phone photography and not disposable cameras. Another consideration is that some photos from the disposable cameras were underexposed and were not able to be developed, which led to the students having fewer pictures to represent their learning experiences. Pictures for each participant ranged from 10 to 18 for year one. Pictures from disposable cameras are of poorer quality than digital photos, which should be considered for the purpose of the research. Photovoice was a supplemental data

collection method in this study and the photographs worked for this purpose. Photograph collection was changed to use digital cameras with SD cards for year two.

Participants were asked to take as many photographs as they desired during year two. Theoretically, the number of pictures they could take on the digital cameras was unlimited, with a maximum of 500 photos that could be stored on the SD cards that were used. The number of pictures taken ranged from five to 17. The small amount of pictures taken in year two was unexpected for the researcher, as with an unlimited amount of photographs, I thought they would have taken many more. Six photographs were deleted in year two data as they contained faces of people at camp. I was surprised by this as with digital cameras these photographs could have been deleted before the focus group discussion. In regard to photo collection, obviously using digital cameras provided better quality photographs in year two, an important concept to think about in data collection.

With any research, the researcher should schedule meeting times to meet the needs of themselves and the research participants. Researchers should be flexible to meet scheduling needs as they arise. For example, the scheduling of individualized cabin placement was changed at camp as there was not enough room in certain cabins for dietetics students in year one. It was the initial plan to have one dietetics student working directly with a medical staff member. This plan changed as two students stayed together in one cabin, one student stayed in a staff cabin, and one student was able to stay in her planned cabin for the week. This change did not affect the results of the study, as the student staying in the staff cabin was able to complete all tasks with her cabin, while the two students staying in one cabin were able to get a variety of experiences with many of the medical staff members in their cabin. For year two, all students stayed in the cabins with campers and the medical staff. Unexpectedly, due to space issues at camp, two

students stayed in the same cabin; however, each student rotated with different cabins during the week to obtain a variety of learning experiences with different age groups and genders.

SUMMARY: RELATED DISCUSSIONS, CONCLUSIONS, AND IMPLICATIONS FOR RESEARCH QUESTIONS

Research Questions

1. How do dietetics students identify their role in type one diabetes management?

There is currently no research to identify how dietetics students identify their role in type one diabetes management; although, it can be assumed that this is discussed in dietetics education programs across the nation. Overall, based on this study, students reported they identify their roles as an educator, meal planner, supporter, and advocate in the management of type one diabetes. Students used ally, patient advocate, educator, supporter, encourager, and mentor to define their roles.

Students see themselves as an important part of the interprofessional team, not only at diabetes camp, but also in other health care settings. In year one, students shared they did not feel as if they fit in with the other health care professional students at camp. The other students they are referring to include nursing and pharmacy students. Dietetics students discovered that other health care professional students, namely nursing and pharmacy students, had a more hands-on clinical role at camp in year one, while they had more of an observatory role. A differing experience between dietetics, nursing, and pharmacy students is expected as nurses and pharmacists play a larger role in medication delivery in the camp setting. In year two, students had a better understanding of their role in the interdisciplinary team and viewed themselves as an important professional in the medical team. Students realized they fit into conversations better with the medical team compared to year one. In addition, students felt more hands-on in their

role as an educator (and in the medical team) in year two. In addition to being an educator for campers and staff, all students were resources and educators for the first year dietetics students who attended camp in 2019.

In year one, dietetics students discovered other health care students, again focusing on the nursing and pharmacy students, did not completely understand the role dietetics students have in the management of diabetes at camp. In addition, dietetics students discussed it was not clear if the nursing and pharmacy students understood the role of the registered dietitian nutritionist in diabetes care and management. In year two, all students recognized building relationships with medical staff members and campers in year one helped increase their exposure as a professional in the medical team; however, they noted there is still a knowledge barrier to the complete role of the RDN at camp. By identifying this problem, students feel more empowered to educate others on the benefits of a registered dietitian nutritionist as an essential part of the medical team.

In year one, dietetics students recognized they were in the early learning of type one diabetes and understood their roles to be carbohydrate counting, nutrition education, and physical activity; not checking blood sugars, changing pump sites, or giving medication doses. Students were able to have a better understanding of a Certified Diabetes Educator's (CDE) scope of practice and stated they are interested in becoming a CDE or continuing their education in diabetes. As noted in previous literature, most students who participate in camp are forever changed and many of them choose careers in diabetes based on their camp experience (Rosenbloom, 2001). Following year one, the same results were found in this study as all four dietetics students identified their desire to become CDEs or further their knowledge of diabetes and endocrinology in other educational programs (i.e., medical school).

In year two, students noted they now feel confident and comfortable to be put in a situation to manage diabetes. Students determined from their knowledge in school and their experiences at camp, they would be able to figure out a situation, make an educated choice, and take care of someone. All students reported more confidence in nutrition management and less confidence in the individualization of managing the disease medically. Students noted the medical component of diabetes will take a while for them to fully comprehend. While these students have increased their knowledge regarding type one diabetes, continued learning about the disease is still needed. Students noted starting small and working up (in regard to medical devices) helped them to find comfort in being able to care for the disease.

Following year two, all four students continued to recognize interest in becoming a certified diabetes educator (CDE) and learning more about diabetes and endocrinology. Three of the four students are interested in becoming CDEs, while the fourth student is currently attending medical school with a goal of pursuing a career in pediatrics, and possibly the field of endocrinology. In the pre-camp interviews for year one, one student noted she wanted to become a nurse practitioner after her undergraduate degree in dietetics, but has decided she wants to become an RDN and CDE and work in the field of diabetes. All four students expressed they feel comfortable moving forward in their education and careers regarding type one diabetes care and management. Students have continued to build their relationships with one another and look forward to using each other as resources in their professional careers. In addition, they identified each other as friends and look forward to staying in touch with each other in the future. In addition, students shared they developed relationships with counselors and members of the medical staff and look forward to keeping in contact with them in the future. In addition, all students expressed interest in returning to camp in the future, two of them noting specifically

they would like to be registered dietitian nutritionists at camp in the future. Results related to this research question have been identified and discussed in detail previously in Chapters Five and Six.

The overall conclusions generated from the results of the study on research question one are as follows:

- Students identify their roles as an educator, meal planner, supporter, and advocate in the management of type one diabetes
- Students identify themselves as an important team member in interdisciplinary care for type one diabetes
- Students believe they play an important role in education and support as an interdisciplinary team member
- Students view themselves as the expert in nutrition, carbohydrate counting, and food allergies in the interdisciplinary team
- Students identify the need for education on type one diabetes for everyone including the public, all health care providers, parents and caregivers of patients living with type one diabetes, and those living with type one diabetes themselves
- Students view themselves as an important member of the support system for their future patients and clients living with type one diabetes
- Students believe the registered dietitian nutritionist plays a large role in the management of type one diabetes in the camp setting
- Students believe they are a resource for type one information and feel confident in their future and current roles as an educator

2. How confident are dietetics students in caring for patients with type one diabetes?

The goal of question two was to identify the students' level of confidence before the camp learning experiences compared to their level of confidence after the camp learning experiences. It is normal for both health care professionals and patients to have frustrations with diabetes management and is crucial that health care providers have training to increase their knowledge, belief, and attitudes about diabetes care. All health professional disciplines have noted the importance of adequate preparation and training for the management of chronic diseases (Delea et al., 2010). Most students believe they have a deficit of knowledge in diabetes if they do not also have experiential learning where they can apply didactic material (Johnson et al., 2014).

Before the camp experiences, all students noted their confidence in caring for type one diabetes as intermediate; a five on a one-to-ten scale. After their first year camp experience, all students realized they did not know as much about type one diabetes as they thought. Following two years of learning experiences at diabetes camp, students ranked their confidence level between seven and 10 on a 10-point scale. This ranking was somewhat surprising to the researcher as most of the students noted their confidence as an eight during the pre-camp interviews for year two, showing a decrease in their confidence levels reported at the focus group for year two. I can assume the students had difficulty in remembering how they ranked their confidence levels between the interview and focus group, which leads me to believe their overall confidence increased [not decreased] after the second year experience. Overall, the dietetics students described being more comfortable and confident in the nutritional management of type one diabetes (ranking an eight to 10 on a 10-point scale), as expected. Students recognized they feel pretty comfortable (a seven or eight on a 10-point scale) they could provide an insulin injection to someone, even though they reported never doing it. All students noted they would

not be able to rank themselves at a 10 for confidence, since the disease is so individualized for everyone. All students stated they have more confidence than before the experiences, but still have a lot to learn. In addition, all of the students reported an interest in becoming an expert in diabetes after the camp learning experiences, but also reported the disease is so individualized, they are not sure they can become an expert in the disease. Students acknowledged that as their confidence of type one diabetes management increased, their knowledge of the disease did as well. Results have been identified and discussed in detail previously in Chapters Five and Six.

The overall conclusions generated from the results of the study on research question two are as follows:

- Students recognize their confidence levels regarding type one diabetes prior to the camp experiences to be different than what they thought
- Students express an increase in overall confidence with the disease after the camp learning experiences
- Students participate in numerous experiences at camp that are not available in the classroom setting
- Students share an increase in passion for the disease after the camp experiences and plan to work with patients living with type and type two diabetes in the future
- Students agree experiences with medical devices for diabetes care and management increased both their knowledge and confidence of the disease
- Students realize that as their confidence of type one diabetes management increases, their knowledge of the disease does as well

3. How can immersive experiential learning at a residential diabetes camp improve knowledge of type one diabetes?

In dietetics, one study in the literature identified changes in knowledge and confidence in students after a week-long type one diabetes camp. This study showed that students benefitted from hands-on learning during camp, which improved their knowledge and confidence in caring for those with the disease (Brann, 2012). In this dissertation, all four dietetics students reported camp was a beneficial learning experience for them to increase their knowledge on type one diabetes. The attitudes from dietetics students in this dissertation were positive to experiential learning, a difference noted from previous research. Previous literature from Horsburgh et al. (2001) and Kolb (1984) identified major challenges to experiential learning are negative attitudes that lead to learning in the real world environment being actively rejected. In these camp experiences, students shared they enjoyed being able to learn in a real world setting where they could work as part of an interprofessional team, a difference found in current research.

All of the students shared their learning will never stop when it comes to diabetes and its advancements. Students were not expecting to realize how much is involved in diabetes care and how much they feel they still need to learn. In addition, all students shared how the experience increased their comfort for moving forward in their continued education and future careers. All four dietetics students noted they could not have obtained this detailed learning experience in a classroom. Camp provided an experience to put the knowledge to use they learned in the classroom, but also provided education on many different aspects of diabetes care that could not be learned in a classroom. Students reported they are resources for their classmates and fellow medical professionals for type one diabetes after their experiences.

Following year two, students reported a deeper understanding of diabetes care and management. Students recognized experiencing checking their blood sugar and wearing an insulin pump provided them with more comfort and confidence in medical management of the disease. The relationship between student experience and increased comfort and confidence is a similar finding to Vogt et al. (2011), as they discussed how their nursing students adopted a diabetes lifestyle at camp to experience the disease for themselves. In both situations, the camp experience not only allowed for increased knowledge and confidence for the disease, but also a change in student perceptions. In addition, students better understand the role and the importance of the registered dietitian nutritionist at diabetes camp in regard to education and food service management. Results have been identified and discussed in detail previously in Chapters Five and Six.

The overall conclusions generated from the results of the study on research question three are as follows:

- Students differ in their most valuable learning experiences at camp; however, they agreed all of the learning experiences were beneficial
- Students identify the need for more education on type one diabetes for dietetics students in dietetics curriculum
- Students believe kids living with type one diabetes can be normal kids with a few additional steps in their day to manage the disease
- Students believe hands-on learning experiences at camp provide more knowledge than a classroom learning experience
- Students recognize they learned more from the younger campers than the older campers, which was not expected for them

- Students identify different ways to care for type one diabetes and current technology available to help with management of the disease
- Students understand that type one diabetes is an individualized disease and what works for treatment one day, may not work the next day
- Students identify themselves as resources for their classmates regarding type one information
- Students describe their first year of learning at camp was general, while their second year was more specific in all areas of diabetes management
- Students understand their coursework plays an important role in their education to provide a baseline of knowledge and what to expect in the management of disease states; however, experiential learning helps put reality into the coursework
- Students recognize gaining knowledge and confidence from their camp experiences that cannot not be learned in a classroom
- Students gain a better understanding of the registered dietitian nutritionist's (RDN) role at diabetes camp

4. How can immersive experiential learning at a residential diabetes camp improve confidence in the management of type one diabetes?

Students were surprised during our focus group discussions about how their confidence had changed with the camp experiences. All students reported their experiences to be eye opening and provided them with practical experience in the management of type one diabetes. Students reported it was beneficial to see the camp side of care versus what they would normally see in the hospital or clinic setting. In addition, the students' confidence increased as they developed a sense of community with the medical staff, volunteers, and the campers. Students

shared immersion into the experiences was beneficial and key to learning. Surprising to them, the students reported they really did not know anything about type one diabetes before the experiences. As noted previously, students' confidence increased as their knowledge about the disease increased. Students also shared that interactions with staff members helped to increase their confidence as a member of the interdisciplinary team. Results from this dissertation are similar to those of a previous study in which Ellis et al., (2012) identified experiential learning as a means to improve confidence and knowledge of diabetes in multiple settings. Results of this research question have been identified and discussed in detail previously in Chapter Five and Six and in Research Question Two above.

The overall conclusions generated from the results of the study on research question four are as follows:

- Students find as their knowledge of type one diabetes increased, their confidence levels did as well
- Students believe camp provided them with practical experience on the management of type one diabetes
- Students could not believe how much their confidence changed during their camp experiences
- Students recognize feeling more confident working with other health care professionals after these experiences
- Students determine that hands-on learning experiences at camp increased their confidence in managing type one diabetes
- Students realize they play an important role as a nutrition professional in the interdisciplinary medical team

- Students realize that building relationships with other medical professionals increases their exposure in the medical team
- Students identify the importance of advocating for themselves as nutrition professionals in the management of diseases
- Students recognize that communication is key in the care and management of type one diabetes

5. How can immersive experiential learning at a residential diabetes camp enhance perceptions of type one diabetes?

Currently there is no research available to identify the change in perceptions of type one diabetes in a diabetes camp experiential learning atmosphere with dietetics students; however, through their experiences and observations at diabetes camp, all four dietetics students noticed a change in their perceptions of the disease. To help better understand the change in perceptions I would like to provide this example: many people living with type one diabetes feel like an outsider in many situations. In year one, students shared they felt like an outsider during the beginning of their time at camp, but by the end of the week, students felt comfortable in the environment and “became an insider.” This finding was expected by me, but not by the students. Vogt et al. (2011) noted many of the same experiences with nursing students identifying as an outsider during the first part of their week at camp.

In year two, students felt like an insider when arriving to camp, noting people knew who they were and why they were there since they made many different relationships with campers, counselors, and the medical staff in year one. In addition, wearing an insulin pump enhanced their feelings of fitting in.

Students identified different perceptions between type one and type two diabetes after their experiences. All students recognized a big stigma and stereotype with type one diabetes and determined there are many components to this one disease. Students were able to identify resources needed to successfully manage diabetes, and now find themselves to be a resource for others. In addition to the medical treatment of diabetes, students were able to see what is important to the campers—being a real kid who fits in and has fun. Students shared they were happy to see how these kids live on a daily basis and how the campers interacted with each other in regard to diabetes care and management.

Students noted that currently education in the classroom does not brush the surface of what diabetes is really like in day-to-day management and the classroom cannot provide detailed experiences like camp can. While the lack of detailed experiences in the classroom is not a flaw in the current education system, students recommended learning experiences outside of the classroom to gain more detailed knowledge of diseases. Students noted that out of class learning experiences should be electives for students in their undergraduate dietetics education. Students proposed these learning experiences should be offered during the junior or senior year of the undergraduate program or the dietetic internship. In addition, students suggested courses on diabetes be offered in the dietetics curriculum and that education on the disease needs to be more than a few weeks in a course. Assignments that allow students to practice living with diabetes and reflections on their experiences should be a major part of the course; however, students noted that wearing a pump and checking blood sugars with a glucometer would be hard to do in this setting. In addition, students noted that learning would not be as personal without the camp experience, and that camp helped them retain information, as their memories are attached to

people and certain experiences. Students encourage learners to participate in camp experiences to fully understand type one diabetes.

Although not expected, the students' perceptions of food insecurity and type one diabetes changed in year one. All students had opportunities to observe and talk with campers who had certain foods available to them at home, through insecurity or availability. Students were able to identify anxiety and its barrier to diabetes management, which also changed their perceptions on many situations at camp. In addition, students were able to experience real life with type one diabetes through checking their blood sugars, observing and learning insulin calculations and dosing, and wearing an insulin pump. These experiences allowed students to perceive life with diabetes and its many obstacles. While the students were able to experience many different strategies of living with type one diabetes, they report they will never *really* understand what it is like to live with the disease. Overall, students noted a difference in their perceptions of the disease after their learning experiences for both years of camp. Results have been identified and discussed in detail previously in Chapters Five and Six.

The overall conclusions generated from the results of the study on research question five are as follows:

- Students recognize as their knowledge on type one diabetes increases, their perceptions of the disease changes
- Students relate to the “outsider” feeling that many patients with type one diabetes feel, as they felt like an outsider during their first few days at camp in year one
- Some students experienced anxiety when checking their blood sugar at camp, which allowed for changes in perceptions and empathy during many of their camp observations and experiences

- Students recognize learning diabetes technology and wearing insulin pumps changed their perspective on living with type one diabetes
- Students understand what living with type one diabetes really means after their experiences; although, they will never *really* understand what it is like to live with the disease
- Students identify themselves as supporters and educators regarding food insecurity in the type one population
- Students understand that diabetes is a complex disease; management of the disease is not black and white
- Students identify stereotyping in all forms of diabetes, and see themselves as a supporter and advocate to help stop it
- Students believe kids living with type one diabetes can be normal kids with a few additional steps in their day to manage the disease
- Students recognize that experiential learning is beneficial to learn about type one diabetes; however, if this is not available to students, they encourage diabetes courses in the curriculum for in-depth learning of the material

6. How can immersive experiential learning at a residential diabetes camp improve empathy for those living with type one diabetes?

Currently there is no research available to determine the improvement of empathy on type one diabetes in a diabetes camp experiential learning atmosphere with dietetics students. In this study, all students expressed a change in empathy towards type one diabetes, especially after they learned more about the disease. In addition, students believed they could better understand how secluded kids living with type one diabetes must feel in everyday life and have more

empathy toward this. Following the experiences, students showed more empathy and admiration for the disease due to increased understanding. I was particularly interested in the change in empathy after the camp experiences. Students identified many feelings and emotions during the week, which played a role in their empathy and perceptions of type one diabetes. Passion, excitement, anxiety, sadness, and isolation were common emotions. In year two, students identified more passion and excitement for the disease. Students shared that wearing an insulin pump not only increased their knowledge, perceptions, and confidence with type one diabetes, but also their empathy. Vogt et al. (2011) noted many of the same thoughts and feelings identified in this dissertation with nursing students learning in a diabetes camp setting. Results for this research question have been identified and discussed in detail previously in Chapters Five and Six.

The overall conclusions generated from the results of the study on research question six are as follows:

- Students identify an increase in passion and excitement for the disease after their experiences
- Students view themselves as future diabetes professionals after their experiences
- Students appreciate the many sad situations they encountered at camp, which was one major emotion to increase their empathy
- Students recognize isolation to be a barrier of the disease and have a better understanding of how their future patients or clients may deal with different situations
- Students are empowered to use their knowledge to help educate and support those living with type one diabetes

In conclusion, the study's findings provide examples of learning experiences at diabetes camp that could be utilized for students in all health care professions. In addition, using multiple strategies to obtain data brought to light an abundance of information and educational tools that may be useful in preparing other dietetics students to be successful practitioners. Overall, results reflected more changes in knowledge and confidence than perceptions and empathy. This finding may be a result of knowledge and confidence being easier to measure. As emergent themes identified in this study indicate, camp can provide an increase in knowledge, perceptions, confidence, and empathy for dietetics students. In addition, one theme identified in this study could influence future research and changes in dietetics education regarding type one diabetes at the national level. Students now understand the importance of type one diabetes and how they impact the treatment and management of the disease; however, more research should be conducted on this topic.

Recommendations for Further Research

Considering the emergent themes and additional findings in this study, the following recommendations for future research come to mind:

1. One of the emergent themes identified in this research, more education needed on type one diabetes in dietetics curricula, deserves further exploration. It is my recommendation to identify the variable levels of type one diabetes education in dietetics programs and assess student knowledge and needs for further instruction.
2. The current study included dietetics students in different years of their respective dietetics programs. An additional recommendation would be to focus on dietetics students during one specific year of their education with experiential learning at diabetes camp. For an example, students who are completing their undergraduate

- degree as a junior will have different knowledge than students completing their sophomore year in the program. Students who have completed their dietetic internship will have different knowledge than students completing their undergraduate program in dietetics. This research could help to identify when the diabetes camp learning experiences would be most beneficial for the student.
3. Further research could also focus more on Photovoice as the primary research method for experiential learning at diabetes camp. It is my assumption that Photovoice would provide different data than using interviews, observations, and focus groups as the major data collectors.
 4. A larger research study to identify the experiences of multi-disciplinary health care students' learning experiences at diabetes camp would be beneficial to literature for interdisciplinary education. One recommendation would be to complete this study on multiple groups of health care professional students. For example, at Camp Kno-Koma, dietetics, nursing, and pharmacy students attend camp for the week. Together, these students would be a beneficial population to study and identify how their experiences were similar and different from each other and the benefits of learning at diabetes camp for multiple professionals.
 5. For further research on this particular study, continued research on the current student participants to see how this experience has impacted their careers in the future would also be beneficial.
 6. One recommendation for using Photovoice data collection methods would be to use digital cameras for data collection and collect journals, if applicable, to enhance data collection.

Significance of Conclusions

This study provides a strong conclusion that experiential learning at diabetes camp can make a difference in the overall education of dietetics students. While one week a year of experiential learning is beneficial, returning for a second week the following year provided a deeper understanding of the disease and the role of the registered dietitian nutritionist at camp. In addition, the camp experiences have shown to be helpful to provide in depth education about type one diabetes management and care; more than what can be provided in a didactic setting. Also, students are able to work interprofessionally to better understand all aspects of diabetes care. Diabetes camps can provide an increase in knowledge, perception, confidence, and empathy for dietetics students. This study adds to the limited body of knowledge concerning experiential learning in dietetics students at diabetes camps and their recommendations for dietetics education. This study informs dietetics educators and students about the benefits of experiential learning at diabetes camp. Most importantly, the study's greatest contribution is the ability to use this information to add to current dietetics curricula to provide more experiential learning opportunities for type one diabetes.

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APPENDIX A: IRB LETTERS



Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205

IRB2 #00003206

March 9, 2018

Elizabeth Campbell, PhD
Elementary and Secondary Education

RE: IRBNet ID# 1200153-1

At: Marshall University Institutional Review Board #2 (Social/Behavioral)

Dear Dr. Campbell:

Protocol Title: [1200153-1] Experiential Learning in Dietetics: Can Diabetes Camp Make a Difference?

Expiration Date: March 9, 2019

Site Location: MUGC

Submission Type: New Project APPROVED

Review Type: Expedited Review

In accordance with 45CFR46.110(a)(6)&(7), the above study and informed consent were granted Expedited approval today by the Marshall University Institutional Review Board #2 (Social/Behavioral) Chair for the period of 12 months. The approval will expire March 9, 2019. A continuing review request for this study must be submitted no later than 30 days prior to the expiration date.

This study is for student Mallory Mount.

If you have any questions, please contact the Marshall University Institutional Review Board #2 (Social/Behavioral) Coordinator Bruce Day, ThD, CIP at 304-696-4303 or day50@marshall.edu. Please include your study title and reference number in all correspondence with this office.



Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205
IRB2 #00003206

February 14, 2019

Elizabeth Campbell, PhD
Elementary and Secondary Education

RE: IRBNet ID# 1200153-3

At: Marshall University Institutional Review Board #2 (Social/Behavioral)

Dear Dr. Campbell:

Protocol Title: [1200153-3] Experiential Learning in Dietetics: Can Diabetes Camp Make a Difference?

Site Location: MUGC

Submission Type: Continuing Review/Progress Report APPROVED

Review Type: Expedited Review

The continuing review for the above listed study was approved today by the IRB#2 Chair. The study is now closed to enrollment. The next annual report will be due on 03/09/2020. The annual report must be submitted prior to the due date in order to continue with the research. A closure package must be submitted upon completion of the study.

This study is for student Mallory Mount.

If you have any questions, please contact the Marshall University Institutional Review Board #2 (Social/Behavioral) Coordinator Bruce Day, ThD, CIP at 304-696-4303 or day50@marshall.edu. Please include your study title and reference number in all correspondence with this office.

Sincerely,

A handwritten signature in blue ink that reads 'Bruce F. Day'.

Bruce F. Day, ThD, CIP
Director, Office of Research Integrity



Office of Research Integrity
Institutional Review Board
One John Marshall Drive
Huntington, WV 25755

FWA 00002704

IRB1 #00002205
IRB2 #00003206

May 21, 2019

Elizabeth Campbell, PhD
Elementary and Secondary Education

RE: IRBNet ID# 1200153-4

At: Marshall University Institutional Review Board #2 (Social/Behavioral)

Dear Dr. Campbell:

Protocol Title: [1200153-4] Experiential Learning in Dietetics: Can Diabetes Camp Make a Difference?
Site Location: MUGC
Submission Type: Amendment/Modification APPROVED
Review Type: Expedited Review

The amendment to the above listed study was approved today by the Marshall University Institutional Review Board #2 (Social/Behavioral) Chair. This amendment entails rather than conducting follow-up one-on-one interviews, the 4 participants enrolled in Summer 2018 will be re-consented and asked to repeat the same methodology in Summer 2019 that was used during Summer 2018. .

This study is for student Mallory Mount.

If you have any questions, please contact the Marshall University Institutional Review Board #2 (Social/Behavioral) Coordinator Anna Robinson at (304) 696-2477 or robinsonn1@marshall.edu. Please include your study title and reference number in all correspondence with this office.

Sincerely,

A handwritten signature in blue ink that reads "Bruce F. Day".

Bruce F. Day, ThD, CIP
Director, Office of Research Integrity

APPENDIX B: INTERVIEW GUIDE (YEAR ONE)

1. Tell me your name, where you go to school, and your major.
2. Are you taking a summer class that requires you to attend camp or are you volunteering your time?
3. Describe the most appropriate learning environment for you (direct learning, hands-on, group work, experiential, service-learning).
4. How do you feel this camp experience will impact your knowledge on type one diabetes?
5. Tell me what you know about type one diabetes.
6. Describe your previous experiences with type one diabetes.
7. Tell me what you plan to learn at camp.
8. Describe what you anticipate will be the most challenging part of your time at camp.
9. At this time, how confident do you feel about caring for patients with type one diabetes?
10. Tell me how you feel working with other health care professionals (nurses, pharmacists, physicians, social workers) during your time at camp will enhance your knowledge on type one diabetes.

APPENDIX C: FOCUS GROUP GUIDE (YEAR ONE)

Ice breaker- Tell me about your week at camp.

1. Will you share your three most significant photographs from camp?
 - a. Tell us the story behind each of your photographs.
 - b. What was going through your mind as you were taking these photographs?
 - c. Tell us how your photographs capture your experience with type one diabetes.
2. Tell us what you learned at camp.
3. Tell us the most valuable concept or idea you learned at camp.
4. Tell us about what you enjoyed the most about your diabetes camp experience. Why?
5. Tell us about the hardest part of your time at camp.
6. How confident do you feel about caring for patients with type one diabetes after this experience?
7. How have your feelings about type one diabetes changed since attending camp? Can you give an example?
8. Tell us what diabetes camp taught you as a person.
9. How was this experience beneficial for you as a student?
10. Tell us what you learned from working with other health care professionals (other than the dietitian nutritionist) at camp.
11. How did you adjust to the camp environment?
 - a. How was “camping”?
12. So, nobody knew each other prior to camp, do you feel you have developed relationships (personal, professional, educational) with each other? How?

APPENDIX D: OBSERVATION GUIDE (YEAR ONE AND YEAR TWO)

Location: _____

Student Group: _____

Date: _____

1. What learning experience is taking place?

2. What questions did students have at the beginning of the experience?

3. How did the camp professional assist the student with the experience?

4. What questions did the students have during the experience?

5. Did the student show empathy toward the child/situation?

6. What resources did the students use to complete the experience?

7. Other observations:

APPENDIX E: PHOTOVOICE DESCRIPTION

Photovoice is participatory action research that uses photography as a data tool. By using photographs that you take during your experience at diabetes camp, you will help to identify and explain what you learned, how your perceptions of type ones diabetes were affected, and how your confidence in caring for patient with type one diabetes was affected.

What do you need to know?

1. You should take pictures of the most significant learning opportunities that you encounter at camp.
2. After camp, you will review the photographs that were taken and select three that are the most significant for you.
3. At our focus group meetings after camp, I will ask you to use these photographs to help guide our discussion about your camp experiences.
4. When taking pictures, always ask first before photographing people's personal items.
5. All students will be provided one disposable camera or digital camera to take pictures for the week. Participants will be asked to take pictures of events, situations, and/or materials that they find significant to their learning.
6. Photographs that contain the faces of people will be deleted and not used in research.

APPENDIX F: PHOTOVOICE GUIDE

The SHOWeD method will be used to guide the focus group discussions regarding photographs to identify the participants’ most significant learning experiences at Camp Kno-Koma.



SHOWED

Name of Photographer _____

Title of Picture _____ Date _____

| | |
|----------|---|
| S | <p>“What is Seen here?” (Describe what the eye sees)</p> <hr/> <hr/> <hr/> |
| H | <p>“What is really Happening?” (The unseen “story” behind the image)</p> <hr/> <hr/> <hr/> |
| O | <p>“How does this relate to Our lives?” (Or MY life personally)</p> <hr/> <hr/> <hr/> |
| W | <p>“Why are things this way?”</p> <hr/> <hr/> <hr/> |
| E | <p>“How could this image Educate people?”</p> <hr/> <hr/> <hr/> |
| D | <p>“What can I Do about it?” (What WILL I or WE do about it?)</p> <hr/> <hr/> <hr/> |

Source: Dahan, R., Dick, R., Moll, S., Salwach, E., Sherman, D., Vengris, J., ... Selman, K. (2007). Photovoice Hamilton Manual and Resource Kit. Retrieved from <https://www.naccho.org/uploads/downloadable-resources/Programs/Public-Health-Infrastructure/Photovoice-Manual.pdf>

**APPENDIX G: THREE MOST SIGNIFICANT PHOTOGRAPHS PER PARTICIPANT
IN YEAR ONE**

Participant One:

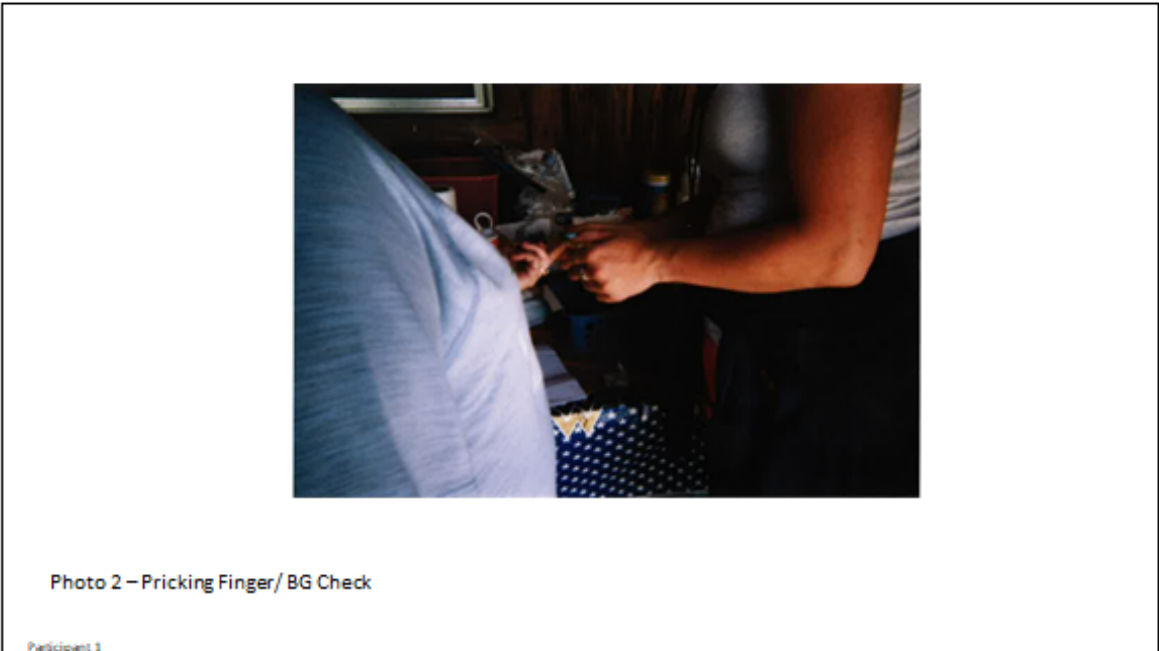
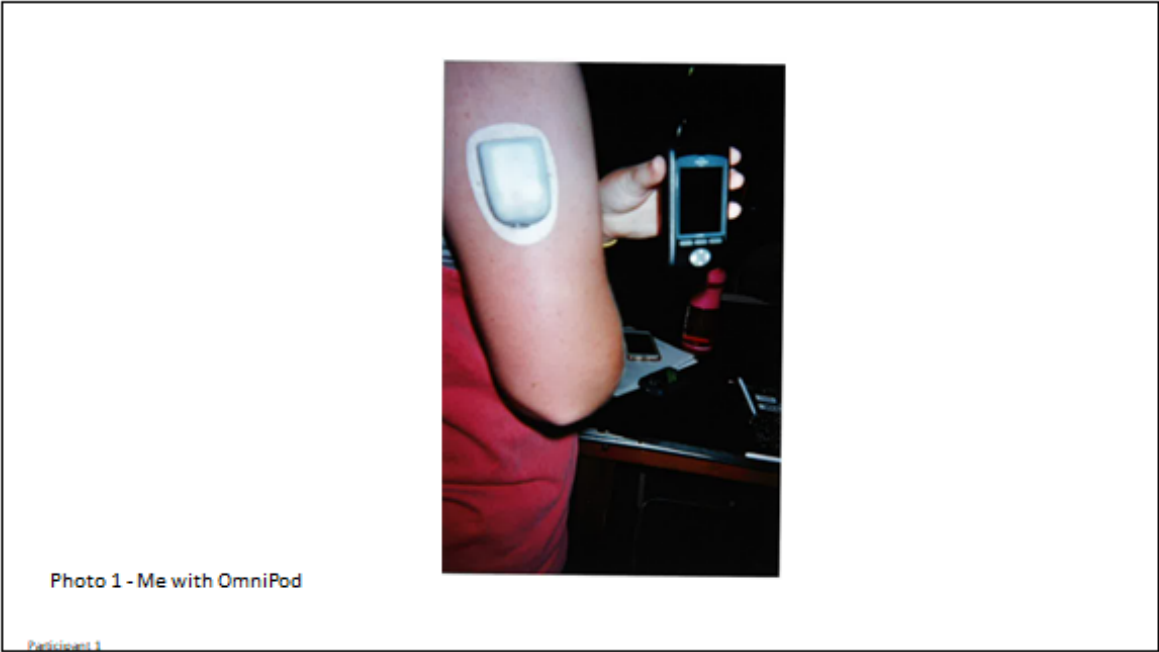




Photo 3 – Pump Site Change

Participant 1

Participant Two:



Photo 1 – Site change

Participant 2



Photo 2 - Snacks

Participant 2



Photo 3 – Blood sugars

Participant 2

Participant Three:



Photo 1 – Camp snacks

Participant 3



Photo 2 - Infirmary

Participant 3



Photo 3 – Blood sugar checks

Patient 3

Participant Four:



Photo 1 - Bunking

Participant 4



Photo 2 - Playing Games

Photo 3 was underexposed and not able to be developed. It was available in the negatives and was used for the focus group. It was titled "Memories" as it captured campers watching a slideshow recap of camp on the last night.

Participant 4

**APPENDIX H: ALL PHOTOGRAPHS TAKEN BY RESEARCH PARTICIPANTS IN
YEAR ONE**

Participant One:

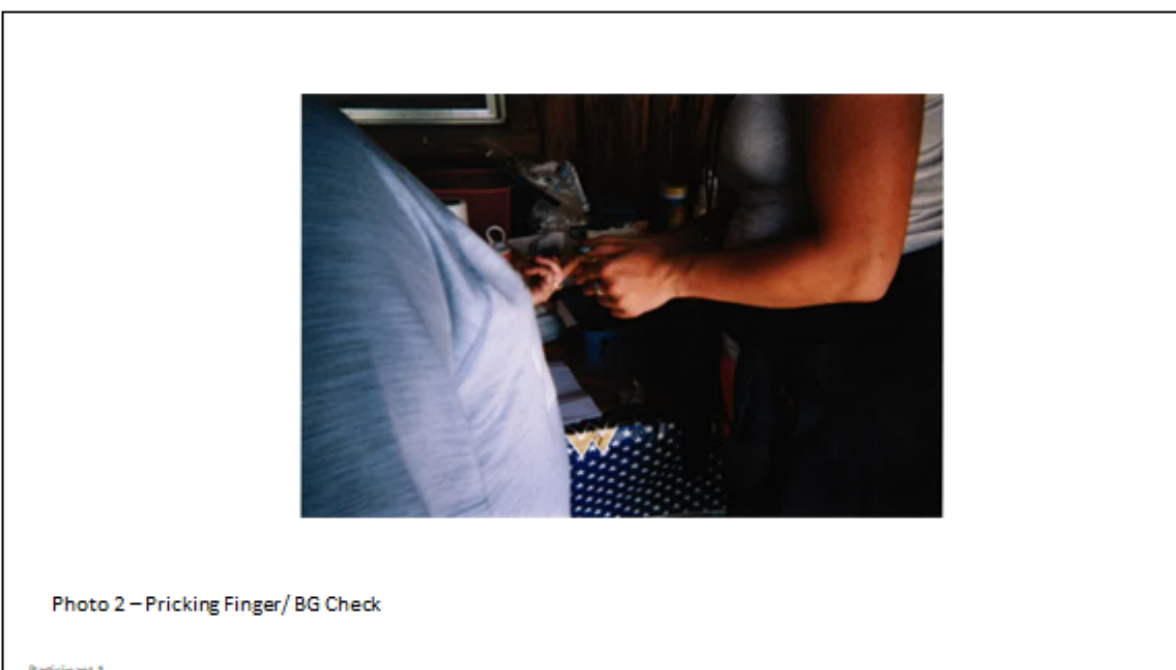




Photo 3 – Pump Site Change

Participant 1



Participant 1



Participant 1



Participant 1



Thank you letters

Participant 1



Snacks

Participant 1



Participant 1



Participant 1



Participant 1



Participant 1



Participant 1



Participant 1

Participant Two:



Photo 1 – Site change

Participant 2



Photo 2 - Snacks

Participant 2



Photo 3 – Blood sugars

Participant 2



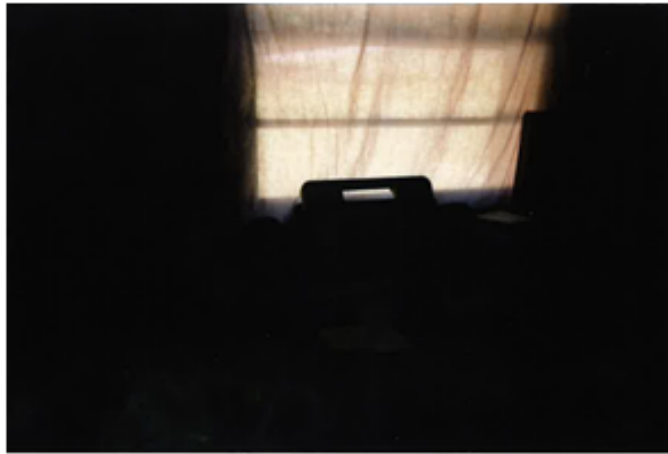
Participant 2



Participant 2



Participant 2



Participant 2



Participant 2



Participant 2



Participant 2

Participant Three:



Photo 1 – Camp snacks

Participant 3



Photo 2 - Infirmary

Participant 3



Photo 3 – Blood sugar checks

Participant 3



Participant 3



Participant 3



Participant 3



Participant 3



Participant 3



Participant 3



Participant 3



Participant 3

Participant Four:



Photo 1 - Bunking

Participant 4



Photo 2 – Playing Games

Photo 3 was underexposed and not able to be developed. It was available in the negatives and was used for the focus group. It was titled "Memories" as it captured campers watching a slideshow recap of camp on the last night.

Participant 4



Participant 4



Participant 4



Participant 4



Participant 4



Participant 4



Participant 4



Participant 4



Participant 4

APPENDIX I: FOLLOW-UP INTERVIEW GUIDE (YEAR TWO)

1. Tell me about what you have been doing the over the last year (school, internship, work).
2. Thinking back to last summer and your experiences at camp, how have the experiences helped you over the last year?
3. How has your camp experience helped you in educating others about type one diabetes?
4. On a scale of 1 to 10, how confident do you feel about caring for patients with type one diabetes after this year?
5. Have you been working in interdisciplinary (professional or student) teams?
 - a. How has your experience at camp helped you to interact with the team?
 - b. How has your experience at camp helped you with confidence in your role with the team?
6. Are there any specific experiences at camp that helped you in a certain situation this past year?
7. How have your feelings about type one diabetes changed since your camp experience?
8. Have your thoughts about diabetes as a career changed over the last year?
9. Is there anything else you want to add that we haven't discussed today?

APPENDIX J: FOCUS GROUP GUIDE (YEAR TWO)

1. Will you share your three most significant photographs from camp?
 - a. Participants will review photographs taken in year one.
 - b. Tell us how these photographs differed from the ones you took last year.
 - c. Tell us how your photographs capture your experience with type one diabetes.
2. Tell us what you learned this year at camp.
3. How confident do you feel about caring for patients with type one diabetes after this experience?
4. How have your feelings about type one diabetes changed since attending camp? Have your feelings changed since your experience last year?
5. This year, you had more responsibility in developing educational lessons for the campers and in providing nutrition guidance in the cabins.
 - a. Tell us how this experience has helped you expand your knowledge of type one diabetes.
 - b. Tell us how this experience has helped you build confidence in managing type one diabetes.
6. Comparing your learning experience from last year to this year, how confident were you on your first few days of camp?
7. Do you think you would have been prepared in (school, internship, work) without your camp experiences?
 - a. How did your camp experience enhance your knowledge to be better prepared in school, internship, work?
8. What suggestions do you have for students who are hesitant about attending any medical camp?
9. How do you think off-site campus learning experiences should be built into the dietetics curriculum?

**APPENDIX K: THREE MOST SIGNIFICANT PHOTOGRAPHS PER PARTICIPANT
IN YEAR TWO**

Participant One:





Photo 3 - Archery

Participant 1

Participant Two:

| Camp Koa Kona at Greenier Youth Camp | | | | |
|--------------------------------------|------------|--------------|------------|---------------|
| Tuesday July 10, 2009 | | | | |
| Dinner 5:00 pm | | | | |
| | Portion | Carb Choice | "g" | I ate |
| Hidden Cove Taco (2) | 5" Shell | 2 | 30 | — |
| Meat Filling | 1/2 c each | 0 | | |
| Let's Kickstart your morning | | | | |
| Corn | 1/2 cup | 1 | 15 | — |
| Lemon Spring Mix | 1 cup | 0 | | |
| Avocado Salsa | 1 pkt | 0 | | |
| Ice cream | 1/2 C | 1 | 15 | — |
| Steak sauce | 1 cup | 1 | 15 | 15 |
| Milk (1% or 2%) | 8 oz | 1 | 12 | 30 |
| Crystal Lite lemonade, tea, water | | | | |
| Black Beans (bar) | 1/2 cup | 1 | 15 | — |
| Name: _____ | | | | |
| | | Total | 45 | 30 |
| | | | +15 | 45 |

Insulin: Carb Ratio

— and to — grams

Total grams —

Divided by — units

I should take — units

Or

Carb Choice is —

units of insulin

Total Choices —

Multiply by — units

I should take — units

Photo 1 - Meal Ticket

Participant 2



Photo 2 - Omnipod

Participant 2



Photo 3 – Lowe's Box

Participant 2

Participant Three:

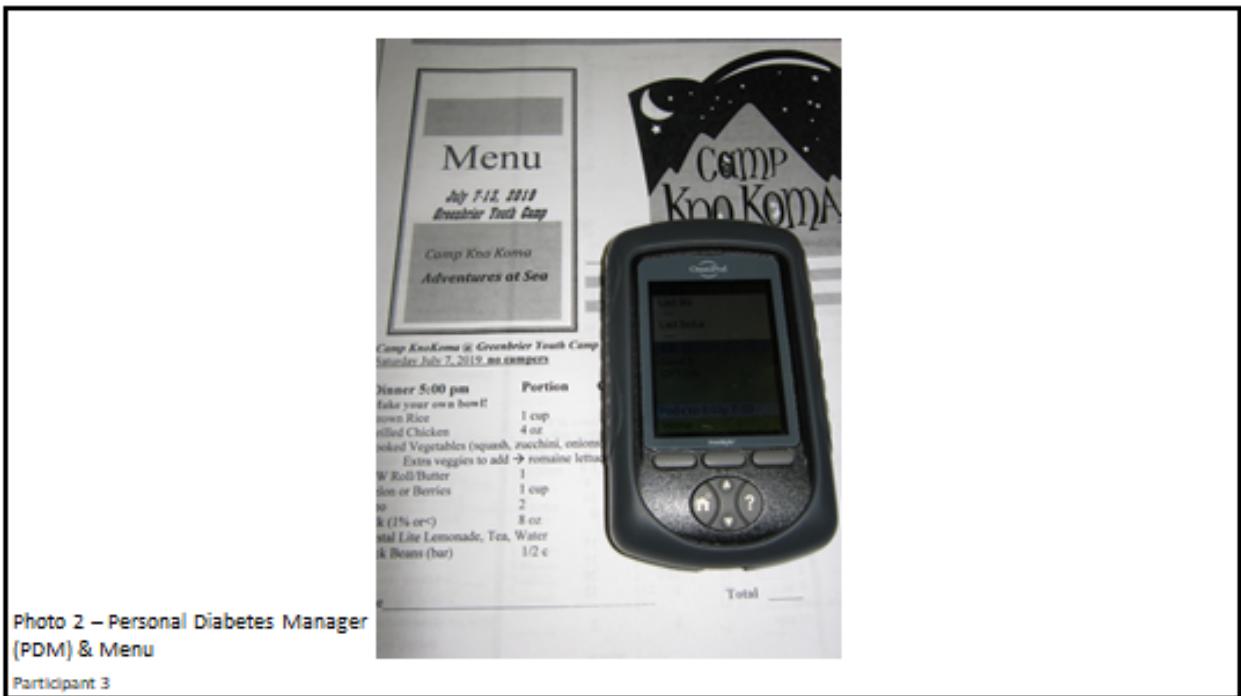




Photo 3 – Menu Board

Participant 3

Participant Four:



Photo 1 – Learning About Insulin Pumps

Participant 4



Photo 2 – Foodservice Management

Participant 4



Photo 3 – Research Prizes

Participant 4

**APPENDIX L: ALL PHOTOGRAPHS TAKEN BY RESEARCH PARTICIPANTS IN
YEAR TWO**

Participant One:



Photo 1 - Glucometer 103

Participant 1



Photo 2 - OmniPod on Stomach

Participant 1

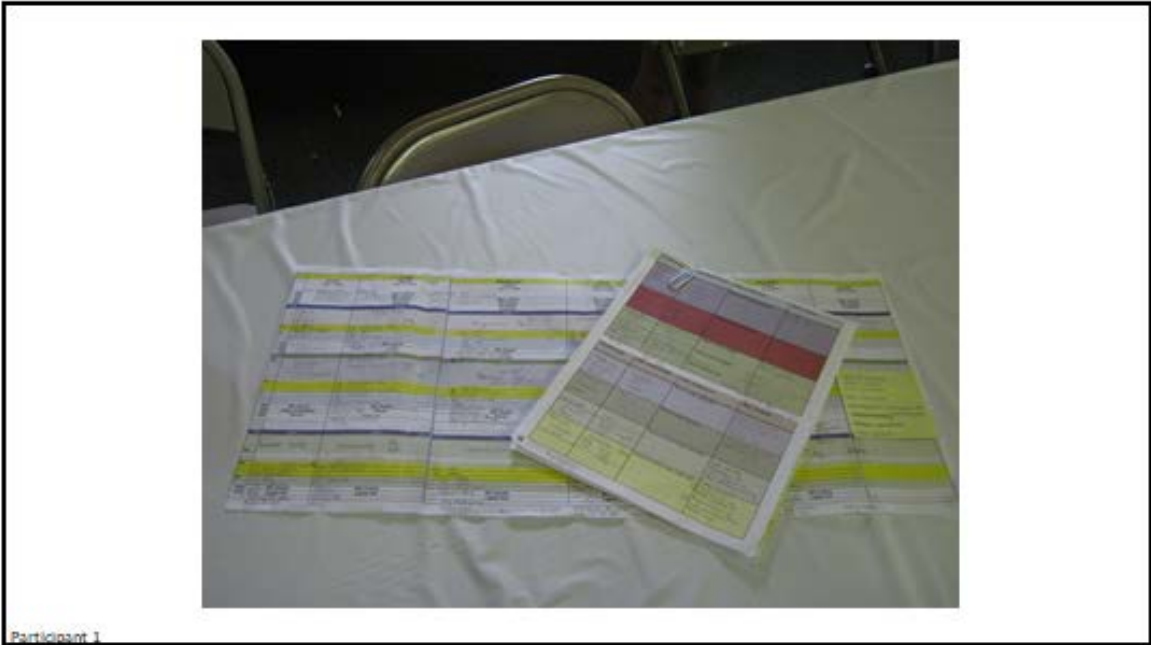


Photo 3 - Archery

Participant 1



Participant 1





Participant 1



Participant 1



Participant 1



Participant 1



Participant 1



Participant 1



Participant 1



Participant 1



Participant 1

Participant Two:

| Camp Kua Kua at Greenleaf Youth Camp | | | | Insulin: Carb Ratio | |
|--------------------------------------|------------------------|---|-------|---------------------------|----------------------------|
| Tuesday, July 10, 2012 | | | | _____ unit to _____ grams | |
| Dinner 5:00 pm | | | | Total grams _____ | |
| Hidden Cove Tacos (2) | 5" Shell 1/2 c each | 2 | 30 | Divided by _____ units | I should take _____ units. |
| Mex Filling | | 0 | | Or | |
| Lettuce/cheedar/bean sauce | | | | _____ Carb Choice to | _____ units of insulin |
| Corn | 1/2 cup | 1 | 15 | Total Choices _____ | Multiply by _____ units |
| Lemon Spring Mix | 1 cup | 0 | | I should take _____ units | |
| Avocado Salsa | 1/4 cup | 0 | | | |
| Ice cream | 1/2 C | 1 | 15 | | |
| Strawberries | 1 cup | 1 | 15 | | |
| Milk (1% or 2) | 8 oz | 1 | 12 | | |
| Crystal Lite lemonade, tea, water | | | | | |
| Black Beans (fry) | 1/2 cup | 1 | 15 | | |
| Name _____ | | | | | |
| | | | Total | 45 | 30 |
| | | | | +15 | 45 |

Photo 1 - Meal Ticket

Participant 2



Photo 2 - Omnipod

Participant 2



Photo 3 - Lows Box

Participant 2



Participant Three:



Photo 1 - OmniPod

Participant 3



Photo 2 - Personal Diabetes Manager (PDM) & Menu

Participant 3



Photo 3 – Menu Board

Participant 3



Participant 3



Participant 3

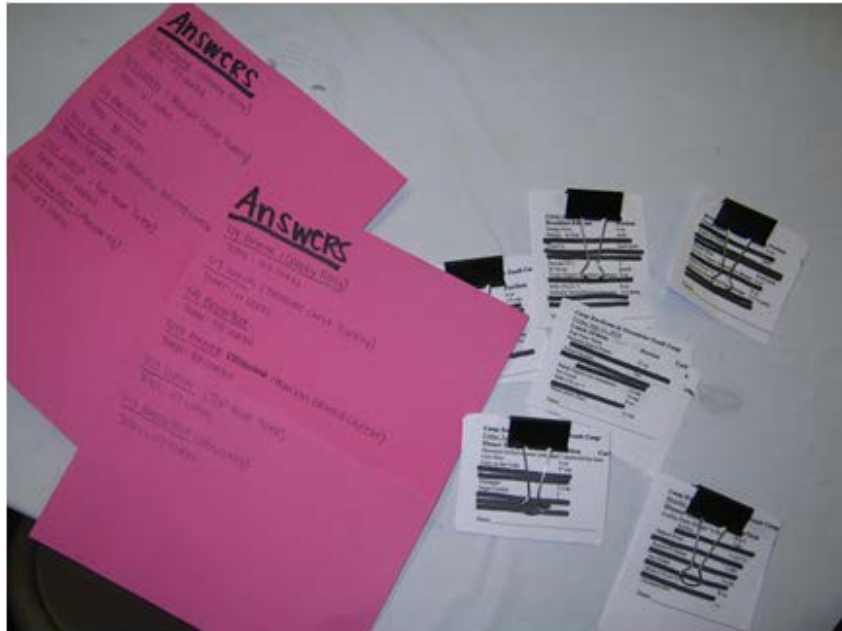


Participant 3

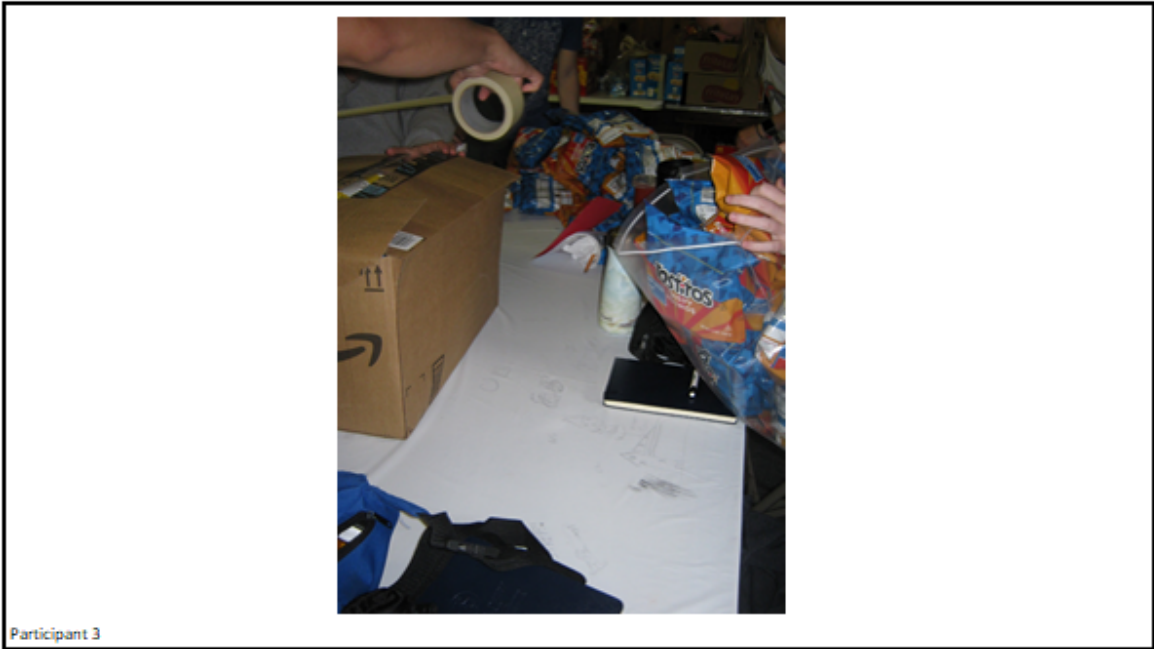




Participant 3



Participant 3



Participant 3

Participant Four:



Photo 1 – Learning About Insulin Pumps

Participant 4



Photo 2 – Foodservice Management

Participant 4



Photo 3 – Research Prizes

Participant 4



Participant 4



Participant 4

APPENDIX M: CURRICULUM VITAE

MALLORY JEAN MOUNT

PROFESSIONAL EXPERIENCE

| | |
|---|---|
| November 2015-Present <i>Consultant Dietitian</i> | Southwestern Community Action Council Huntington, WV |
| August 2015-Present <i>Assistant Professor</i> | Marshall University Huntington, WV |
| August 2013-Present <i>Camp Dietitian</i> | Camp Kno-Koma Lewisburg, WV |
| May 2016-May 2018 <i>Consultant Dietitian</i> | PEIA Weight Management Huntington, WV |
| March 2014-August 2015 <i>Outpatient Dietitian & Diabetes Educator</i> | Marshall Health Huntington, WV |
| August 2009-March 2014 <i>Clinical Dietitian</i> | Holzer Health System Gallipolis, OH |

EDUCATION

| | |
|--|---------------------------------------|
| In Progress <i>Doctor of Education in Curriculum and Instruction, Ed.D.</i> | Marshall University Huntington, WV |
| August 2009 <i>Master of Science</i> Dietetics | Marshall University Huntington, WV |
| August 2008-August 2009 <i>Dietetic Internship</i> | Marshall University Huntington, WV |
| May 2008 <i>Bachelor of Science</i> Dietetics | Marshall University Huntington, WV |

LICENSE AND REGISTRATION

| | |
|-----------------------------|---|
| <i>Registered Dietitian</i> | Commission on Dietetic Registration Registration Number: 1010024 |
| <i>Licensed Dietitian</i> | West Virginia Board of Licensed Dietitians License Number: 920 |

April 12, 2019

Oral Presentation

Bridgeport, WV

Mount, M., Hardyman, H., & Whiteman, H.

West Virginia Academy of Nutrition and Dietetics Annual Food and Nutrition Conference

“Type One Diabetes (T1D) Resources in West Virginia”

Presented for continuing education for Registered Dietitian Nutritionists on type one diabetes resources in WV including diabetes camp and the College Diabetes Network at Marshall University.

March 17, 2019

Short Oral Presentation/Conference Panel Asheville, NC

Gannon, A. & Mount, M.

Appalachian Studies Association Annual Conference

“Innovations in Dietetics Education: Engaging Community Members and Meeting the Needs of Tomorrow’s Practitioners in Appalachia”

Presented for continuing education at the Appalachian Studies Association Annual Conference to a variety of professional disciplines.

October 2018

Poster Presentation

Washington, D.C.

Mount, M. & Gannon, A.

Academy of Nutrition and Dietetics Annual Food and Nutrition Conference

Dietetics Meets Downtown: An Educational Case Study. (2018, September). *Journal of the Academy of Nutrition and Dietetics*, Vol. 118, Number 9, Supplement, Page A-38.

April 6, 2018 Short Oral Presentation/Conference Panel Cincinnati, OH

Gannon, A. & Mount, M.

Appalachian Studies Association Annual Conference

“Downtown Meets Dietetics: Integrating the Department into the Community”

Presented for continuing education at the Appalachian Studies Association Annual Conference to a variety of professional disciplines.

May 2017

Poster Presentation

Huntington, WV

Gannon, A. Mount, M. Williams, K., Bender, T.

West Virginia Academy of Nutrition and Dietetics Annual Food and Nutrition Conference

Use of Technology in a Youth Education Program Improves Evaluation and Increases Staff Satisfaction. (2016, September). *Journal of the Academy of Nutrition and Dietetics*, Vol. 116, Number 9, Supplement, Page A-35.

October 2016

Poster Presentation

Boston, MA

Gannon, A. Mount, M. Williams, K., Bender, T.

Academy of Nutrition and Dietetics Annual Food and Nutrition Conference

Use of Technology in a Youth Education Program Improves Evaluation and Increases Staff Satisfaction. (2016, September). *Journal of the Academy of Nutrition and Dietetics*, Vol. 116, Number 9, Supplement, Page A-35.

Publications:

May 2018

Published Article

Mount, M.

From campus to kitchen: Integrating dietetics education into the community. (2018, Summer). *NDEP-Line*, Pages 16-18.