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The Truth about Type 1 Diabetes Mellitus: The Myths Exposed

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THE TRUTH ABOUT TYPE 1 DIABETES MELLITUS:
THE MYTHS EXPOSED

A Capstone Experience/Thesis Project
Presented in Partial Fulfillment of the Requirements for
the Degree Bachelor of Science with
Honors College Graduate Distinction at Western Kentucky University

By
Caitlynn Oberhausen

*****

Western Kentucky University
2014

CE/T Committee:

Dr. Margaret Cook-Newell, Advisor
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Trudy-Ann Crossbourne

Approved by

Advisor

Department of Family and Consumer Sciences
Children with type 1 diabetes, T1DM, live with a widely misunderstood, chronic disease. The daily management regimens and psychosocial aspect of T1DM bring attention to the child with diabetes. Myths and misconceptions of diabetes management abound. The intent of this research is to address myths and misconceptions by reading a children’s book, written and illustrated by the researcher, to students in grades 3-5 at a local elementary school and measuring change in knowledge with an assessment tool based on book content.

Keywords: Type 1 Diabetes, Children's Book, Diabetes, Myths, Misconceptions
Dedicated to those living with type 1 diabetes
ACKNOWLEDGEMENTS

This project would not have been possible without the assistance and support of several key people. First of all, I would like to thank Dr. Margaret Cook-Newell, my project advisor, for being by my side every step of the way. Not only did she assist me with the necessary tasks such as editing my book, getting me in contact with people necessary for the completion of the project, and reviewing my Institutional Review Board (IRB) application for submission, but she also attended the meeting with the WKU IRB Committee alongside me and pushed me to get my project out there by participating in research conferences. If it were not for her encouragement, I would not have presented my project as many times as I have which helped me in preparing for my defense as well as helped popularize my project.

I would also like to thank Dr. Karen Mason and Trudy-Ann Crossbourne, the second and third readers for my project, as well as Dr. Leslie Baylis, for taking the time to review my project and offer their guidance. The credit for the initial printing of my book goes to the WKU Honors College. I was able to print 58 copies of my book with funding so generously given to me through an Honors Development Grant. Judi Silvey, a friend and great supporter of those with type 1 diabetes, deserves the credit for getting me in contact with Mrs. Bonnie Watson at Olmstead Elementary School. Thanks goes to Chris Cooper for featuring my project in the local newspaper. I would also like to thank
Dr. D’Lee Babb for her assistance with using the Statistical Package for the Social Sciences (SPSS) Statistics Software for data analysis and for taking the time to help me edit my book.

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Finally, I would like to thank my family and friends for being so supportive of the entire project. They were there for me during both the high and low points of this entire process. During all of the stress and sleepless nights they offered nothing but encouragement. My dad, John Oberhausen, offered his assistance by documenting my visit to the school and distributing the pre-assessments and post-assessments to the students for which I was very thankful.
VITA

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2011 ........................................................................... Logan County High School, Russellville, Kentucky

August 4, 2011 ............................................................... Diagnosed with Type 1 Diabetes

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2010 ........................................................................... Kentucky Governor’s Scholar

2010 ........................................................................... WKU Outstanding High School Scholar Award Recipient

2011 ........................................................................... Valedictorian of Logan County High School

2011-2014 ................................................................. Regents Tuition Scholarship Recipient

2011-2014 ................................................................. Caleb Slaton/Logan Aluminum Scholarship Recipient

2011-2014 ................................................................. Kentucky Education Excellence Scholarship Recipient

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CHAPTER 1

INTRODUCTION

Diabetes is a disease that is becoming more and more prevalent in the United States. According to the American Diabetes Association, 25.8 million children and adults in the United States—8.3% of the population—have diabetes. Only 5% of the people who have diabetes have type 1 diabetes (American Diabetes Association, 2014). This form of the disease is typically diagnosed in children and young adults and is also referred to as juvenile diabetes. In type 1 diabetes, the body loses its capability to produce insulin for reasons that are unclear. There is no definite cause of type 1 diabetes; it varies from person to person. Scientists have formed a link between type 1 diabetes and environmental factors, genetics, and some viruses.

This disease is of great importance to me because I was diagnosed with type 1 diabetes on August 4, 2011 at the age of 18. My experiences with managing type 1 diabetes the past two and a half years were the inspiration for this project. I have been asked the following question several times since my diagnosis: What is the greatest need for people with type 1 diabetes? My response is the same every time. People with type 1
diabetes have everything they need to efficiently manage the disease. We have insulin, insulin pumps, injections, and blood glucose monitors; we are just waiting for a cure.

Right now, the greatest need for people with type 1 diabetes is to have those around them possess knowledge and understanding about what it means to live with type 1 diabetes.

This need became the focus of my project. I decided to publish a children’s book about the myths and misconceptions associated with type 1 diabetes in order to educate the peers of children living with type 1 diabetes. I put my focus on children since type 1 diabetes is typically diagnosed in children and young adults. I know how difficult it has been for me as an adult to get others to understand what I experience on a daily basis, so I cannot even begin to imagine how difficult it must be for a child. I wanted to help others to understand that a child with type 1 diabetes is just like any other child. The only difference between someone who has type 1 diabetes and someone who does not is that his/her body does not produce insulin on its own, so one has to administer insulin via insulin injections or an insulin pump.

To begin the process of increasing knowledge of others by using the book as an educational tool, I shared my book with two classes of fourth grade students at Olmstead Elementary School located in Olmstead, Kentucky in order to test the following hypothesis: Children’s knowledge of the day to day management of type 1 diabetes will increase after being read a book written for grades 3-5 about the common myths and misconceptions associated with type 1 diabetes. These students were classmates of a child with type 1 diabetes. Prior to hearing the information included in my book, many of
them possessed the misconceptions about the disease that I find to be most common from my own experiences with having type 1 diabetes. All of the students were very attentive and receptive of the information that I had to share.

To me, this was more than just a project; it was an opportunity to begin doing what I want to do for the rest of my life. I want to help others who, like myself, have to go through the daily struggles and frustrations of managing diabetes. I could not be more pleased with the overall result of this project and my biggest hope is that it will continue to have an impact in the lives of those with type 1 diabetes by educating those around them.
CHAPTER 2

LITERATURE REVIEW

Type 1 diabetes is a term that I know all too well. It is a part of who I am, seeing as though I was diagnosed with type 1 diabetes almost three years ago. Although type 1 diabetes is a part of me, it does not define who I am nor does it define anyone else who has it. There are no diabetics, there are simply people with diabetes. It is important that people who do not have diabetes also develop this viewpoint. This can be achieved if there is an increase in the amount of knowledge that people possess about diabetes and its day-to-day management. My focus is type 1 diabetes which typically affects children, so I decided to focus on the importance of diabetes education in schools. In the present paper, the need for diabetes education in schools is investigated.

The information used in this literature review was collected from journal articles found in an online search. All of the articles used were found on PubMed.gov, which is operated by the US National Library of Medicine, National Institutes of Health, and the National Center for Biotechnology Information. Articles were selected based on one of the following two criteria: (1) the article’s results related to the relationship of peers to the management of type 1 diabetes (2) the article’s results related to the amount of in-school support given to children with type 1 diabetes. Ten studies were analyzed for the investigation of the topic (see Table 2.1) and two common themes arose: (1) peer support
is important for children with type 1 diabetes and (2) there is a lack of support in schools for children with type 1 diabetes.

The following four articles discussed presented outcomes supporting the theme that peer support is important for children with type 1 diabetes. A research article published in 1995 focused on the evaluation and comparison of support provided by family members and friends for adolescents’ diabetes care. The study was conducted using a structured interview given to adolescents with diabetes. The interview focused on answering the following questions: (1) How do family members and friends provide support for diabetes management (insulin shots, blood glucose monitoring, eating proper meals, and exercise)? (2) How do family members and friends provide support for helping adolescents with diabetes to “feel good” about their diabetes? Seventy-four adolescents with diabetes participated in the interview. The study found that families provided key support in that they were more supportive than friends for three management tasks: insulin injections, blood glucose monitoring, and meals. Friends, on the other hand, provided more emotional support for diabetes than families. Implications for the findings include encouraging parents to remain involved in adolescents’ treatment management, and involving peers as supportive companions for meals and exercise (La Greca, et al., 1995). The results of this study suggest that the support of peers is just as important as the support of family members in the effective management of diabetes.
This point was further supported in a study in 2001, by Greco, Pendley, McDonell, and Reeves. The goal of this study was to devise and implement a structured intervention for integrating peers into diabetes care. The participants in the study were adolescents with diabetes and their best friends. Twenty-one adolescents with diabetes and 21 best friends took part in a group intervention designed with the focus of increasing diabetes knowledge and social support of diabetes care. A pre-assessment and post-assessment was given to analyze measures of social support, knowledge about diabetes and support, diabetes functioning, and social functioning. The results showed that following the intervention, adolescents and their friends demonstrated higher levels of knowledge about diabetes and support, as well as a higher ratio of peer to family support, and friends demonstrated improved self-perception. The outcomes suggested that peer group intervention has the potential to increase positive peer involvement in adolescents’ diabetes care. (Greco, Pendley, McDonell, & Reeves, 2001)

The effect of peer involvement on diabetes care was also assessed in a study done in 2002 by Pendley, Kasmen, Miller, Donze, Swenson, and Reeves. The purpose of this study was to use a more developmental context to examine social support and peer and family involvement in relation to diabetes management. Familial support is a key aspect of diabetes management, but according to research it is not sufficient to ensure adequate disease management. Diabetes management occurs across different settings, such as home and school, thus it should be optimally facilitated by the support of both family members and peers. For optimal success, intervention programs aimed at improved
disease management should mobilize supports from the multiple systems involved in the daily care regimen (Pendley, et al., 2002).

The data presented in research conducted by Pendley, Kasmen, Miller, Donze, Swenson, and Reeves are part of an ongoing, innovative intervention program. The data were obtained to provide information regarding the relationships among peer support, disease management, metabolic control, and parent-child relations among youth with diabetes. The study included 68 participants with type 1 diabetes ranging from the age of 8 to 17. Each participant formed a ‘support team’ to participate in the study alongside them which was comprised of potential sources of regular support for specific aspects of the daily care regimen. Participants completed two 15-item scales to measure adherence to the most common type 1 diabetes regimen tasks and assess family conflict surrounding each regimen task. The participants with type 1 diabetes also completed an interview developed to assess reports of support received from family and friends for their diabetes care. The results of the study showed that peer participation in the intervention was correlated with metabolic control. This implies that the active involvement of peers can have a positive effect on adolescents’ diabetes management. Diabetes management spans across all areas of life, so it is important that many people from different settings comprise the support system for those with diabetes.

School experiences tend to have a great impact on people’s lives. For most people, a large portion of their childhood memories, whether good or bad, are connected
to an experience had at school. As stated before, diabetes has an effect on all areas of a person’s life. With diabetes, there are no breaks so the management regimen spans a number of different settings, including school. Huus and Enskär in 2007, set out to describe adolescents’ experiences of living with type 1 diabetes. Six girls and two boys ranging in age from 14 to 18 years old were interviewed for this study. The results of the interview show that the life experience of these adolescents can be described as a pendulum swinging between being normal and being different (Huus & Enskär, 2007). The data reflected the content of life experiences through five additional themes: 1) to be different, 2) to be treated differently, 3) to live a regular life, 4) to know one’s body and 5) to take care of oneself. Just like children without diabetes, children with diabetes just want to fit in and be like their friends. All children use different coping strategies to achieve this sense of belonging, but they also need the support of those around them. Support from their families and the diabetes team is of great importance, but above all, they need support and understanding from friends of their own age (Huus & Enskär, 2007). Since people are involved in school for a large part of their life, it is important that school faculty be included in this diabetes team.

The next six articles discussed presented evidence supporting the theme that there is a lack of support in schools for children with type 1 diabetes. Adolescents tend to have the most interaction with their peers in the school setting. However, successful diabetes management in schools involves support from a network of people, not just peers. Nabors, Lehmkuhl, Christos, and Andreone conducted a study in 2003 that identified six
categories representing key themes to assist with diabetes management at school: (1) improving staff knowledge, (2) availability of supplies and snacks, (3) flexibility, (4) help with hypoglycemic episodes, (5) reminders to follow regimens, and (6) emotional support from other people. Mixed methods, including groups, interviews and surveys, were used in this study to assess children’s and young adolescents’ perceptions of supportive behavior by nurses, teachers, and friends that allow them to improve their diabetes management at school (Nabors, Lehmkuhl, Christos, & Andreone, 2003). One hundred five children participated in the interviews and groups, and 78 parents completed surveys to provide information about their child’s diabetes. The results showed that children needed support for their diabetes management in the six category areas listed above.

Some of these same category areas appeared in the results of the study done by Hayes-Bohn, Neumark, Mellin, and Patterson in 2004. The purpose of their study was to explore opinions, concerns, and recommendations about the care of type 1 diabetes in the school setting. Thirty adolescent females and their parents participated in the study. Data were collected through semi-structured, individual interviews that were audiotaped, transcribed, coded, and qualitatively analyzed. The responses gathered could be divided into three categories similar to those listed in the study conducted by Nabors, Lehmkuhl, Christos, and Andreone in 2003. The categories were as follows: (1) knowledge/training of school staff, (2) foods offered/available at school, and (3) school rules. Participants expressed concerns that school personnel, particularly classroom teachers, possess limited knowledge of diabetes; that healthy food/beverage options are limited in the
cafeteria, vending machines, and classrooms; and that school rules impede self-care of diabetes (Hayes-Bohn, Neumark-Sztainer, Mellin, & Patterson, 2004).

Lewis, Powers, Goodenough, and Poth investigated the reasoning behind such obstacles to good control of diabetes in the school setting in 2003. Two hundred twenty-two schools were selected at random to participate in their study. Two questionnaires were prepared based on the recommendations of the American Diabetes Association (ADA) for appropriate in-school support for children with diabetes. One questionnaire was distributed to the schools and the other to the children and parents. The data collected from these questionnaires showed a wide variability and frequent inadequacy concerning the in-school care and resources available for youth with diabetes. Parents and schools were in agreement on the need to heighten the level of staff training in diabetes education. Lack of uniform distribution of diabetes education programs and initiatives across school districts, and among schools, has resulted in several inconsistencies that underscore an obvious need for comprehensive education and training on in-school diabetes management (Lewis, Powers, Goodenough, & Poth, 2003).

Evidence of this was shown in the study conducted by Amillatequi, Mora, Calle, and Giralt in 2009, concerning the special needs of children with type 1 diabetes at primary school. To do so they took into account the perceptions reported by parents, children, and teachers. A survey was conducted at nine public hospitals with children ranging in age from 6-13 years, the majority of which were 10-13 years old and came
from public schools. Questions on the survey were designed to evaluate the overall situation experienced by children with type 1 diabetes, main worries about the disease, and possible improvement measures. A total of 430 surveys were completed, of which the vast majority was completed by parents and children and a small percent (26%) was completed by teachers. The major consensus from the surveys was that parents, teachers, and children demanded better information at school about diabetes and about emergency management. It was agreed upon among the three population groups used in the study that having more available information on diabetes at schools is a necessity.

Wang, Yueh-Ling, Brown, and Horner took studying the school experience of children with type 1 diabetes to a more personal level when they intentionally recruited two Taiwanese adolescents with type 1 diabetes to participate in their study in 2010. The one limitation with this study was the small sample size. Individual interviews were conducted with the adolescents and were audio-recorded. Verbatim transcripts of the interviews were analyzed with the purpose of obtaining an initial understanding of school-based experiences of adolescents with type 1 diabetes. The two participants saw their school-based lived experiences as a dynamic learning process for how to deal with living with type 1 diabetes. Four interwoven themes were discovered: (1) learning to be master of their disease, (2) learning to find ways to feel comfortable, (3) learning to not be different, and (4) learning to not let others (especially parents) worry about them (Wang, Brown, & Horner, 2010). A supportive learning environment is necessary to assist individuals with diabetes to incorporate diabetes management into their daily lives.
and overcome common social obstacles in schools. This supportive learning environment is established by a network of people including: diabetes care professionals, school nurses, school personnel, and parents.

School personnel involvement in the management of diabetes during school hours, including insulin administration, management of hypoglycemia, and glucagon use was investigated in a 2011 study conducted by Pinelli, et al. The methods for this study included semi-structured questionnaires completed by a number of parents and teachers following an initial qualitative phase. A total of 220 parent and 52 teacher questionnaires were completed. The results were as follows: 43.6% of parents said diabetes had negatively influenced school activities, only 40.4% of teachers reported receiving any specific training regarding diabetes management, and only 23% of teachers considered their schools to be equipped to manage an emergency and said they would use glucagon directly in an emergency. The study shows that people who are not directly involved have superficial knowledge of the different aspects of diabetes, even though no parents reported episodes of neglect/incorrect management (Pinelli, et al., 2011).

Two common themes arose as a result of the analysis of the preceding ten articles: (1) peer support is important for children with type 1 diabetes and (2) there is a lack of support in schools for children with type 1 diabetes. Since most of the interaction that children have with their peers occurs in the school setting, both of these themes relate to a need for diabetes education in schools. It is necessary that the education of peers and
faculty within the school be pursued in the future to improve the support system for children with type 1 diabetes. Future research should investigate ways to integrate this type of intervention into the school curriculum.

**Table 2.1**

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<th>Results</th>
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<td><strong>Theme 1: Peer support is important for children with type 1 diabetes.</strong></td>
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<td>La Greca, et al/ <em>I get by with a little help from my family and friends: adolescents' support for diabetes care.</em> (1995)</td>
<td>Evaluate and compare support provided by family and friends.</td>
<td>Structured interview 74 adolescents with diabetes described ways family and friends provided support.</td>
<td>Families provided key support for management tasks. Friends provided emotional support.</td>
<td>Encourage parents to remain involved in adolescents' treatment management. Involve peers as supportive companions for meals and exercise.</td>
</tr>
<tr>
<td>Greco, Pendley, McDonell, Reeves/ <em>A peer group intervention for adolescents with type 1 diabetes and their best friends.</em> (2001)</td>
<td>Devise and implement intervention for integrating peers into diabetes care.</td>
<td>Group intervention including adolescents with diabetes and their friends. Measures of social support, diabetes knowledge and support, diabetes functioning, and social functioning obtained before and after.</td>
<td>Adolescents and their friends demonstrated higher levels of knowledge about diabetes and support Higher ratio of peer and family support Friends demonstrated improved self-perception.</td>
<td>Peer group intervention approaches may result in increased positive peer involvement in adolescents’ diabetes care.</td>
</tr>
<tr>
<td>Pendley, et al/ <em>Peer and family support in children and adolescents with type 1 diabetes</em> (2002)</td>
<td>Examine social support and peer and family involvement in diabetes management within developmental context.</td>
<td>68 youth ages 8-17 participated. Data included parent and youth report of disease management and conflict, youth-reported perceptions of support, peer participation in the intervention, and HbA1c.</td>
<td>Adolescents perceived greater diabetes-related peer support than did school-age children. Perceived peer and family support not correlated with metabolic control. Peer participation in intervention correlated with metabolic control.</td>
<td>There is a developmental shift in perceptions of peer support. Increased perceptions of peer and family support overall may not result in improved metabolic control.</td>
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Huus, Enskärl/Adolescents’ experience of living with diabetes. (2007)

Describe adolescent’s experience of living with type 1 diabetes. Six girls and two boys aged between 14 and 18 years were interviewed. Interview started with an open-ended qualitative question. Life experience of these adolescents can be described as a pendulum swinging between being normal and being different. Five themes emerged from the data: to be different, to be treated differently, to live a regular life, to know one’s body and to take care of oneself. It is important to adolescents with type 1 diabetes to be like their friends. They use different coping strategies and need support from their families and the diabetes team. Above all, they need support and understanding from friends of their own age.

Theme 2: There is a lack of support in schools for children with type 1 diabetes.


Assess perceptions of supportive behavior by nurses, teachers, and friends that allow improvement of diabetes management at school by mixed methods: groups, interviews, and surveys. 105 children participated in interviews and groups. 78 parents completed surveys to provide information about their child’s diabetes. Parents indicated 56% of children exercised good control. Six categories representing key themes identified: 1) improving staff knowledge, 2) availability of supplies and snacks, 3) flexibility, 4) help with lows, 5) reminders, and 6) support from other people to help them manage their diabetes at school. Children needed support in six areas: educating staff, availability of supplies, teacher flexibility, help with hypoglycemic episodes, reminders to follow their regimens, and emotional support. Children and adolescents with diabetes provided many useful ideas about how teachers, nurses, and friends could provide support during school. Some children need encouragement from friends to follow their medical regimens at school.
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<th><strong>Lewis, Powers, Goodenough, Poth</strong>/Inadequacy of in-school support for diabetic children (2003)</th>
<th>Identify obstacles to good control of diabetes in school setting. Document level of support available in various school districts. 222 schools selected to participate. Two questionnaires were prepared based on the recommendations of the ADA for appropriate in-school support for children with diabetes. One distributed to schools and the other to the children and parents. Data collected showed in-school care and resources available for youth with diabetes are widely variable and frequently inadequate. Both parents and schools reported a need to heighten the level of staff training in diabetes education.</th>
<th>Lack of uniform distribution of diabetes education programs and initiatives across school districts, and among schools, has resulted in several inconsistencies. Obvious need for comprehensive education and training on in-school diabetes management.</th>
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<td><strong>Hayes-Bohn, Neumark, Mellin, Patterson</strong>/Adolescent and Parent Assessments of Diabetes Mellitus Management at School (2004)</td>
<td>Explore opinions, concerns, and recommendations regarding care in schools. 30 adolescent females and their parents participated in semi-structured, individual interviews. Responses emerged in three categories: (1) knowledge/training of school staff; (2) foods offered/available at school; (3) and school rules. Participants expressed the following concerns: (1) school personnel, possess limited knowledge of diabetes, (2) healthy food/beverage options are limited in cafeteria, vending machines, and classrooms, (3) school rules impede self-care of diabetes.</td>
<td>Implications for enhancing diabetes management at school are noted.</td>
</tr>
<tr>
<td><strong>Wang, Yueh-Ling, Brown, Horner</strong>/School-Based Lived Experiences of Adolescents with Type 1 Diabetes: A Preliminary Study (2010)</td>
<td>Obtain initial understanding of school-based lived experiences of adolescents with T1DM to serve as a foundation of future research. Two Taiwanese adolescents with T1DM were recruited. Individual, audio-recorded, semi-structured interviews were conducted. Verbatim transcripts were analyzed. Participants described school-based lived experiences as dynamic learning process. Four themes discovered: (1) learning to be master of their disease, (2) learning to find ways to feel comfortable, (3) learning to not be different, and (4) learning to not let others worry about them. Diabetes care professionals, school nurses, school personnel, and parents should help strengthen resilience of adolescents to overcome common social obstacles in schools. Creating a supportive learning environment is warranted to help incorporate diabetes management into their daily lives.</td>
<td></td>
</tr>
<tr>
<td><strong>Amillatequi, Mora, Calle, Giralt</strong>/Specia l needs of children with type 1 diabetes at primary school: perceptions from parents, children, and teachers. (2009)</td>
<td>Identify the special needs of children with type 1 diabetes at primary school through the perceptions reported by parents, children, and teachers.</td>
<td>Cross-sectional survey carried out at nine public hospitals with children ranging from 6-13 years old. Included demographical information and questions that helped evaluate the general situation of children with type 1 diabetes at primary school, main worries about the disease, and possible improvement measures.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Pinelli, et al/The ALBA project: an evaluation of needs, management, fears of Italian young patients with type 1 diabetes in a school setting and an evaluation of parents’ and teachers’ perceptions</strong> (2011)</td>
<td>Determine how Italian parents and school personnel of 6-13-year-old children with type 1 diabetes manage during school hours. Investigation into the responsibilities and training of school personnel regarding diabetes.</td>
<td>After an initial qualitative phase, semi-structured questionnaires were completed by a sample of parents and teachers.</td>
</tr>
</tbody>
</table>
CHAPTER 3

METHODOLOGY

The Truth about Type 1 Diabetes: The Myths Exposed was the first book I had ever attempted to write and I did not know the first thing about being an author. I just blindly dove head first into this project. I knew I wanted the focus of the book to be on the myths and misconceptions commonly associated with type 1 diabetes, so I began by searching the internet for the most common misconceptions. The Juvenile Diabetes Research Foundation website was of the most assistance in my endeavors. There was a page on the website dedicated to debunking the most common myths involving type 1 diabetes. I searched through the list of myths and decided upon the ones that I wanted to include in my book. The writing process began in August 2013 and the book was published on February 27, 2014.

It started out as a simple word document and looked like any other paper I had ever written. I had not given much thought to how I wanted to format the book. I just wanted to get all of my ideas down on paper. With the assistance of my advisor and reference to other children’s books, I was able to take the words I had written and format them in such a way that it was starting to resemble a children’s book. There were several decisions involved in the formatting such as the orientation of the page, style of the font, and the layout of the words on the page. Landscape orientation was chosen because that
was the orientation and association I had of a great number of the books read as a child. Since the book is for children, the decision was to go with a ‘fun’ font to catch their attention rather than the commonly used professional fonts. Key vocabulary was highlighted using a variety of font colors. Figuring out the layout took the most thought and labor. Information was grouped and organized into pages, which were then arranged many times before a layout was discovered with which I was completely satisfied.

Being a children’s book necessitated plenty of illustrations. After plans for an illustrator fell through, I ended up drawing all of the illustrations myself, beginning by hand on blank computer paper. Each illustration was scanned into the computer and then inserted as an image into the word document for the book. Initially plans were to print the pages out and color the images by hand, as I had no experience with coloring images on the computer. However, advice from Dr. Baylis, Honors Advisor, on the professional appearance of hand coloring led to investigating how to color scanned images. A Google® search revealed Adobe Photoshop® from which I downloaded a free trial and began coloring my illustrations. With the help of a tutorial video, this was a success and I was very pleased with the way the illustrations turned out.

Upon completion of the book, I created the pre-assessment and post-assessment to be used for data collection. They were each comprised of seven True/False Questions. The same questions were included on both assessments, but the ordering was different. The content of the questions came directly from the True/False Questions from the myths
portion of the book. To make it less intimidating for the children, the pre-assessment was labeled as Before Reading the Book and the post-assessment was labeled as After Reading the Book. A sample of the assessments can be found in Appendix 2.

The next step in the process was to obtain full Institutional Review Board (IRB) approval for my research since I would be working with children. Before I could submit my application, I had to obtain a Letter of Agreement from the superintendent of each school that wished to participate. The initial plan was for me to travel to several different schools to collect data for my research, but I was only successful in getting in contact with one school, Olmstead Elementary School. Once I had all of the necessary components, my application was submitted and my meeting with the WKU IRB Committee took place on January 31, 2014. An analysis software was used by the WKU IRB Committee to determine the reading level of my book and it was initially determined to be for 8th-9th grade. After some minor revisions, full IRB approval was granted on March 4, 2014, and was assigned case number 553769-3.

The data collection phase took place on March 25, 2014. Two of the fourth grade teachers at Olmstead Elementary School allowed me to come to their classrooms and share my book.
Both Parental Consent and Student Assent Forms were distributed to the students the week prior to my visit. Parental consent and student assent were received from all students in the participating classrooms. One class would be the control group and the other would be the experimental group. For the control group the process was as follows:

1. The students were administered the pre-assessment.
2. The book was read to the students.
3. A question and answer session was held.
4. The students were administered the post-assessment.

The process was exactly the same for the experimental group except the students were not administered the pre-assessment. The interaction with the students lasted approximately 15-20 minutes for each class.

The determining factor in deciding which group would be the control group and which would be the experimental group was that one of the classes included a student with type 1 diabetes. This increased the risk of the results for the pre-assessment being skewed as a result of the students having direct contact with a child with type 1 diabetes. Prior to reading the book, I wanted to measure the knowledge of students who were not as likely to have previous knowledge regarding type 1 diabetes. Thus the classroom that

Figure 3.2: Reading at Olmstead Elementary School (2)
did not have the student with diabetes become the control group. All of the students in both classrooms were very attentive and involved during the whole process and all of them completed the assessments they were given.

The data from the assessments were then analyzed using Statistical Package for the Social Sciences (SPSS) Statistics Software. The questions on the assessments were listed as variables in the dataset. A group variable was also added to divide the data into three groups: Pre-Assessment 1, Post-Assessment 1, and Post-Assessment 2. Pre-assessment 1 and Post-Assessment 1 both had 20 participants and Post-Assessment 2 had 21 participants. Two Independent Samples t-Tests were run on the data at an alpha (α) level of statistical significance set at 0.05 (5%). The first Independent Samples t-Test included Pre-Assessment 1 and Post-Assessment 1 to determine if there was a significant difference between responses prior to and following reading the book. The second Independent Samples t-Test included Post-Assessment 1 and 2 to determine if there was a significant difference between the responses given by the two groups after the book was read. The results of the research are included in the following chapter.
CHAPTER 4

RESULTS

The following table is a quantitative description of the main features of the entire sample used in the research. The data are described using measures of variability or dispersion – minimum and maximum values of the variables and standard deviation – and the number of participants (N) and the group to which they belong are also listed.

Table 4.2

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes comes from eating too much sugar.</td>
<td>1.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td>.6000</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td>.9500</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>.00</td>
<td>1.00</td>
<td>1.0000</td>
</tr>
<tr>
<td>Insulin makes Diabetes go away.</td>
<td>1.00</td>
<td>19</td>
<td>.00</td>
<td>1.00</td>
<td>.8947</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td>.9000</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>.00</td>
<td>1.00</td>
<td>.9524</td>
</tr>
<tr>
<td>If people with Diabetes exercise, they do not have to take insulin.</td>
<td>1.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td>.9500</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td>.9000</td>
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<td>3.00</td>
<td>21</td>
<td>.00</td>
<td>1.00</td>
<td>.8571</td>
</tr>
<tr>
<td>People with Diabetes take insulin only for the sugars listed on food labels.</td>
<td>1.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td>.5000</td>
</tr>
<tr>
<td></td>
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<td>.6500</td>
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<td>21</td>
<td>.00</td>
<td>1.00</td>
<td>.8095</td>
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</tbody>
</table>
You can catch Diabetes from someone who has it.  

<table>
<thead>
<tr>
<th></th>
<th>1.00</th>
<th>20</th>
<th>.00</th>
<th>1.00</th>
<th>.8500</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>20</td>
<td>.00</td>
<td>1.00</td>
<td></td>
<td>1.0000</td>
</tr>
<tr>
<td>3.00</td>
<td>21</td>
<td>.00</td>
<td>1.00</td>
<td></td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Exercise is important for people with Diabetes.  

<table>
<thead>
<tr>
<th></th>
<th>1.00</th>
<th>20</th>
<th>.00</th>
<th>1.00</th>
<th>.8500</th>
</tr>
</thead>
<tbody>
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<td>.00</td>
<td>1.00</td>
<td></td>
<td>1.0000</td>
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<tr>
<td>3.00</td>
<td>21</td>
<td>.00</td>
<td>1.00</td>
<td></td>
<td>1.0000</td>
</tr>
</tbody>
</table>

People with Diabetes can eat sweets just like people who do not have Diabetes.  

<table>
<thead>
<tr>
<th></th>
<th>1.00</th>
<th>19</th>
<th>.00</th>
<th>1.00</th>
<th>.3684</th>
</tr>
</thead>
<tbody>
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<td>1.00</td>
<td></td>
<td>.9000</td>
</tr>
<tr>
<td>3.00</td>
<td>21</td>
<td>.00</td>
<td>1.00</td>
<td></td>
<td>.9524</td>
</tr>
</tbody>
</table>

Valid N (listwise)  

<table>
<thead>
<tr>
<th></th>
<th>1.00</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2.00</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3.00</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

The following table describes the main features of the sample used for the Independent Samples t-Test comparing the data from the pre-assessment and post-assessment of the control group. The data are described using measures of variability or dispersion – standard deviation and standard error mean – and measures of central tendency, or the mean. The number of participants (N) and the group to which they belong are also listed.
Table 4.3

Group Statistics:
Pre-Assessment 1 vs. Post-Assessment 1

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes comes from eating too much sugar.</td>
<td>1.00</td>
<td>20</td>
<td>.6000</td>
<td>.50262</td>
<td>.11239</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.9500</td>
<td>.22361</td>
<td>.05000</td>
</tr>
<tr>
<td>Insulin makes Diabetes go away.</td>
<td>1.00</td>
<td>19</td>
<td>.8947</td>
<td>.31530</td>
<td>.07234</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.9000</td>
<td>.30779</td>
<td>.06882</td>
</tr>
<tr>
<td>If people with Diabetes exercise, they do not have to take insulin.</td>
<td>1.00</td>
<td>20</td>
<td>.9500</td>
<td>.22361</td>
<td>.05000</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.9000</td>
<td>.30779</td>
<td>.06882</td>
</tr>
<tr>
<td>People with Diabetes take insulin only for the sugars listed on food labels.</td>
<td>1.00</td>
<td>20</td>
<td>.5000</td>
<td>.51299</td>
<td>.11471</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.6500</td>
<td>.48936</td>
<td>.10942</td>
</tr>
<tr>
<td>You can catch Diabetes from someone who has it.</td>
<td>1.00</td>
<td>20</td>
<td>.8500</td>
<td>.36635</td>
<td>.08192</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>1.0000</td>
<td>.00000</td>
<td>.00000</td>
</tr>
<tr>
<td>Exercise is important for people with Diabetes.</td>
<td>1.00</td>
<td>20</td>
<td>.8500</td>
<td>.36635</td>
<td>.08192</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>1.0000</td>
<td>.00000</td>
<td>.00000</td>
</tr>
<tr>
<td>People with Diabetes can eat sweets just like people who do not have Diabetes.</td>
<td>1.00</td>
<td>19</td>
<td>.3684</td>
<td>.49559</td>
<td>.11370</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>20</td>
<td>.9000</td>
<td>.30779</td>
<td>.06882</td>
</tr>
</tbody>
</table>

The following table displays the results of the Independent Samples t-Test comparing the data from the pre-assessment and post-assessment of the control group:
The following table describes the main features of the sample used for the Independent Samples t-Test comparing the data from the post-assessment of the control

<table>
<thead>
<tr>
<th>Question</th>
<th>Levene's Test for Equality of Variances</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes comes from eating too much sugar.</td>
<td>Equal variances assumed</td>
<td>58.581</td>
<td>.000*</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin makes Diabetes go away.</td>
<td>Equal variances assumed</td>
<td>.011</td>
<td>.917</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If people with Diabetes exercise, they do not have to take insulin.</td>
<td>Equal variances assumed</td>
<td>1.429</td>
<td>.239</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with Diabetes take insulin only for the sugars listed on food labels.</td>
<td>Equal variances assumed</td>
<td>1.879</td>
<td>.178</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>You can catch Diabetes from someone who has it.</td>
<td>Equal variances assumed</td>
<td>19.776</td>
<td>.000*</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise is important for people with Diabetes.</td>
<td>Equal variances assumed</td>
<td>19.776</td>
<td>.000*</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with Diabetes can eat sweets just like people who do not have Diabetes.</td>
<td>Equal variances assumed</td>
<td>20.135</td>
<td>.000*</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < 0.05
group and post-assessment of the experimental group. The data are described using measures of variability or dispersion – standard deviation and standard error mean – and measures of central tendency, or the mean. The number of participants (N) and the group to which they belong are also listed.

Table 4.5

<table>
<thead>
<tr>
<th>Question</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes comes from eating too much sugar.</td>
<td>2.00</td>
<td>20</td>
<td>0.9500</td>
<td>0.22361</td>
<td>0.05000</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>1.0000</td>
<td>0.00000</td>
<td>0.00000</td>
</tr>
<tr>
<td>Insulin makes Diabetes go away.</td>
<td>2.00</td>
<td>20</td>
<td>0.9000</td>
<td>0.30779</td>
<td>0.06882</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>0.9524</td>
<td>0.21822</td>
<td>0.04762</td>
</tr>
<tr>
<td>If people with Diabetes exercise, they do not have to take insulin.</td>
<td>2.00</td>
<td>20</td>
<td>0.9000</td>
<td>0.30779</td>
<td>0.06882</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>0.8571</td>
<td>0.35857</td>
<td>0.07825</td>
</tr>
<tr>
<td>People with Diabetes take insulin only for the sugars listed on food labels.</td>
<td>2.00</td>
<td>20</td>
<td>0.6500</td>
<td>0.48936</td>
<td>0.10942</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>0.8095</td>
<td>0.40237</td>
<td>0.08781</td>
</tr>
<tr>
<td>You can catch Diabetes from someone who has it.</td>
<td>2.00</td>
<td>20</td>
<td>1.0000</td>
<td>0.00000a</td>
<td>0.00000</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>1.0000</td>
<td>0.00000a</td>
<td>0.00000</td>
</tr>
<tr>
<td>Exercise is important for people with Diabetes.</td>
<td>2.00</td>
<td>20</td>
<td>1.0000</td>
<td>0.00000a</td>
<td>0.00000</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>1.0000</td>
<td>0.00000a</td>
<td>0.00000</td>
</tr>
<tr>
<td>People with Diabetes can eat sweets just like people who do not have Diabetes.</td>
<td>2.00</td>
<td>20</td>
<td>0.9000</td>
<td>0.30779</td>
<td>0.06882</td>
</tr>
<tr>
<td></td>
<td>3.00</td>
<td>21</td>
<td>0.9524</td>
<td>0.21822</td>
<td>0.04762</td>
</tr>
</tbody>
</table>

a. $t$ cannot be computed because the standard deviations of both groups are 0.
The following table displays the results of the Independent Samples t-Test comparing the data from the post-assessment of the control group and post-assessment of the experimental group:

<table>
<thead>
<tr>
<th>Question</th>
<th>Levene's Test for Equality of Variances</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes comes from eating too much sugar.</td>
<td>Equal variances assumed</td>
<td>4.686</td>
<td>.037*</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin makes Diabetes go away.</td>
<td>Equal variances assumed</td>
<td>1.649</td>
<td>.207</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If people with Diabetes exercise, they do not have to take insulin.</td>
<td>Equal variances assumed</td>
<td>.683</td>
<td>.414</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with Diabetes take insulin only for the sugars listed on food labels.</td>
<td>Equal variances assumed</td>
<td>5.203</td>
<td>.028*</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People with Diabetes can eat sweets just like people who do not have Diabetes.</td>
<td>Equal variances assumed</td>
<td>1.649</td>
<td>.207</td>
</tr>
<tr>
<td></td>
<td>Equal variances not assumed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*\( p < 0.05 \)

*Table 4.6*  

Independent Samples t-Test:  
Post-Assessment 1 vs. Post-Assessment 2
The following graph shows a comparison of the mean from the data collected using the Independent Samples t-Test comparing the pre-assessment and post-assessment of the control group:

Figure 4.1
The following graph shows a comparison of the mean from the data collected using the Independent Samples t-Test comparing the post-assessment of the control group and post-assessment of the experimental group:

**Figure 4.2**
CHAPTER 5

DISCUSSION

The purpose of this research was to test the following hypothesis: Children’s knowledge of the day to day management of type 1 diabetes will increase after being read a book written for grades 3-5 about the common myths and misconceptions associated with type 1 diabetes. To determine whether the proposed hypothesis was supported or rejected, the data were analyzed for statistically significant differences. Statistically significant differences are indicated by $p \leq 0.05$. There were indeed statistically significant differences found for both sets of data.

Table 4.1 is a quantitative description of the main features of the entire sample used in the research. The data are described using measures of variability or dispersion, including the minimum and maximum values of the variables and standard deviation. Also included are the number of participants (N) and the group to which they belong. Table 4.2 and Table 4.4 describe the main features of the samples used for each Independent Samples t-Test. The data on these tables are also described using measures of variability or dispersion, including standard deviation and standard error mean, as well as measures of central tendency, or the mean. The number of participants (N) and the group to which they belong are included on these tables as well. All three of these tables serve as background knowledge to better explain the data collected in the Independent Samples t-Tests.
The desired outcome for the results of the Pre-Assessment 1 vs. Post-Assessment 1 dataset, was to have maximum differences in the responses of the students. Results for 4 out of 7 questions – (1) Diabetes comes from eating too much sugar, (2) You can catch Diabetes from someone who has it, (3) Exercise is important for people with Diabetes, and (4) People with Diabetes can eat sweets just like people who do not have Diabetes – showed a statistically significant difference between the two groups by having a $p$ value equal to 0.000, which is less than the required maximum of 0.05 as seen in Table 4.3. Figure 4.1 indicates that, with the exception of one question, for those questions without a statistically significant difference the average amount of correct answers still experienced a slight increase. These outcomes support the hypothesis by showing an increase in the average amount of correct answers from the pre-assessment to the post-assessment for all questions except one, and for four of those questions the increase was statistically significant.

The desired outcome for the results of the Post-Assessment 1 vs. Post-Assessment 2 dataset, was to have minimum differences in the responses of the students. Results for two of the questions – (1) You can catch Diabetes from someone who has it and (2) Exercise is important for people with Diabetes – showed no variance at all because all of the students in both groups answered them correctly as seen in Table 4.4, which is excellent support for the hypothesis. Figure 4.2 indicates that the average amount of correct answers for both groups were very similar in comparison for six out of the seven questions. However, two of the questions – (1) Diabetes comes from eating too much
sugar \( p = 0.037 \) and (2) People with Diabetes take insulin only for the sugars listed on food labels \( p = 0.028 \) –showed a statistically significant difference between the two groups after data analysis by having a \( p \) value greater than the maximum of 0.05.

This difference could be due to one of the following limitations in the study: (1) the Post-Assessment 1 group included the same students who had taken the pre-assessment, thus they had previous exposure to the questions asked, or (2) the Post-Assessment 2 group actually included a student with type 1 diabetes, thus the classmates of the student may have had prior knowledge due to direct contact with the student with type 1 diabetes. These limitations hinder the ability to officially declare the hypothesis as being supported or rejected. However, the data analysis does indicate a greater degree of support for the hypothesis than for its rejection.
On Thursday, March 6\textsuperscript{th}, I held a copy of my book in my hands for the first time. It was so surreal to go from seeing my work on a computer screen to being able to physically hold a book. The moment I had been waiting for the past six months had finally arrived. My family, friends, and work colleagues offered nothing but positive feedback upon seeing the book, and many of them were eager to purchase a copy of their own. After all of the hard work that I had put into it, to see other people as excited about my project as I was filled me with joy.

The best part of this whole process was seeing how intrigued the children at Olmstead Elementary School were by my book. I was anticipating that I would experience difficulty with keeping the children’s attention because children at that age are typically so active. That was not the situation at all. The children were so excited to see my book and I was excited to see them so eager to learn. Some of them even left little messages on their pre-assessments and post-assessments that melted my heart. One student wrote, “Your book is the best!” and another elaborated on their response to a
question. The question was: True or False, people with Diabetes can eat sweets just like people who do not have Diabetes. The student answered true, which was correct, and also wrote, “But they have to watch how much.” To me, that was proof that I had made an impact, no matter how small it may have been, which had been my goal throughout the entire process.

Although I was unable to fully support my hypothesis statistically, the project was a complete success as far as I am concerned. I set out to educate the peers of children with type 1 diabetes about type 1 diabetes, and I did just that. It is my hope that both my book and this project will continue to have an impact by spreading the word about type 1 diabetes, in the hopes of creating a world in which people understand type 1 diabetes rather than pass judgment on it.
CHAPTER 7

FUTURE APPLICATIONS

In the near future, I hope to be able to visit several more elementary schools and continue to tell others the truth about type 1 diabetes. I do not want it to stop there. I want to expand beyond elementary schools as well in order to reach as many people as possible. I have already made a step in this direction by donating a book to the Vanderbilt Eskind Diabetes Pediatric Clinic in Nashville, Tennessee.

Not only will my book be used to educate others about type 1 diabetes, but it will also be used to fund type 1 diabetes research. Half of the proceeds earned from the sale of my book will go to the Juvenile Diabetes Research Foundation (JDRF). The JDRF is the leading global organization funding type 1 diabetes research. Their goal is to work toward finding a cure for this disease. The other half of the proceeds will go toward printing and distributing more books. I will not be keeping any of the profits for myself. My goal is to use my book in any way possible to support those living with type 1 diabetes.
WORKS CITED


APPENDIX 1

PUBLISHED CHILDREN’S BOOK

The Truth about
Type 1 Diabetes
The Myths Exposed

Written & Illustrated By: Caitlynn Oberhausen
The Truth about Type 1 Diabetes

The Myths Exposed

Written & Illustrated By: Caitlynn Oberhausen

Honors College Capstone Experience/Thesis Project for Western Kentucky University

Project Advisor: Dr. Margaret Cook-Newell, RDN, LD, CDE, CN
Honors College Project Advisor: Dr. Leslie Baylis, PhD
The Truth about Type 1 Diabetes: The Myths Exposed

By Caitlynn Oberhausen

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ISBN 978-1-312-05129-4
Diabetes is a condition in which the body is not able to use the sugar from food we eat for energy.

There are two types of Diabetes:

**Type 1 Diabetes**
A condition in which the body does not make insulin. Insulin is needed to help cells in the body turn food into energy.

**Type 2 Diabetes**
A condition in which the body makes insulin, but the insulin does not work right.

This book is about information on *Type 1 Diabetes*.
Taking Care of Diabetes
Our bodies make **insulin**. **Insulin** helps the body turn food into energy so we can run, skip, play, or swim.

**Insulin** is like a key to a door.

It opens the door to let the sugar from food you eat get in your cells. Energy is made in the cells.

With **Diabetes**, the cells do not make **insulin**.

Without **insulin**, there is no key so sugar can’t get in the cells. The sugar stays in the blood, which causes **high blood sugar** and results in **Diabetes**.
Nobody knows why people have Diabetes, but scientists think it might be:

**Genetics** – one of your parents or grandparents has it.

**Immune system mistakes** – the immune system protects the body from germs and sickness. Sometimes the immune system makes a mistake and attacks the body’s healthy tissues and organs. With Diabetes, an immune system mistake causes the body to stop making insulin.

**Environment in which we live** – being around some chemicals or getting a virus.
Scientists know that eating too much food or eating too much sugar have nothing to do with getting Diabetes.

People with Diabetes do not make insulin so they have to take insulin every day.

A doctor has to order insulin for the person with Diabetes.

To get the insulin in their bodies they take a shot or use an insulin pump.

Taking insulin does not cure Diabetes, it just keeps the blood sugar at a normal level.

The normal level for blood sugar is between the numbers 70 and 120.
People with Diabetes can eat all of the foods that people without Diabetes eat, including sugar.

They take Insulin for the carbohydrates in the food because their bodies do not make insulin.

Foods like fruit, milk, bread, potatoes, pizza, pasta, cookies, cake, candy, and ice cream are made up of carbohydrates, which turn into blood sugar.

People with Diabetes ‘count’ their carbohydrates so they know how much insulin to take.
People with Diabetes can exercise just like people without Diabetes. In fact, exercise is very important for people with Diabetes because it can:

* Keep their blood sugar at normal levels and
* Help their body use insulin
How People Get Diabetes

Questions

True or False: Diabetes comes from eating too much sugar.

True or False: Diabetes comes from eating too much food.

True or False: You can catch Diabetes from someone who has it.
How People Get Diabetes

Answers

False  Eating sugar does not cause Diabetes.
False  How much food you eat does not cause Diabetes.
False  Scientists do not know why Diabetes happens, but they know it cannot be passed from person to person. It is not like a Cold or the flu.

No one knows why the body doesn't make insulin, but scientists think it might be one of the following: genetics, immune system mistakes, or the environment in which we live.
Taking Care of Diabetes

Questions

True or False:
Insulin makes Diabetes go away.

True or False:
People with Diabetes take insulin only for the sugars listed on food labels.

True or False:
If people with Diabetes exercise, they do not have to take insulin.
Taking Care of Diabetes

Answers

False

**Insulin** does not make **Diabetes** go away.
A ‘cure’ has not been found.

False

**Insulin** is taken for food that has carbohydrates in it. Sugar is just one kind of carbohydrate.

False

**Exercise helps the body use insulin.**
People with **Diabetes** have to take insulin because without insulin food cannot give you energy.

**Nutrition Facts**

- **Serving Size:** 1/4 cup
- **Amount per serving:**
  - Calories: 280
  - Total Fat: 14 g
  - Cholesterol: 53 mg
  - Sodium: 75 mg
  - Total Carbohydrate: 26 g
  - Dietary Fiber: 9 g
  - Sugars: 15 g
What People with Diabetes Can/Cannot Do

Questions

True or False:
People with Diabetes cannot eat sweets.

True or False:
People with Diabetes cannot play sports.

True or False:
People with Diabetes cannot eat many foods.
What People with Diabetes Can/Cannot Do

Answers

False  Not eating sweets helps keep blood sugar at normal levels. A person with Diabetes can eat sweets but not all the time.

Sometimes sweets are needed. If blood sugar goes too low, sweets are used to bring the blood sugar back to normal levels.

False  Exercise is important for people with Diabetes. It helps keep blood sugar at normal levels.

False  People with Diabetes can still eat all of the foods that people without Diabetes eat. They just have to take insulin for the carbohydrates in the food they eat.
People with Diabetes can do the same things and eat the same foods that everyone else can.

People with Diabetes are just like you. They are only different because they don’t make insulin and have to take a shot or use an insulin pump.

All children need good food, plenty of exercise, and lots of support. Learning about Diabetes helps you be a friend to the people with Diabetes.
Glossary:

- **Diabetes** - a condition in which the body is not able to use the sugar from food we eat for energy. It is managed by food, exercise, and medication.
  - **Type 1 Diabetes** - a condition in which the body does not make insulin
  - **Type 2 Diabetes** - a condition in which the body makes insulin, but the insulin does not work right
- **Insulin** - made by the pancreas to help cells turn the food you eat into energy
- **Blood Sugar** - provides energy for the body from food
- **High Blood Sugar** - sugar that cannot get into the cells and stays in the blood
- **Carbohydrates** - the sugar and starch found in foods such as bread, pasta, and sweets that is needed for energy; broken down into blood sugar in the body
- **Insulin Pump** - a small battery-operated device that delivers insulin through a tube inserted under the skin
Caitlynn Oberhausen is a senior at Western Kentucky University. She is studying Hospitality Management and Dietetics with a concentration in Nutrition and Dietetics and a minor in Nutritional and Food Chemistry. She was diagnosed with Type 2 Diabetes on August 4, 2011. Her ultimate goal is to become a Certified Diabetes Educator after being credentialed as a Registered Dietitian.

Resources:
  Retrieved from http://www.eatright.org
  Retrieved from http://jdrf.org

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APPENDIX 2

PRE-ASSESSMENT AND POST-ASSESSMENT

Before Reading the Book

1. Diabetes comes from eating too much sugar.
   a. True
   b. False

2. Insulin makes Diabetes go away.
   a. True
   b. False

3. If people with Diabetes exercise, they do not have to take insulin.
   a. True
   b. False

4. People with Diabetes take insulin only for the sugars listed on food labels.
   a. True
   b. False

5. You can catch Diabetes from someone who has it.
   a. True
   b. False

6. Exercise is important for people with Diabetes.
   a. True
   b. False

7. People with Diabetes can eat sweets just like people who do not have Diabetes.
   a. True
   b. False
After Reading the Book

1. People with Diabetes can eat sweets just like people who do not have Diabetes.
   c. True
   d. False

2. People with Diabetes take insulin only for the sugars listed on food labels.
   c. True
   d. False

3. You can catch Diabetes from someone who has it.
   c. True
   d. False

4. If people with Diabetes exercise, they do not have to take insulin.
   c. True
   d. False

5. Exercise is important for people with Diabetes.
   c. True
   d. False

6. Insulin makes Diabetes go away.
   c. True
   d. False

7. Diabetes comes from eating too much sugar.
   c. True
   d. False
Auburn’s Oberhausenen publishes, shares story about Type 1 Diabetes

Chris Cooper Managing Editor

March 31, 2014

Caitlynn Oberhausen, of Auburn, recently wrote, illustrated and published a book on the facts and myths of type 1 diabetes, a topic she is all to familiar with, having been diagnosed herself before attending college.

“It was very surprising when I found out I had type 1 diabetes,” said Caitlynn, a 2011 graduate of Logan County High School. “It definitely took some adjustment, but I’m okay, and pretty much live a normal lifestyle.”
Caitlynn said through being diagnosed, she wanted to take her experience and educate those who are around people with the condition. She feels it’s important to bring about awareness to diabetes which breaks down the walls of fear others may have who either work, go to school with, or are friends with, those who have it.

As part of Caitlynn’s graduate school thesis at Western Kentucky University (WKU), she decided to write a book about what was true and false about type 1 diabetes. This was the perfect opportunity. Caitlynn’s book is entitled, “The Truth About Type 1 Diabetes: The Myths Exposed.”

“A lot of people don’t realize the facts about type 1 diabetes. People like myself who have it can live a normal life. We just have to watch what we eat and make sure our levels are where they need to be,” said Caitlynn. Knowledge is power and by educating people about type 1 diabetes, it can help those who have it fit in.

Type 1 diabetes is usually diagnosed in children and young adults, and was previously known as juvenile diabetes. Only 5 percent of people with diabetes have this form of the disease. In type 1 diabetes, the body does not produce insulin. Insulin is a hormone that is needed to convert sugar, starches and other food into energy needed for daily life. With the help of insulin therapy and other treatments, even young children can learn to manage their condition and live long, healthy lives.

“I can’t imagine what young people in middle school must go through having type 1 diabetes, and the feelings of wanting to fit in. It’s hard enough getting through school at that age without any added struggles,” said Caitlynn.

Caitlynn’s book breaks down those added struggles and explains to kids what actually happens when someone has Type 1 Diabetes. The illustrations, which she drew herself, are a warming addition to the book, one which children can relate to.
“My focus is the peer groups who have people in their lives with type 1 diabetes,” said Caitlynn. “I want them to understand and not fear.”

Caitlynn’s book can be found on Amazon.com. A portion of the proceedings from her book will go to the Juvenile Diabetes Research Foundation (JDRF), with the remainder going to purchase more books to be donated to schools. Caitlynn says she didn’t do this project to make money, but to help others.

Caitlynn recently had the opportunity to read her book to 3rd-5th graders at Olmstead School. She said they were very welcoming and seemed to love the book. Afterwards she asked the students questions about type 1 diabetes.

“It was a great experience,” said Caitlynn. “I believe the kids really learned about what was read, which is my goal.”

Caitlynn is majoring in Hospitality Management and Dietetics with a concentration in Nutrition and Dietetics and Food Chemistry at WKU. She is also very active in the WKU Marching Band. She is the daughter of Dickie and Cheryl Oberhausen.

Caitlynn says she wants to use her degree to someday help those who have diabetes.


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