TEACHERS SUPPORTING LEARNERS WITH DIABETES:

A PSYCHO-EDUCATIONAL PERSPECTIVE

by

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DECLARATION

I declare that 'TEACHERS SUPPORTING LEARNERS WITH DIABETES: A PSYCHO-EDUCATIONAL PERSPECTIVE' is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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SIGNATURE DATE

(Mrs L. Chothia)

SUMMARY

TEACHERS SUPPORTING LEARNERS WITH DIABETES:

A PSYCHO-EDUCATIONAL PERSPECTIVE

The purpose of this study was to develop a set of guidelines to enable teachers to support children with diabetes. The aspects of support include the physical, emotional, social and cognitive aspects that have an effect on a child with diabetes.

A literature study and an empirical investigation were undertaken to investigate which factors would enable teachers to become better sources of support in school.

Semi-structured interviews were conducted with teachers to determine their knowledge about diabetes. Parents who have children with diabetes were also interviewed to determine what support they required from teachers.

The results of the study culminated in a set of guidelines for teachers.

Key terms

diabetes; Type 1 diabetes; Type 2 diabetes; diabetes guidelines; hypoglycaemia; insulin; hyperglycaemia; teacher support; emotional support; physical support; social support; cognitive support

Dedication and Acknowledgement

This dissertation is dedicated to the great men in my life: my late father, whose gentleness, patience and generous spirit have been an inspiration to me every day! My husband, whose magnanimity has made my studies possible, and my four amazing sons, who are the pride and joy of my life.

The Prophet Muhammad (may peace be upon him) said something to this effect, "He who does not thank people is not thankful to God."

I would like to express my sincere appreciation and deepest gratitude to the following individuals who have played an instrumental role in the achievement of this dissertation and in my life:

I would firstly like to thank my Creator who has blessed me and has guided me throughout my life.

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My research participants: Thank you for sharing your stories with me. I hope that other teachers, parents and children with diabetes will benefit from your willingness to participate.

My mother and mother in law: Your strength and ability to persevere in good and bad times have been an invaluable lesson to me.

My friends and family: Thank you for being absolutely amazing.

Last but not least: the children with diabetes whom I have taught, and who were my inspiration for this study.

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1.1 INTRODUCTION

Diabetes mellitus is fast becoming one of the most common chronic diseases in childhood. It can affect children at any age, even young toddlers. Diabetes is an illness that affects the glucose levels because insulin either is not sufficient or is used inadequately by the body. Insulin is a hormone that helps to regulate the blood glucose level in the body (Munden 2007:15). Glucose gives the body energy. In diabetics the glucose remains in the blood and does not move into the cells where it is required. This is harmful to the cells that require glucose as well as to the other organs and tissues that are exposed to high levels of glucose. The two types of diabetes that will be focused on in this study are Type 1 and Type 2 diabetes. Type 1 diabetes is usually diagnosed in childhood and is also called insulin dependent diabetes, because it requires insulin to maintain health (Munden 2007:11). Type 2 diabetes is caused by insulin resistance in muscles and the liver (Munden 2007:12).

According to the International Diabetes Federation (2007), in 2006 the statistics on diabetes state that the illness is increasing by 3% every year, and that over 70 000 children develop Type 1 diabetes each year. These figures indicate "that 440,000 children worldwide under the age of 14 now live with Type 1 diabetes. At the same time, Type 2 diabetes which was previously unheard of in children, is rising at alarming rates, especially among ethnic minorities. More than 200 children a day now develop diabetes" (International Diabetes Federation 2007).

According to a study on diabetes conducted in South Africa, diabetes is estimated to have caused 20 000 deaths in 2000; this is 4,3 per cent of all deaths in the year 2000. "This makes diabetes the seventh leading cause of death in South Africa, and the fifth leading cause of death worldwide" (Bradshaw, Rosana, Pieterse, Levitt & The South African Comparative Risk Assessment Collaborating Group 2007:704). Although all groups are affected, those most at risk are the black community because of their rapid lifestyle and cultural changes, and people of Indian descent who have a gene pool that makes them easily susceptible to diabetes" (Welcome to Diabetes SA). The government of South Africa is not sufficiently prepared to deal with the rising numbers of diabetes sufferers (Welcome to Diabetes SA). It is predicted that the rate of diabetes will increase by a rate of 54 per cent from the year 2010 to 2030, with the highest rate of increase in Africa (Shaw, Sicree & Zimmet 2010:11).

The increase in diabetes is progressing so rapidly that The International Diabetes Federation (2007) has stated that “diabetes is becoming an epidemic of the 21st century.” This increase will put pressure on the country’s health care as well as its social infrastructures. Seeing that children are also being diagnosed at alarming rates, schools will have to take the initiative to ensure that teachers update their knowledge in order to meet the needs of increasing numbers of learners with diabetes that will be admitted in schools. Teachers are the caregivers of children during school hours, and thus have a responsibility to all the children in their class – this includes the child with diabetes.

1.2 ANALYSIS OF THE PROBLEM

In my experience as a Foundation Phase teacher, I have found in recent years that many children were diagnosed with diabetes and required my assistance. When I encountered the first child with diabetes in my class, my knowledge regarding the illness and its pervasive effects on the child was sorely lacking. I was faced with the challenge of having to learn how to test blood sugar levels, how to administer insulin and also how to monitor the diet and physical activity of a child with diabetes.

The amount of stress that this situation caused me is indescribable. A child’s life depended on me and the situation left me feeling uncertain and incompetent as I did not have the knowledge required to cope. I had to educate myself very quickly in order to give myself, the child and the parents confidence to carry out this task in a professional and an empathetic manner. Prior to my contact with the illness I had no idea what a huge impact the illness had on a child. The complications of mismanagement are daunting too, because of the serious repercussions. A child with Type 1 diabetes can be rendered unconscious if the blood sugar level drops too low. In order to handle such an emergency I had to learn how to administer an adrenalin injection. I also had to know how to deal with a blood sugar level that was too high, which could also cause unconsciousness, and is treated by increasing the dosage of insulin.

I realised that had I been versed in some important aspects of the illness I would have felt more confident and less anxious in dealing with the situation. An easy set of guidelines geared towards helping a teacher would have been of tremendous value to me at the time. Teachers are responsible for the care of children while they are at school, so it is of vital importance for them to be well informed about any and all aspects of diabetes in order to lend the appropriate physical, emotional and learning support to the child. In my experience I also found that some children with diabetes are more sensitive and are less adventurous due to worries about how certain activities could affect their blood sugar levels. The

emotional aspect of the illness also has to be considered when teaching a child with diabetes.

One wonders whether other teachers experienced the same stress due to lack of knowledge and training. In my experience, having a young child with diabetes in the class is a tremendous responsibility that requires not only knowledge but patience, as well as an alert, observant eye in order to pick up subtle changes in a child that can indicate a low or high sugar level. In addition, it requires the teacher to keep track of the individual eating schedules of the child with diabetes, which may not coincide with the school lunch breaks. It often requires the child to have a snack during teaching time, which must be accommodated in order to avoid an uncontrolled blood sugar level. The teacher of a young child must also be willing to prick the child's finger in order to do sugar readings, or administer an injection, if the child is not capable of carrying this out themselves. The task is therefore not easy and initially requires a great deal of courage.

1.3 BACKGROUND TO THE PROBLEM

Parents are required to put their faith in the teacher's ability to handle their children with diabetes with competence during school hours. It is not practical to expect parents to always be available during school hours to assist their children with sugar testing and adjusting insulin dosages. In the first few days of having a child with diabetes in my class, the parent came in during lunch breaks to help me practice, and to guide me through the process. At every additional snack time during the first few days of school, the parent called to remind me that the child needed her snack. This made me realise that parents too feel anxious and need to be reassured that the teacher will be responsible and conscious of the child's needs throughout the day.

Good, effective communication and collaboration between the parent and teacher are vital in any school, but in the case of a chronically ill child it is of greater importance. The parent-teacher relationship cannot be emphasised enough when dealing with a child with diabetes. Parents will give teachers valuable information about the child's condition and are a vital source of support to the teacher. Parents will also inform teachers of particular behaviour patterns their children display when experiencing low blood sugar levels and how to adjust medication in the event of a party at school. Teachers must also communicate any changes in the child's sugar levels or fluctuations that are unusual, so that parents are aware of them and can communicate these to the child's medical practitioner.

Parents must feel reassured that their children will be in the hands of a capable teacher that will not neglect the medical and dietary regimen of the child. The teacher must therefore be

equipped with sufficient knowledge from the outset, in order to foster the trust of the parents and the child. Knowledge will prevent misconceptions about diabetes and prevent discrimination against children with diabetes. Knowledge will also remove fear and enhance the relationship between the teacher and parents, as well as between the teacher and the child.

In America, educators must provide a school environment and resources to ensure the adequate care of students with diabetes. “This is not only a question of ethics, but law in America. Three federal laws enacted to safeguard students with a chronic illness – section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Individuals with Disabilities Education Act of 1991 – apply to students with diabetes” (Wishnietsky & Wishnietsky 2004:8). In Washington in 2002, the governor signed a Senate Bill (no. 6641) which allowed children to manage their diabetes at school. This bill also requires each school to have staff trained in diabetes management and to have an individual health plan that outlines specific needs (Wishnietsky & Wishnietsky 2004:26).

I think that due to the rise in diabetes in South Africa it would be wise to follow this line of policy in our country too. I know that it would have helped me a great deal and relieved some of my stress if there had been a trained person on the school staff to guide and support me. The Education White Paper 6 on Special Needs (Department of Education 2001:9), which uses the principles in the South African Constitution as its guidelines, suggested the following key strategies to foster human justice and social rights of all learners: (i) “participation and social integration: equal access to a single, inclusive education system; access to the curriculum, equity and redress; community responsiveness; and cost-effectiveness transforming all aspects of the education system, (ii) developing an integrated system of education, (iii) infusing ‘special needs and support services’ throughout the system, (iv) pursuing the holistic development of centres of learning to ensure a barrier-free physical environment and a supportive and inclusive psycho-social learning environment, developing a flexible curriculum to ensure access to all learners, (v) promoting the rights and responsibilities of parents, educators and learners, (vi) providing effective development programmes for educators, support personnel, and other relevant human resources, (vii) fostering holistic and integrated support provision through intersectorial collaboration” (Department of Education 2001:9).

The South African Department of Education, in conjunction with the United Nations Children Fund, has a brief set of guidelines on chronic illnesses, which includes a section on diabetes in a handout called “Supporting grade R to grade 3 learners with chronic illness (Department of Education & Unicef 1999:3-32). This handout helps in acquainting teachers with the basic

knowledge regarding a number of chronic illnesses. All the teachers that I have thus far consulted with, at the private school my children are in and the special school I am currently working at, as well as the teachers I have interviewed for this study, claim to have no knowledge of this handout. This set of guidelines mention diabetes as a chronic illness, but is not explicit about how a teacher should assist a child with diabetes. The South African Schools Act of 1996 (Chapter 2, section 5) makes it the duty of all public schools to admit learners and serve their educational requirements without unfairly discriminating in any way (South African Schools Act 1996).

Although international guidelines will probably not differ significantly from South African guidelines in respect of recognising symptoms and the basic emergency procedures that need to be followed, the infrastructure in America is better able to accommodate learners with diabetes, because over there, by law there should be a trained person at school to assist with the care of the child. I envisage developing a simple, user-friendly set of guidelines that can assist South African teachers in handling learners with diabetes and understanding the effect of diabetes on the total development of the child. This will include the physical, emotional, cognitive and social effects of diabetes.

Teacher training at universities does include some information on illnesses, for example the University of Pretoria in their course JGV 320 for third-year students studying BEd in Early Childhood and Foundation Phase, prescribes the textbook by Marotz (2012), titled *Health, Safety and Nutrition for the Young Child*. This book has a chapter dedicated to medical conditions affecting children's health (2012:78), which includes a good description of the basic information as well as the emergencies related to diabetes. However, in practice (being a teacher myself), it is difficult to remember everything that one has studied. We are also not dealing practically on a regular basis with certain equipment used by children with diabetes, such as an insulin pump. This is a devise that is inserted under the skin and has a small machine about the size of a cellular phone attached to it. This devise contains insulin and controls the dosage of insulin automatically when calibrated. It is overwhelming knowing that you have a child's life in your hands every time you help the child to reset the dosage. This is the reason why I believe that short training programmes and refresher courses can help to assist teachers in dealing with the different challenges they may face in practice.

It is evident from the statistics and the literature that the incidence of diabetes in children is increasing and that good management of the illness can prevent complications. Children with diabetes need the support of all stakeholders in managing their illness, and this would include the school as well as the teachers. School support would include making available continuous training or sending teachers on training courses so that they can assist children

with special needs (such as diabetes) in their classes; schools should also stock emergency kits, for handling diabetic emergencies such as a very low blood glucose level, and ensuring that some members of the staff have enough knowledge to give guidance to teachers when a child with diabetes is admitted in their classrooms. Training teachers about diabetes is therefore of paramount importance. Diabetes impacts on children's physical, emotional and social functioning and they require both physical as well as psychological support (Barnard, Lloyd & Holt 2012:8). In inclusive schools, allowances must be made to ensure optimal educational, psychological and social development of all their leraners.

Anyone with diabetes requires discipline in order to manage their illness. Teachers of young children in particular have to ensure that the particular treatment regimen is adhered to in order to maintain optimal blood glucose levels and prevent diabetes-related complications (Munden 2007:52). Young children usually cannot test their own sugar levels and most often cannot determine how much insulin they are required to take. They can make errors that may cost them their lives. In addition, teachers must be aware of the physical, emotional, cognitive and social effects of diabetes on a child. Teacher education does not adequately equip teachers with knowledge on certain aspects of health impairments that they may encounter in schools. This is an unrealistic task because of the vast amount of information required to be learnt by student teachers; it is therefore important to supplement teacher education by providing user-friendly guidelines that are easily accessible to teachers and which will give them specific information pertaining to these chronic illnesses. Diabetes education may reduce teacher anxiety and prepare the teacher to adequately provide for the needs of children with diabetes. Diabetes is a chronic illness that has implications for the teacher and school – it is their duty to assist and support a child with this condition.

Amillategui, Calle, Alvarez, Cardiel and Barrio (2007) conducted a quantitative study in Spain, which strengthens my argument for the need of such guidelines for dealing with children that have diabetes. The study in Spain focused on the special needs of school children with Type 1 diabetes from the parents' point of view and the difficulties experienced with full integration. The results of this study showed that only 34% of parents believed that teachers could recognise symptoms of hypoglycaemia, and 17% of parents experienced problems at school when they informed staff that their children had diabetes; 5% of parents did not get accepted at school, and 8% were forced to change schools. Nine per cent of parents reported having to change the dosage of their children's medication because of a lack of cooperation from the school. This study is an example of the difficulties that parents may encounter when they have a child with diabetes in school. The study further found that

parents felt that education programmes about diabetes should be developed specifically for school personnel (Amillategui et al. 2007:1078).

The National Diabetes Education Program (Helping students with diabetes succeed 2010) in the United States and Watson (1998:148), amongst others, have developed useful guidelines on the management of diabetes in schools. These international guidelines can be used to create a set of guidelines for teachers in South Africa. The day-to-day management of diabetes in young children require parents to adjust their daily routine to provide for the additional care their children may need. The responsibility of the care of young children with diabetes falls into the hands of parents (Seppänen, Kyngäs & Nikkonen 1999:63-64). In school this responsibility shifts to the teachers during school hours.

My contention is that, if aware that a child has diabetes, a teacher can help the child in complying with his/her treatment regimen, and also support the child on an emotional level to cope with the illness and the challenges it poses in school. Within inclusive schools, accommodations have to be made to ensure optimal physical, emotional, cognitive and social development. With this study, I intend to contribute to the knowledge and training of teachers in schools by providing a set of guidelines to help them when they are faced with the challenge of having a child with diabetes in the classroom.

1.4 DELIMITATION OF THE STUDY

This study will focus on the Foundation Phase at schools, because this is probably where support is required most because young children are often not able to control or monitor their sugar levels independently. They may also not know how to adjust their medication according to the sugar test. In the case of young children with insulin pumps, they may not yet know basic mathematics in order to count the carbohydrates and enter the correct amount into the pumps. They will need assistance to check their sugar levels and to administer their medication. This study will therefore be limited to teachers in the Foundation Phase, which includes Grade R (reception year) up to grade 3 teachers.

Teachers from three different schools in Pretoria will be used in this study. Teachers from a private school, teachers from a government school, and teachers from a special needs school will be interviewed to determine their knowledge about diabetes.

Three parents who have children with diabetes will be interviewed to determine, amongst other factors, the obstacles they encountered as well as the expectations that they have of teachers to facilitate the needs of their children during school hours.

1.5 PRELIMINARY LITERATURE REVIEW

1.5.1 Theoretical Framework

My choice of topic left me no option but to begin with the biomedical model to explain diabetes as a medical condition. This is however too reductionistic and limiting, in particular because diabetes is a condition that has psychological as well as social implications. My focus is also on teachers who form part of the social milieu of children's lives. In search of a way of marrying the medical model with the social model, I therefore chose the bio-psycho-social paradigm. This approach takes into account all the factors that I had in mind for my study. The bio-psycho-social model is a comprehensive, integrative, and elegant model that allows us to address all major areas of the presenting issue across three spheres: physical, psychological, and sociocultural. It allows (and actually encourages) us to examine holistically the interactive and reciprocal effects of environment, genetics, and behaviour (Borrell-Carrió, Suchman & Epstein 2004).

I would like this study to broaden the way in which teachers, in particular, view diabetes. I would like to make them aware that diabetes can affect all areas of the child's life. I also want to bring to their attention that they and the school have a responsibility to make inclusion a priority by accommodating and making allowances for the physical, emotional, social and cognitive well-being of the child with diabetes. I will therefore be using the paradigm of the bio-psycho-social model. In the next few paragraphs I will highlight the effects of diabetes on individuals.

1.5.2 Physical Effects of Diabetes

The classic symptoms of Type 2 diabetes include (Tentolouris 2006b:16):

- polyuria (frequent urination)
- polydipsia (excessive thirst)
- weight loss
- infections (particularly fungal infections of the genital tract)
- visual disturbances
- muscular cramps in lower extremities
- hyperalgesia (increased sensitivity to pain)
- hypoglaecemia (low blood sugar)
- coma

Type 1 diabetes presents with (Tentolouris 2006b:16):

- sudden weight loss (in the order of 1-2 kg per week)
- extreme ploy phagia (hunger)
- extreme polyuria (frequent urination especially during the night)
- extreme polydipsia (thirst especially during the night)
- generalised fatigue
- weakness, sleepiness
- visual disturbances
- skin infections (fungal infections of the genital organs)
- dehydration
- coma

Once a diagnosis is made, there are numerous other complications that can occur, especially if the diabetes is not well controlled. After many years, diabetes can lead to other serious problems. I will mention the many complications that may not pertain to children to highlight the seriousness of the condition, as well the various implications of uncontrolled or inadequate control of diabetes. These are as follows:

- diabetic nephropathy (decline in kidney function) (Diakoumopoulou 2006a:176)
- macroangiopathy (atherosclerosis – cholesterol plaque in the arteries) (Ioannidis 2006c:199)
- diabetic foot (poor circulation and lack of sensation which leads to ulcers forming) (Tentolouris 2006a:217)
- skin disorders like dermatitis (Makrilakis 2006d:243)
- increase in infections (Liatis 2006b:267)
- diabetic retinopathy (eyesight problems) (Diakoumopoulou 2006b:159)
- hypertension (Makrilakis 2006b:277)
- due to nerve damage digestion problems can occur as well as erectile dysfunctions in men (Pubmed Health – *A.D.A.M. Medical Encyclopaedia*).

The way in which diabetes affects the child has to be common knowledge to teachers, not only to provide adequate support but to make them aware of the numerous ways in which it can affect the child. This will ensure that the symptoms and the effects of the illness are not misunderstood by the teacher. For instance, if a child suddenly starts displaying symptoms which correlate with symptoms of diabetes, like wetting themselves or frequently asking to go to the toilet and often asking for water. The teacher may view this as being disruptive. However, if teachers are aware of the symptoms of diabetes they can advise the parents of

the change in behaviour and advise that the child has a medical examination to determine whether the symptoms are due to a medical cause such as diabetes.

1.5.3 Psychological Effects of Diabetes

The words of one child with diabetes summarises the drastic effect the illness had on his life: "At least once every 15 minutes, I have to deal with my diabetes. I have to stop what I'm doing, think about how I'm feeling, try to remember when and what I last ate, think about what I'll be doing next, and decide whether to test my blood. Then depending on the results of the test (or my guess as to my sugar level), I'll plan when to eat or take my next insulin bolus" (Rubin 2000:21).

Children with any chronic illness can also suffer from psychological disorders like depression due to the effect the chronic illness has on them. Several studies suggest that diabetes can cause depression (Hyvärinen, Wahlbeck & Eriksson 2007; Guthrie, Bartsocas, Jarosz-Chabot & Konstantinova 2003. The physical symptoms as well the treatment – which involves pricking oneself and injecting oneself – are usually unpleasant; social restrictions like the restrictive diet that accompanies the illness are contributory factors. The diet of a person with diabetes disallows party foods like cakes, cold drinks, sweets, fatty foods, fatty meat and alcoholic beverages.

In a study by Hood, Huestis, Maher, Butler, Volkening and Laffel (2006:1390), it was found that the incidence of children and adolescents with Type 1 diabetes suffering from depression were double that of youth in general. These issues were observed by earlier studies too. Grey, Boland, Chang, Sulivan-Bolyai and Tamborlane (1998:909) found that teenagers who successfully controlled their diabetes perceived diabetes as having a negative impact on their lives, causing depression.

In Anderson (1990:91), it is reported from interviews with mothers of children with diabetes that between the ages of 8 and 11 children feel heightened frustration and social stigma due to the dietary restrictions. The child’s emerging self-awareness and ability to make comparisons with peers make the child with diabetes vulnerable to feelings of inadequacy. Children in middle-childhood face many challenges such as developing an identity and independence as well as peer relationships. Having diabetes may exacerbate these developmental challenges.

1.5.4 Social Effects of Diabetes

Trying to follow a diabetic diet can pose difficulties in social situations. Family or friends may feel offended by the person who refuses a piece of homemade pie or other dessert. It can be

difficult to avoid overindulging in the presence of people who eat large quantities of food. This can be especially troublesome for children and teens with diabetes who will need to develop a great amount of willpower. Children with diabetes may have to refrain from some group activities due to the need to monitor or maintain their blood sugar level, leading to stigmatisation or group isolation.

Unfortunately, children with diabetes sometimes experience discrimination. There have been cases in which day-care centres have refused to admit children with diabetes, and secondary school learners have not been allowed to monitor their blood glucose level in the classroom or to eat the snacks they needed on the school bus. There is a case of a little girl called Celeste Barselou who was refused admittance to school because she had diabetes. She was asked to attend a school that was an hour's drive away. This was very inconvenient and there was no one to assist her with a diabetic emergency if one occurred on the bus during the hour commute (Arent 2003:163). Travelling can be particularly problematic for anyone with diabetes (Liatis 2006a:319-320). Special precautions have to be taken in the event of any delays whilst travelling.

"Family members of the child with diabetes often experience the classic stages of grief, progressing from anger and denial to bargaining, depression, and finally resolution or acceptance. Unresolved grief leads to families becoming dysfunctional if they were not already so" (Guthrie et al. 2003:7). In my own personal experience as a teacher dealing with children with diabetes in the class, the situation also had an emotional impact on me. I felt incompetent and was terrified at first because I knew so little about the illness. Once I learnt about the illness and its complexities, I felt even more anxious because of the weight of the responsibility it placed on my shoulders. So I can just imagine how much worse it has to be for the parents, and the parents' stress due to their child's diabetes will impact on the entire family and ultimately on the child as well.

1.5.5 The Cognitive Effects of Diabetes

Research suggests that diabetes can affect cognitive functioning. "There is a relationship between cognitive dysfunction and Type 1 diabetes. In patients with Type 1 diabetes, cognitive dysfunction is characterized by a slowing of mental speed and a diminished mental flexibility, whereas learning and memory are spared. The magnitude of the cognitive deficits is mild to moderate, but even mild forms of cognitive dysfunction might hamper everyday activities since they can be expected to present problems in more demanding situations" (Brands, Biessels, De Haan, Kappelle & Kessels 2005:734).

As stated above, after many years, diabetes can lead to other serious problems. “Diabetics are more likely to suffer a decline in mental ability as they age, due to a narrowing of the arteries that can lead to tiny strokes and gradual brain damage. Diabetics experience a decline in speed of processing information. People with Type 2 diabetes have an increased risk of developing dementia and Alzheimer's disease” (The Human Brain – Carbohydrates; Society of Neuroscience - Diabetes).

Laura Plunkett from Parenting Diabetic Kids (Diabetes affecting Learning Abilities) talks about her son who was seven years old when he was diagnosed with diabetes. His blood glucose levels were very unstable or unpredictable in the first year after being diagnosed. This affected his concentration and consequently his ability to learn. He also had frequent headaches and stomach aches from the highs and lows in his blood sugar levels. Some nights he had to wake to have a snack or have an insulin injection, which caused tiredness the next day. This is an example of how initially adapting to diabetes and the treatment regimen can affect the ability to learn due to the unpleasant consequences of this illness.

1.6 PROBLEM STATEMENT

What guidelines can benefit South African teachers in providing support to children regarding the physical, emotional, cognitive and social effects of diabetes?

1.7 RESEARCH AIMS

1.7.1 Primary Aim

The aim of this study is to develop a set of guidelines for South African teachers to provide support to children regarding the physical, emotional, cognitive and social effects of diabetes.

1.7.2 Specific Aims

In order to achieve the primary aim, the research has the following specific aims:

1.7.2.1 Answering the following research questions

- What are the physical, emotional, cognitive and social effects of diabetes in children in school?
- What knowledge do teachers require when faced with a child with diabetes in their classrooms?

1.7.2.2 Conducting a literature study

A literature study will be conducted to gain knowledge on diabetes and how it affects children in school, with specific attention on the Foundation Phase. The treatment regimen and needs of the child with diabetes in school will also be researched. The literature study will give insight into the knowledge that teachers need to acquire when teaching a child with diabetes. Literature on the guidelines in other countries will also be looked at to assist in drawing up the set of guidelines.

1.7.2.3 Conducting an empirical study

The subjective experience of teachers and their knowledge will be assessed. The subjective experience of parents who have children with diabetes will also be used to help with compiling the guidelines. This will add first-hand accounts of the difficulties that may be experienced by children with diabetes and that may have an impact on their schooling.

1.8 CLARIFICATION OF CONCEPTS

1.8.1 Diabetes

"Diabetes is a disorder that affects the way your body uses food for energy. Normally, the sugar you take in is digested and broken down to a simple sugar, known as glucose. The glucose then circulates in your blood where it waits to enter cells to be used as fuel. Insulin, a hormone produced by the pancreas (see Figure 1.1), helps move the glucose into cells. A healthy pancreas adjusts the amount of insulin based on the level of glucose. But, if you have diabetes, this process breaks down, and blood sugar levels become too high" (Munden 2007:10).

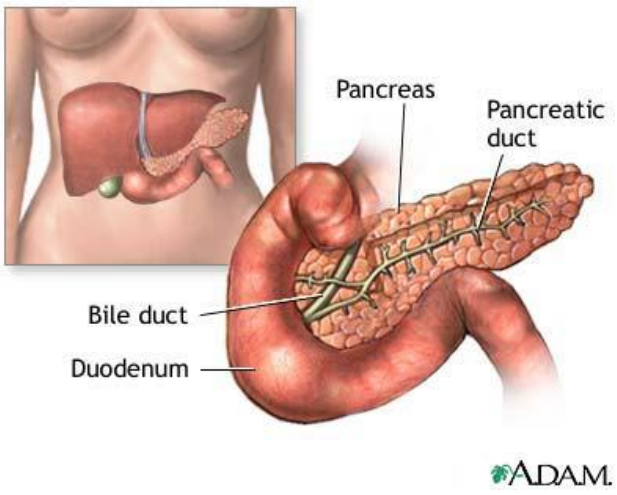

FIGURE 1.1: The location of the pancreas behind the liver and stomach
Source: Pubmed Health – *A.D.A.M. Medical Encyclopaedia*

There are two main types of full-blown diabetes. People with Type 1 diabetes (also termed insulin-dependent diabetes or juvenile diabetes) are completely unable to produce insulin. People with Type 2 diabetes can produce insulin, but their cells do not respond to it. In either case, the glucose cannot move into the cells and blood glucose levels can become high. Over time, these high glucose levels can cause serious complications (Munden 2007:11).

1.8.2 Type 1 Diabetes/Insulin Dependent Diabetes/Juvenile Diabetes

A person with Type 1 diabetes has an absolute lack of insulin and survival is dependent on the administration of insulin. Type 1 most often occurs before age 30, but may strike at any age. The origins of Type 1 are not fully understood, and there are several theories. But all of the possible causes still have the same end result: The pancreas produces very little or no insulin anymore. Frequent insulin injections are needed for Type 1 (Munden 2007:11).

1.8.3 Type 2 Diabetes

“A group of metabolic disorders characterised by either a defect in secretion, or a defect in the action of insulin. A person with Type 2 diabetes may produce adequate insulin, but the cells have become resistant to it. The result is that the insulin is not effective. Type 2 usually occurs in adulthood, but can affect anyone, including children” (Munden 2007:11).

1.8.4 Hypoglycaemia

“Hypoglycaemia also called low blood glucose or insulin reaction occurs when blood serum levels fall below critical levels. Symptoms can range from hunger, sweating, nausea, shivering, blurred vision, unconsciousness, seizures and coma” (Munden 2007:146). This is one of the most common and most serious complications of insulin therapy in anyone with diabetes (Ioannidis 2006b:71).

1.8.5 Hyperglycaemia

This is the result of glucose remaining in the bloodstream rather than being transported to the cells. This occurs when there is inadequate or no insulin produced, or when the cells of the body no longer recognise the insulin (Munden 2007:17).

1.8.6 Ketoacidosis

Diabetic ketoacidosis occurs due to lack of insulin and leads to excessive production of ketone bodies. The lack of insulin leads to a large increase in blood glucose levels, causing dieresis-polyuria and consequently a large loss of water and electrolytes. The final result is dehydration, and in severe cases a coma (Ioannidis 2006a:83).

1.9 RESEARCH METHODOLOGY AND DESIGN

A qualitative mode of inquiry will be adopted. “Qualitative research is based on constructivism which assumes multiple realities are socially constructed through individual and collective perceptions or views of the same situation” (McMillan & Schumacher 2001:15). The study will also be an interactive one in which an in-depth literature study will be conducted in order to gain knowledge about diabetes.

Interviews will also be used to gain lessons from parents with children with diabetes, in order to make appropriate recommendations in the form of a set of guidelines for teachers.

1.9.1 Literature Study

An extensive literature study will be conducted to gain knowledge and facts about diabetes. By means of an intensive study of recent literature, I will synthesise and integrate the information in order to design short guidelines for teachers. My theoretical framework is bio-psycho-social, which will give a holistic picture of diabetes as well as accommodations that can be made to create an inclusive environment for learners with diabetes.

1.9.2 Empirical Study

The empirical study will consist of triangulation, which will include:

- Interviews will be conducted with teachers to determine what their knowledge is concerning diabetes, and also their perspective on diabetes.
- Interviews will also be conducted with parents who have children with diabetes.
- Content analysis will be used to analyse the information gathered from the interviews to identify common issues that are relevant to the study.
- Guidelines will then be drawn up with the information obtained.
- Thereafter the guidelines will be given to teachers and feedback will be obtained.

1.10 PLAN OF THE STUDY

1.10.1 Chapter 1

Chapter 1 consists of an introductory orientation which gives an overview of the study, an analysis of a teachers dilemma when he/she has a child with diabetes in his/her class, the aim of the study, method of research and intervention, as well as a clarification of the main concepts.

1.10.2 Chapter 2

Chapter 2 documents a literature review of diabetes and its effects on children in school, and the necessary precautions and treatment in case of diabetic emergencies.

1.10.3 Chapter 3

Chapter 3 details the plan of the empirical research to be conducted for this study. The research design, sample selection, data collection and analysis as well as ethical considerations are discussed.

1.10.4 Chapter 4

Chapter 4 is a discussion of the empirical investigation.

1.10.5 Chapter 5

Chapter 5 is a summary of the findings, conclusions, limitations and recommendations from the study, as well as a suggestion for future research based on the study.

1.11 CONCLUSION

With this study, I hope to contribute towards improving the quality of support that diabetes sufferers receive from teachers in schools. Apart from the certain measure of relief which effective support can offer children with diabetes and their parents, it can also contribute to minimising the stigmatisation and discrimination as well as reduce the long-lasting negative emotional, social and cognitive effects of diabetes.

CHAPTER 2
LITERATURE STUDY

2.1 INTRODUCTION

In order to explore the various effects of diabetes, it is vital that the concept *diabetes* is fully understood. This chapter provides definitions for and explanations of various key concepts vital to this study. It begins by providing a definition of diabetes. The discussion then focuses on the symptomology and the treatment options currently available. This is followed by a discussion of the available literature relating to the psychological, social and cognitive effects of this disease. The final section of the chapter focuses on the implications for teachers with children that are diagnosed with diabetes in their classrooms. The literature study will explain and use many medical terms that may make the study seem very clinical and medical; however, it is necessary if the study envisages drawing up a set of guidelines that will require these terms to be well understood. The medical terminology forms part of the bio-psycho-social model which is used in this study. (Refer to Chapter 1 – see section 1.5.1.)

2.2 WHAT IS DIABETES?

The term *diabetes* comes from the ancient Roman and Greek term which means 'the running of sugar' (Munden 2007:2). Greek and Roman physicians used the term diabetes to describe the condition that presented with large volumes of sweet smelling urine, intense thirst and weight loss despite an increase in appetite (Munden 2007:2). Diabetes is a complex chronic disease resulting in an elevation in the glucose level in the blood. It is a metabolic disorder that affects the blood sugar levels because of the underproduction of insulin or inaction of insulin. Insulin is a hormone, produced by the pancreas, which is central to regulating carbohydrate and fat metabolism in the body. Insulin causes cells in the liver, muscle, and fat tissue to take up glucose from the blood, storing it as glycogen inside these tissues (Makrilakis 2006c:43-45).

According to the latest classification, there are four main types of diabetes, which are Type 1 diabetes mellitus, Type 2 diabetes mellitus, gestational diabetes (the disease appears for the first time during pregnancy), and other types of diabetes which can result due to a specific condition such as genetic defects, drugs, infections, genetic syndromes (Tentlouris 2006b:1-3).

2.3 TYPES OF DIABETES

A brief explanation of the four major classifications of diabetes follows:

2.3.1 Type 1

This is also known as IDDM (insulin dependent diabetes mellitus) or juvenile diabetes. About 5-10% of people diagnosed with diabetes have Type 1 diabetes mellitus. The pancreas produces inadequate amounts of insulin, resulting in the need for insulin injections to control the blood glucose. It is characterised by a sudden onset, and usually occurs in childhood and adolescence (Ioannidis 2006d: 23).

2.3.2 Type 2

Type 2 diabetes was formerly also known as adult-onset diabetes, however due to incidence of Type 2 diabetes in children rising the term is no longer applicable (Emedicine health – Diabetes). In contrast to type 1 diabetes, insulin resistance is the main characteristic of Type 2 diabetes. It results due to a decrease in cell sensitivity to insulin and a decrease in the amount of insulin produced. About 90-95% of people with diabetes have Type 2 diabetes.

Lewis, Collier and Heitkemper (1996:1442) indicate that there are two subtypes of Type 2 diabetes, namely obese and non-obese. Type 2 diabetes has a strong genetic influence. Individuals with Type 2 “diabetes have a 50% chance of transmitting the disease to their children (Lewis et al. 1996:1442).

2.3.4 Gestational Diabetes Mellitus

The onset of gestational diabetes mellitus is during pregnancy. It usually occurs in the second or third trimester of pregnancy. It occurs in 2-5% of all pregnancies. About 30-40% of people with gestational diabetes will develop diabetes after pregnancy (Munden 2007:13).

2.3.3 Other Types

A third group of diabetes is associated with other conditions, such as pancreatic disease, hormone disorders, genetic defects in insulin function, and some chemicals and drugs for example nicotinic acid/niacin(used in certain medications e.g. cholesterol medication) and oestrogen-containing preparations. Depending on the functioning of the pancreas, the person may require oral medication or insulin (Munden 2007:13-14).

2.4 PREVALENCE OF DIABETES

Diabetes has become so common that it is considered an epidemic. “From 1997 through 2003, the number of new cases of diabetes increased by more than 50%” (Munden 2007:2). Diabetes affects people of all ages. From 20,8 million people that have diabetes, 14,6 million will be diagnosed and 6,2 million will remain undiagnosed. Of the 6,2 million, between 5% and 10% have Type 1 diabetes, and 90%-95 % have Type 2 (Munden 2007:2). Whittemore,

Chase, Mandle and Roy (2002:18) indicate that Type 2 diabetes accounts for 80-90% of all significant causes of morbidity in the United States.

A growing concern is the development of pre-diabetes, which is a condition in which an individual has impaired fasting glucose levels or impaired glucose tolerance, or both. This is basically a higher than normal blood glucose but not high enough to be classified as having diabetes (Munden 2007:3). Having pre-diabetes increases the chance of developing full-blown diabetes, but is not necessarily a precondition for developing diabetes. It also does not mean that diabetes will become full-blown due to being pre-diabetic.

Diabetes affects all age groups; Type 2 diabetes is more prevalent in the elderly, whereas Type 1 diabetes is usually diagnosed during childhood. However, recently it has been noticed that Type 2 diabetes is being seen in the young as well. Munden (2007:4) states that one of the most alarming aspects of the diabetes epidemic is the prevalence of Type 2 diabetes in children and adolescents. As the rate of obesity rises, Type 2 diabetes is becoming more common. Munden (2007:4) cautions, “a disease that used to be seen only in adults over 45 is becoming more common in young children” (Munden 2007:4).

Diabetes affects both males and females; however, historically more women have been affected. But these statistics too are changing and the prevalence is now almost equal between males and females (Munden 2007:4). The prevalence of diabetes is more pronounced in certain population groups. According to Munden (2007:5), in America, Latinos are about two times more likely to have diabetes than whites.

In South Africa, according to a study by Bradshaw and associates (2007:703), Indians are most susceptible to developing diabetes, followed by urban blacks, then coloureds and whites and lastly, non-urban blacks. This concurs with studies done in other countries which found that people of Asian descent are more prone to develop diabetes than other race groups (Marguerite & Edward 2004; Park & Eisenbarth 2001)

2.5 CAUSES OF DIABETES

Diabetes is characterised by high blood glucose levels that result from defects in insulin production or insulin inaction. The main causes include ageing, unhealthy diet, obesity and lack of exercise (Munden 2007:10).

2.5.1 Causes of Type 1 Diabetes

As mentioned above that Type 1 diabetes occurs when the pancreas produces inadequate amounts of insulin, resulting in the need for insulin injections to control the blood glucose

level. It is characterised by a sudden onset, usually before the age of 30. The cause may be environmental, genetic, or autoimmune problems (Munden 2007:11). Autoimmunity occurs when an organism fails to recognise its own constituent parts, which allows an immune response against its own cells and tissues.

2.5.1.1 Environmental causes

Environmental causes are agents that may cause damage to pancreatic cells. These can include:

a) Viruses like mumps, rubella and Coxsackie B4 (a virus which can trigger an autoimmune reaction which results in destruction of the insulin-producing beta cells of the pancreas)
b) Toxic chemicals
c) Cytotoxins (a substance that is toxic to cells)
d) Exposure to cow's milk during infancy; bovine serum albumin (BSA) is found in cow's milk and is thought to be an environmental trigger that causes children to develop antibodies for BSA, as was found in children diagnosed with Type 1 diabetes (Munden 2007:11)

2.5.1.2 Genetic factors

People do not inherit Type 1 diabetes itself, but they inherit a genetic predisposition, which means that they may be more susceptible to develop this type of diabetes than other people. Certain genetic markers have been shown to increase the risk of developing Type 1 diabetes. The genetic tendency is found in people with a certain Human Leukocyte Antigen (HLA). HLA is a cluster of genes responsible for transplantation of antigens and other immune processes (Munden 2007:11). An antigen is any substance that causes your immune system to produce antibodies against it. "An antigen may be a foreign substance from the environment such as chemicals, bacteria, viruses, or pollen. An antigen may also be formed within the body, as with bacterial toxins or tissue cells" (MedicinePlus Medical Encyclopedia).

A family history of diabetes makes one more prone to the disease. If there is no family history, the risk of developing the disease is less than 1%. If one has a twin with Type 1 diabetes, the chances of developing diabetes is 25% to 50%. If one parent has diabetes the risk increases. The risk of developing Type 1 diabetes is higher if one's father has Type 1 diabetes (Munden 2007:11).

2.5.1.3 Immunological factors

Type 1 diabetes is considered an autoimmune disease. An autoimmune disease is an inappropriate or abnormal immune response against substances and tissues normally present in the body. In other words, the immune system mistakes some part of the body as a pathogen or something foreign, and attacks its own cells (Royle & Walsh 1992:596; Munden 2007:11).

2.5.2 Causes of Type 2 Diabetes

Type 2 diabetes is the result of insulin resistance in the muscles, which leads to decreased glucose uptake. “The pancreas produces enough insulin, however because the cell doesn’t recognise the insulin, body tissue cells exhibit resistance” (Munden: 18).

The exact cause of Type 2 diabetes is not known, although it is strongly linked to family genes and there are factors that place one at risk for developing the illness. These risk factors include the following (Munden 2007:13):

a) Obesity
b) Family history
c) Belonging to a high risk ethnic population (black, native American, Latino, Native Hawaiian, and people from East India, Japan and Australia that have migrated to Western cultures)
d) Anyone that has been diagnosed with gestational diabetes or delivered a baby weighing more than 4,1 kg
e) Having high blood pressure
f) Having High-density lipoprotein (HDL) – also called good cholesterol
g) Ingesting alcohol in large amounts
h) A high fat diet
i) Sedentary lifestyle
j) The elderly
k) Stress
l) Depression

2.6 SYMPTOMS OF DIABETES

The symptoms of diabetes are as follows (Tentolouris 2006b:16):

a) Polyuria (frequent urination) as a result of glucose in the urine
b) Polydipsia (excessive thirst) which is secondary to osmotic diereses

c) Polyphagia (increased appetite) as a result of cellular starvation and decreased storage of calories
d) Excessive weight loss due to the presence of polyphagia (increased appetite), which is due to the ineffective metabolism of carbohydrate, protein and fat
e) Weakness and lethargy resulting from inadequate energy production
f) Vaginitis (infection of the vagina) may be an early complaint in females
g) Visual disturbances, e.g. complaints of blurred vision
h) Muscular cramps in lower extremities
i) Wounds that heal poorly due to poor blood circulation to the lower extremities
j) Hyperalgesia (increased sensitivity to pain)
k) Hypoglaecemia (low blood sugar)
l) Coma (loss of consciousness)

2.7 COMPLICATIONS OF DIABETES

Once a diagnosis is made there are numerous other complications that can occur, particularly if the diabetes is not well controlled. After many years, diabetes can lead to other serious problems. I will mention the many complications that may not pertain to children, to highlight the severity of the condition as well the various implications of uncontrolled or inadequate control of diabetes.

These are as follows:

a) diabetic nephropathy (decline in kidney function) (Diakoumopoulou 2006a:176)
b) macroangiopathy (atherosclerosis – cholesterol plaque in the arteries) (Ioannidis 2006c:199)
c) diabetic foot (poor circulation and lack of sensation which leads to ulcers forming) (Tentolouris 2006a:217)
d) skin disorders like dermatitis (Makrilakis 2006d:243)
e) increase in infections (Liatis 2006b:267)
f) diabetic retinopathy (eyesight problems) (Diakoumopoulou 2006b:159)
g) hypertension (Makrilakis 2006b:277)
h) due to nerve damage, digestion problems can occur; weakness due to nerve damage as well as erectile dysfunctions in men (Pubmed Health – A.D.A.M. Medical Encyclopaedia)

2.8 MANAGEMENT AND TREATMENT OF DIABETES

There are various options for treating diabetes; these are as follows:

2.8.1 Nutritional Therapy/Diet

For the purpose of this study it is sufficient to know that nutrition is important, regardless of the type of diabetes one has. Once a person is diagnosed some permanent changes in lifestyle are necessary. One such change involves adjusting one's eating plan to accommodate diabetes (Munden 2007:52).

The goals of nutritional management can be summarised as follows (Royle & Walsh 1992:597; Whittemore et al. 2002:18):

a) Provision of all essential food constituents
b) Meeting energy needs
c) Optimal blood glucose levels that are close to normal
d) Minimising the risk of hypoglycaemia in the case of insulin users
e) Desirable weight loss in the obese and maintaining good nutritional status in the young and elderly
f) Maintenance of ideal weight
g) Help to control blood lipids and blood pressure
h) Decrease the risk of long lasting complications that can be caused by uncontrolled diabetes

The diet prescribed for a person with diabetes as well as the restrictions will briefly be discussed. Type 2 diabetes is treated by diet and exercise, and only when elevated glucose levels persist are supplements of oral agents as well as injections given (Royle & Walsh 1992:597; Whittemore et al. 2002:18; Makrilakis & Ioannidis 2006:328).

Savoca and Miller (2001:225) indicate that research has shown that people with diabetes find adhering to a healthy diet the most difficult component of their care. People with diabetes are more resistant to dietary changes, when compared to people with other chronic diseases. The diet which is off-limits for a person with diabetes is often food that is eaten at parties such as cakes, cold drinks, sweets, fatty foods in the form of fatty meat and alcoholic beverages. Alcoholic beverages should be completely restricted in people with diabetes because of the danger of hypoglycaemia when alcohol is taken on an empty stomach.

2.8.2 Prescribed Diet

People with diabetes should eat three meals per day and have snacks in between in order to prevent hypoglycaemia. The diet recommended includes the following (Delport 2002:35):

a) Carbohydrates such as brown bread, maize meal, cereals and potatoes because they add bulk to the diet
b) Food rich in fibre, e.g. legumes, oats, soy products, vegetables and some fruits
c) A low-fat diet
d) Vegetables can be eaten raw or boiled without the addition of sugar, salt or butter
e) Regular salt should be substituted by spices, herbs and salt recommended for people with hypertension
f) Snacks like fruits and provita between meals
g) A glass of low-fat milk or yoghurt per day may be ingested

2.8.3 Oral Drug Therapy

In the South African Medical Journal (Pulse: News from the market place 2001:1) and Munden (2007:78) various treatment regimens are discussed for people with diabetes whose blood glucose levels remain elevated despite a change in diet. There are various options of oral medication. For the purpose of this research, the names and components of these drugs are not going to be dealt with.

What is important is to ensure that the person with diabetes has regular meals and receives counselling about meals and snacks, because some of the medications can cause hypoglycaemia if not taken correctly. Usually the medication must be taken after a meal.

2.8.4 Insulin Injections

Apart from oral medication, diabetes can be treated by insulin injections if drug therapy proves ineffective. There are short-acting as well long-acting injections. For the purpose of this study it is important to be aware of the treatment options. There are different types of insulin injections which are categorised as rapid-acting, short-acting, long-acting or intermediate-acting insulin (Munden 2007:113; Liatis 2006c:371-372).

2.8.4.1 Short-acting insulin

Short-acting insulin is taken every 3-6 hours. It is slow acting therefore it must be taken half an hour or an hour before eating, to allow peak action of the insulin at the time of the meal (Munden 2007:115).

2.8.4.2 Intermediate-acting insulin

These are taken only in the morning and the evening (Liatis 2006c:388).

2.8.4.3 Long-acting insulin

These are taken once daily (Munden 2007:115).

2.8.4.4 Rapid-acting insulin

These are taken immediately before or after a meal, and allow greater lifestyle flexibility (Liatis 2006c:371-373).

2.8.4.5 Insulin infusers

These are plastic needles or a catheter which are placed subcutaneously – which means under the skin. It remains secured for about 48 to 72 hours and the insulin is administered through it, reducing the number of needle pricks. It is however invasive and the risk of infection is always present (Munden 2007:119).

2.8.4.6 Insulin pens

These are used by people with diabetes that have difficulty handling a syringe, and are easier alternatives to injections. They are small pocket-sized pens and can be prefilled with insulin cartridges. Some contain preset amounts of insulin. There are some pens that even show the amount of time that has lapsed since the previous dosage, and records the dosage taken (Munden 2007:118). See Figure 2.1.

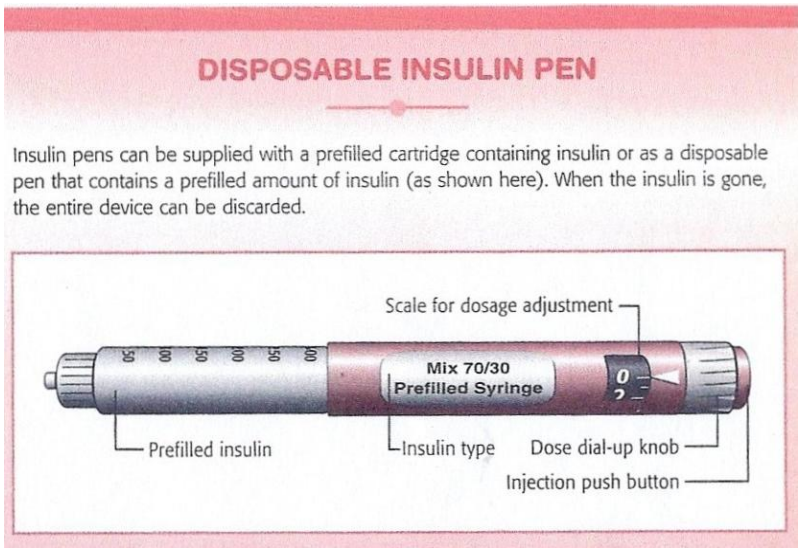

FIGURE 2.1: Disposable insulin pen
Source: Munden (2007:115)

2.8.4.7 Insulin injectors

These are also known as jet injectors. They do not have needles. They produce a stream of insulin that is dispersed under pressure into the subcutaneous tissue. The drawback of this device is that it can cause bruising (Munden 2007:119). See Figure 2.2.

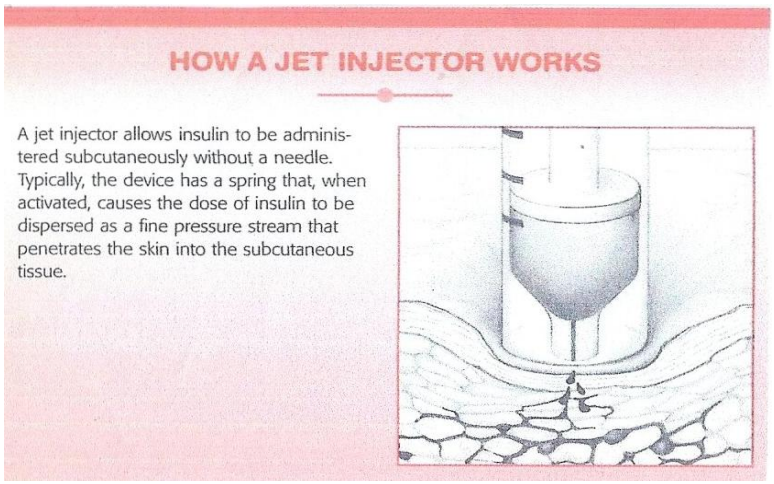

FIGURE 2.2: Insulin injector
Source: Munden (2007:120)

2.8.4.8 Insulin pumps

These are computerised devices about the size of a credit card and worn externally. The pump contains the insulin, which is continuously delivered at a specific rate. The pump must be programmed according to the dosage required. The pump can also be manually operated to administer additional insulin before meal times (Munden 2007:120). See Figure 2.3.

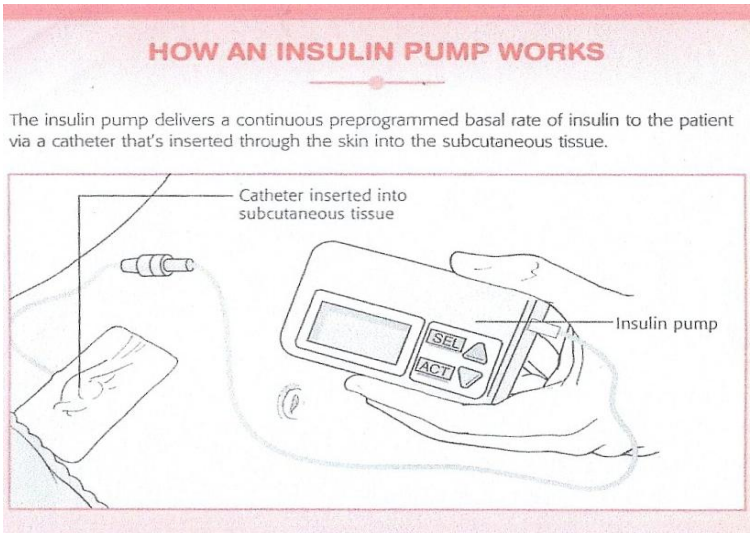

FIGURE 2.3: Insulin pump
Source: Munden (2007:121)

2.8.5 Injection Administration

Injection administration is important for people with diabetes that require this form of medication. The following steps are recommended for injecting (Munden 2007:126):

a) Clean the injection site with alcohol.
b) Remove the protective needle sheath.
c) With the non-dominant hand, grasp the skin around the injection site. A second alcohol pad can be used to hold the skin. Elevate the subcutaneous tissue to form a fold of about 2,5 cm in the shape of the alphabet L.
d) Insert the needle at a 90-degree angle.
e) Inject slowly.
f) After injecting, remove the needle at the same angle used for injecting. Do not rub the injection site as this promotes absorption, which can cause too rapid absorption and can lead to hypoglycaemia.
g) If the injection site is bleeding apply pressure.
h) Dispose of equipment by discarding needle in a device or refuse container made specifically to safely dispose of needles. Do not recap the needle as this can cause needle-prick injuries.
i) Figure 2.4 shows possible injection sites.

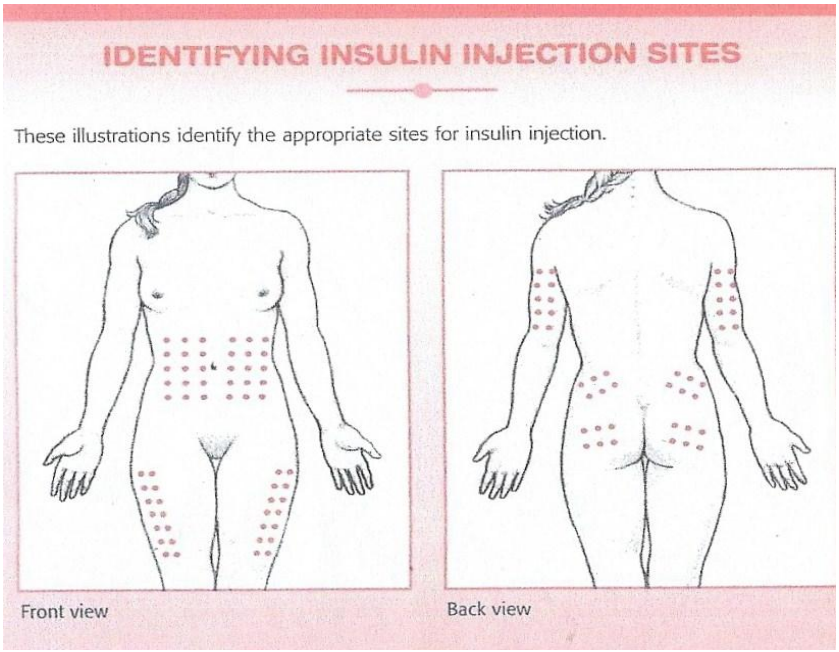

FIGURE 2.4: Possible sites for injection of insulin
Source: Munden (2007:127)

2.9 CARE OF INSULIN AND EQUIPMENT

Insulin and equipment require special care, based on manufacturers' instructions. Insulin is stored in a cold place such as a refrigerator. Studies have shown that injecting cold insulin can increase the pain of an injection (Munden 2007:125). The insulin should be removed from the fridge about half an hour before use. Injection equipment should be stored safely away from children. If injectors are reused they should be kept sterile. Alcohol should not be used to clean needles because it removes the protective substance covering the needle which aids in insertion. Reusing needles is however not advised, as it places the person at risk of infection (Munden 2007:124).

2.10 GLUCOSE MONITORING

Daily glucose monitoring is important for anyone with diabetes. Family members and caregivers of a person with diabetes should be trained in carrying it out. In young children it is vital for caregivers to know how to monitor blood glucose levels because they are not capable of testing themselves. The data is used to adjust diet, exercise and medication. It assists in identifying hypoglycaemia and hyperglycaemia. The following steps should be taken before performing capillary blood glucose monitoring. A capillary is an extremely small blood vessel (Munden 2007:263).

- Wash hands with soap and warm water.
- Hold the lancet at a right angle to the side of the finger
- Prick the fingertip to create a drop of blood.
- Position the hand with the finger facing down to help form a good sized drop of blood.
- Milk the finger if necessary to obtain a 'hanging drop' of blood to form.
- The glucose monitor has a strip that is inserted into the machine before blood is applied. The strip is first put into position and then the finger is punctured. A drop of blood is applied to the strip.
- The meter automatically displays the results (Munden 2007:195). Refer to Figure 2.5.
- Many meters use "error codes" when there is a problem with the meter, the test strip, or the blood sample on the strip. You will need the manual of the meter being used to interpret these error codes and fix the problem.
- Several features of glucose meters differ from meter to meter. Read instruction manuals before using the meter.

FIGURE 2.5: Diabetes – blood glucose test
Source: Islets of Hope. What is a blood glucose (sugar) test meter?

2.11 DIABETIC EMERGENCIES THAT TEACHERS NEED TO KNOW ABOUT

There are life threatening emergencies associated with diabetes. “Two potentially life threatening emergencies associated with diabetes are hypoglycaemia (a deficiency of glucose in the blood) and hyperglycaemia (excessive sugar in blood)” (Marotz 2012:231).

2.11.1 Hypoglycaemia or Insulin Shock

Hypoglyceamia is caused by low levels of sugar in the blood. If the level of sugar is less than 3,3-3,9 mmole/L it is considered low. Hypoglycaemia can occur due to excessive insulin, insufficient food, delay or omission of a meal, intense muscular activity, alcohol consumption without intake of food containing carbohydrates, illnesses, delayed eating time, or increased physical activity (Ioannidis 2006b:74; Marotz 2012:231). If hypoglycaemia is not treated it can lead to convulsions that mimic epilepsy, and may lead to a coma and eventually death.

2.11.1.1 Symptoms of hypoglycaemia

Hypoglycaemia has a sudden onset and includes the following symptoms (Marotz 2012:232; Helping students with diabetes succeed 2010:38):

- Cool, clammy and pale skin
- Dizziness
- Shakiness
- Nausea
- Headache
- Hunger

- Rapid, shallow breathing
- Shaky or jittery movements
- Sweatiness
- Paleness
- Blurry vision
- Sleepiness
- Confusion/disorientation
- Inability to eat or drink
- Irritable or nervous
- Argumentative
- Changed personality
- Changed behaviour
- Inability to concentrate
- Weak
- Lethargic
- Seizures (convulsion)
- Unconsciousness
- Uncoordinated

2.11.1.2 Treatment

Once it is determined that a person's blood sugar is indeed low by doing a blood glucose test, or if the symptoms are so clear that one is certain it is hypoglycaemia, it should be treated immediately.

If the person is still conscious and alert, administer half a cup of natural juice, 1-2 teaspoons of honey or sugar, and half a glass of regular coca-cola or a glass of milk. If after 15 minutes the blood sugar is still low, the same is repeated until blood sugar levels are over 3,9 mmole/L. If the next meal is not within the next half hour then a quantity of slowly absorbed carbohydrates are recommended, e.g. crackers with milk, a small cheese sandwich or crackers with cheese (Ioannidis 2006b:76).

If the person is comatose or unconscious a glucagon injection is administered immediately (De Jong 2009:12). Glucagon belongs to a group of medication called hormones. Anyone with diabetes should carry it and have someone that knows how to administer it in the case of an emergency.

2.11.2 Hyperglycaemia

Hyperglycaemia results when too much sugar is circulating in the bloodstream. This can be due to illness, infection, emotional stress, poor dietary control, fever, or a dose of insulin that is too small or has been forgotten to be administered. It most commonly occurs in people with Type 1 diabetes (Munden 2007:17). A blood glucose above 13,9 mmole/L is dangerous, because it could lead to diabetic ketoacidosis (DKA) which requires immediate medical attention by a medical practitioner.

DKA combines three major features: hyperglycaemia, meaning excessively high blood sugar levels; hyperketonemia, meaning an overproduction of ketones by the body; and acidosis, meaning that the blood has become too acidic. Ketoacidosis occurs when hyperglycaemia is not treated promptly (Munden 2007:153-154).

2.11.2.1 Symptoms of hyperglycaemia

The following are symptoms of hyperglycaemia which has a slow gradual onset. (Marotz 2012:232):

- Slow, deep breathing
- Increased thirst
- Skin flushed and dry
- Confusion/altering mental status
- Staggering, appears as if drunk
- Drowsiness
- Sweet smelling, wine-like breath odour
- Nausea, vomiting
- Excessive urination
- Physical state of shock (the organs and tissues of the body do not receive enough flow of blood), characterised by low blood pressure, fast pulse, weak, faint, cold and clammy

2.11.2.2 Treatment for hyperglycaemia

Hyperglycaemia is considered to be a medical emergency and treatment by a medical practitioner should be sought immediately (Munden 2007:152-153).

2.12 EMOTIONAL EFFECTS OF DIABETES ON A CHILD

In order to understand the impact of diabetes on the child starting school, the child's years before school must also be taken into account. A child has two important developmental

tasks during the toddler years (2-5 years). Toddlers need to separate from their parents or primary caregivers as well as develop a sense of competence in having an effect on their environment. The environment refers to both the physical and social environment (Anderson & Brackett 2005:4).

Anderson and Brackett (2005:4) maintain that when a child has diabetes the parents often restrict the child's movements, because they fear that if the child ventures out there may not be anyone around to render assistance if needed. The child's sense of autonomy is therefore threatened due to the over-protectiveness of parents who have children with diabetes. Toddlers are therefore not given an opportunity to separate from parents nor feel a sense of competence. This is exacerbated by the normal parent-child conflict, which is usually typical of this age. The autonomy that a child needs to develop is then seen in a child's refusal to cooperate or throwing tantrums at the time of monitoring glucose levels and receiving insulin injections. These problems can then increase stress the parent already feels, which in turn can have negative effects in the parent-child relationship and may cause other behaviour problems in the child (Anderson & Brackett 2005:4-5). Teachers can keep in mind that due to overprotection by their parents, children with diabetes may be less independent than their peers.

People with diabetes have a disproportionately high rate of psychological disorders than people suffering from other chronic medical conditions (Anderson & Brackett 2005:108). Children with diabetes that are starting school will for the first time realise and become aware that they are 'different' from others (Guthrie et al. 2003:8). They will see the difference in their eating, checking of glucose levels, as well as in wearing an identification bracelet. The result is often that they may see their diabetes as a punishment. They may think that due to bad behaviour they have to endure this painful treatment. This is seen in any chronic illness where a child can internalise the illness and develop behaviour problems such as depression and low self esteem. "People with diabetes are two to three times more likely to be depressed, than people without diabetes" (Barnard et al. 2012:12).

Studies on self-esteem in school-aged children have consistently linked low self-esteem to poorly controlled diabetes (Anderson & Brackett 2005:10). Children with diabetes are also more susceptible to feelings of inadequacy due to their treatment regimen and the restrictions that the illness poses (Anderson & Brackett 2005:10). Separating from parents when starting school also causes fear in a child regarding their safety (Guthrie et al. 2003:8). A child that depended on parents for their treatment is entrusted to a complete stranger who must not only teach them but assist in managing their diabetes. This is one reason why

anxiety disorders are also more common in children and adolescents with diabetes than in the general population. (Fritsch & Olshan 2011:4).

It must also be noted that it is often difficult to distinguish between diabetes-related mood swings and normal toddler behaviour in young children. During the so-called 'terrible twos', temper tantrums are common in children; however, for a toddler with diabetes a temper tantrum can be a signal of hypoglycaemia (Anderson & Brackett 2005:6). In a case study reported by Fritsch and Olshan (2011:2), a little boy who was diagnosed as having diabetes when he was a toddler had severe episodes of hypoglycaemia and his parents were instructed to allow his sugars to run a little high to avoid this. He could even identify and report to his parents when his sugars were low; however, when he started school he would sneak foods with higher sugar content, which caused his sugars to run higher than his normal limit, and this caused aggressive behaviour and an inability to sit still.

Another psychological disorder that is seen in people with diabetes is eating disorders. People with Type 1 diabetes often engage in insulin purging which is deliberately taking less insulin in order to control weight (Fritsch & Olshan 2011:4; Anderson & Brackett 2005:185). The term for this condition is diabulemia which has been acknowledged by The American Diabetes Association (Hasken, Kresl, Nydegger & Temme 2010:466). About 30% to 40% of females with diabetes skip insulin dosages after meals to lose weight. This can cause harmful physical effects such as dehydration, breaking down of muscle tissue, and fatigue in the short term; if this behaviour continues, it may also result in kidney failure, eye disease leading to blindness, vascular disease, and even death (Hasken et al. 2010:466). Binge eating is also common in people with Type 2 diabetes, and parents and teachers should look out for it in children.

A case study in Fritsch and Olshan (2011:4) describes how a teenage girl discovered that, if she lowered her insulin dosage she lost weight. However, the result of this made her grades go down to the point of almost failing. She also had to be hospitalised with ketoacidosis. She was referred for psychiatric evaluation and it was revealed that she had an eating disorder, depression and was suicidal. This case gives us some insight into how damaging diabetes can be to mental health and overall wellbeing.

2.13 SOCIAL EFFECTS OF DIABETES ON THE CHILD

Barnard et al. (2012:10) are of the opinion that "maintaining 'normal' social relationships can also be difficult as the restrictions of achieving good diabetes control is in direct opposition to societal norms of enjoyment." In a study by Fritsch and Olshan (2011:4), it was found that the diet of a person with diabetes can affect their quality of life because of the many changes

that have to be made. They have to omit the things that they enjoy like having pizza with friends, or cakes and ice-cream at birthday parties. These social limitations often make it difficult for young children to cope. A case study of a little girl called Tammy describes that the greatest loss for her was the candy that she could no longer have ready access to. She also developed nocturnal enuresis due to her condition, which restricted her from sleepovers because of the embarrassment it caused her (Fritsch & Olshan 2011:4).

As stated above, when children start school they perceive that they are different to their peers because of their diet and frequent glucose testing. This makes it difficult for them to feel accepted and can create feelings of inadequacy (Anderson & Brackett 2005:10). These feelings are often increased because of teasing. Twenty five per cent of children with diabetes in one study reported that they were being teased (Anderson & Brackett 2005:10). Children in school reported frustration and social stigma due to their dietary restrictions (Anderson & Brackett 2005:10). These factors have a negative effect on the social development of the child in school.

In a study conducted by Wagner, Heapy, James and Abbott (2006), parents reported that their children's diabetes affected decisions they made regarding field trips, extracurricular activities, and even their future plans after school. Parents are also anxious and may in some cases delay plans for preschool education, which causes negative implications to the cognitive as well as social development of their child (Anderson & Brackett 2005:6). Thus, in general the diet, treatment as well as restrictions or precautions associated with diabetes has an impact on his/her social functioning and development.

Travelling can be problematic for people with diabetes and must be planned meticulously to ensure their safety. The necessary precautions must be taken and a plan of action must be in place in the event of unforeseen delays on the road or during flights. A delay on a school bus to and from school caused by traffic or a breakdown can be catastrophic for a child with diabetes. Equipment and medication need to be easily accessible to the child and someone competent in diabetes care should ideally be travelling with the child. Injectables may also pose a problem when boarding a plane due to safety regulations and the required doctors' letters will be mandatory. Advice from medical personnel should also be sought before long distance travel is undertaken so as not to compromise the health and safety of the person with diabetes (Liatis 2006a:319-320).

Diabetes is not a static illness. The psychological impact changes over time, resulting in increased psychosocial implications. Situations that can initially be handled and controlled become problematic months later, and some illness-related stressors persist or even

increase in the long term. A person with diabetes can never take a day off from their illness. In schools, teachers, school nurses, school cafeteria workers, school bus drivers, parents, friends, and friends' parents may all be in the position of monitoring the welfare of the child with diabetes when separation is the key task to independence (Fritsch & Olshan 2011:5). This puts a strain not only on parents but on everyone that is a part of the child's life. Parents who are raising children with a chronic illness face unique challenges which can often put a strain on family relationships and parenting.

"The impact of family functioning on childhood diabetes was described by Minuchin and colleagues in the 1970s. They described families with a child with diabetes as being vulnerable to four maladaptive transactional patterns: enmeshment, over-protectiveness, rigidity, and lack of conflict resolution. In addition, Minuchin's group reported that stressful family interactions could lead to immediate elevations in the patient's blood glucose levels" (Fritsch & Olshan 2011:3). The kind of parenting can also influence glycaemic control. It was found that children with authoritative parents have better glycaemic control. This parenting style is one in which there is greater warmth and understanding. Poorer control of blood sugar is noted in children that come from homes with conflict (Anderson & Brackett 2005:14).

2.14 COGNITIVE EFFECTS OF DIABETES ON THE CHILD

Diabetes seems to have an impact on cognitive functioning. "There is growing evidence that there are negative consequences and mild, cognitive deficits, resulting from attempts to normalize metabolism in young children" (Anderson & Brackett 2005:7). McCarthy, Lindgren, Mengeling, Tsalikian and Engvall (2002:2) have found that children with diabetes score lower on a national achievement test than children with other chronic illnesses. They have also found that reading difficulties have been noted more in children who were diagnosed at a younger age than in those diagnosed at a later stage (McCarthy et al. 2002). Hagen, Barclay and Anderson in their study which is discussed in McCarthy et al. (2002:2) found that children with late-onset diabetes performed significantly below the age-matched, non-diabetic children in reading comprehension. Reading and reading comprehension which is an important life skill and necessary for academic progress is negatively impacted by developing diabetes.

A number of studies associate poor metabolic control as a factor in lowering cognitive ability and performance (McCarthy et al. 2002; Fritsch & Olshan 2011:2; Ohmann, Popow, Rami, König, Blaas, Fliri & Schober 2010). In a study by Brands and associates (2005), it was found that sufferers of Type 1 diabetes show a slowing of mental speed, and a diminished

mental flexibility, whereas their learning and memory are not affected. Cognitive deficits are however mild to moderate; the cognitive dysfunction may create problems if a situation is more demanding.

It seems that when a person has chronic episodes of high or low blood glucose levels, it directly affects the insulin level and damages cells in the brain, which could lead to cognitive impairments. When a person has diabetes the brain may not get enough amounts of glucose needed for memory and therefore memory is affected. The hippocampus, which is a part of the brain involved in learning and memory, seems to be affected (Society of Neuroscience). According to Fritsch and Olshan (2011:2), the preschool child is more prone to hypoglycaemic episodes which may lead to problems with spatial memory deficits and compromised cognitive function.

2.15 EXERCISE AND DIABETES

Exercise is an important part of diabetes management. It assists in reducing weight as well as cholesterol levels. Exercise also lowers blood glucose levels and can assist in reducing cardiovascular risk factors that are associated with diabetes. Exercise increases the uptake of insulin by the muscles of the body and also improves the absorption of insulin. People with diabetes are encouraged to exercise daily, at the same time and for the same amount of time (Makrilakis 2006a:111).

However, consultation with a doctor is important, because the blood glucose levels have to be regulated before any exercise programme is started. Exercising with high blood glucose levels can increase the levels even further and cause more harm than good (Makrilakis 2006a:112). It is also vital for the person with diabetes to monitor blood glucose levels before, during as well as after exercising, to determine the effect it has on their bodies. Awareness should be created around exercise-induced hypoglycaemia. A person on insulin is usually required to eat a snack before exercising in order to avoid hypoglycaemia. A snack can be eaten after exercising and can reduce the insulin taken to avoid post-exercise hypoglycaemia (Makrilakis 2006a:110).

2.16 TEACHER TRAINING IN DIABETES

Teachers trained in some basic, yet vital aspects of diabetes can be a valuable source of support and comfort to children with diabetes in the school environment. “Staff and peer training and school-related diabetes care issues have the potential to impact both the child’s glyceamic control and quality of life” (Wagner et al. 2006:765). It is therefore important for

teachers working with children with diabetes to be trained in monitoring a child with diabetes as well as in handling any diabetes-related emergency that may arise.

In one study it was found that a better or healthier blood glucose level was maintained by children whose teachers had diabetes training, than by those whose teachers were untrained (Wagner et al. 2006:765). Adequate teacher education is necessary because children with diabetes may unnecessarily be excluded from participating in certain academic or social activities if sufficient information is not known (Guthrie et al. 2003:8). When a teacher is competent enough to assist a child with diabetes, the child also feels less anxious. The child will also have more confidence and trust in the teachers' capability to assist them in school with their diabetes management.

In a study by Amillategui et al. (2007:1077) that researched the special needs of children with Type 1 diabetes in school, it was found that parents felt that it was important for teachers to understand the illness and to identify glycaemic emergencies. Some parents also felt it was necessary to have glucagon ready in the event of an emergency, as well as a person that can administer it. The same study found that, even though 95% of the children experienced normal physical activities, 51% had at least one glycaemia episode during activities. In the light of the seriousness of a glycaemic episode it should be mandatory for at least one staff member at a school to be trained in diabetes management.

2.16.1 The Implications for a Teacher of having a Child with Diabetes in the Classroom

Getch, Bhukhanwala and Neuharth-Pritchett (2007:50) suggest that school staff dealing with children on an individual basis such as the class teacher as well as teachers that come into the class for other activities or supervision, should be proactive when dealing with children with diabetes. They recommend the following for teachers:

a) Attend diabetes training.
b) Be familiar with the learners' health care plan for school management.
c) Be aware of how to handle emergencies for individual learners.
d) Be able to recognise hypoglycaemia and hyperglycaemia.
e) Encourage learners to participate in all school activities.
f) Prepare substitute teachers for emergencies or provide contact information of people that can be notified.
g) Make accommodations in the case of hypoglycaemia or hyperglycaemia because it impairs thinking for a few hours.
h) Communicate events to school nurse, counsellor and parents.

i) Help the other learners to empathise with a learner with diabetes, while respecting their right to privacy.

The American Diabetes Association created a checklist for the classroom with regard to learners with diabetes; this list is quoted in Hasken et al. (2010). The list is as follows:

a) Every child with diabetes is different.
b) Don't draw unnecessary attention to your learner's condition.
c) Provide inconspicuous and gentle reminders.
d) Do not put a 'label' on the learners with diabetes.
e) Do not sympathise: empathise.
f) Always be prepared.
g) Use the buddy system.
h) Allow unrestricted bathroom breaks.
i) Be patient.
j) Keep the lines of communication open.
k) Knowledge is power.

Anderson and Brackett (2005:12) emphasise that teachers need to be informed of parental preferences relating to what the child is permitted to eat during school hours, and whether substitute foods will be provided from home. They also maintain that school personnel must also be informed about the treatment, the need for snacks, and the frequency of blood glucose monitoring and insulin administration if such procedures are deemed necessary during school hours. It is of paramount importance that families meet with teachers and school nurses before the start of school to provide such information and guidelines. Communication with the school should be regular throughout the year. "Families can prevent conflict, clarify expectations and feel more confident that their child is safe at school" (Anderson & Brackett 2005:12).

The above makes it clear that information about diabetes as well individual children's care is vital in order to assist the child on a physical, emotional, social and cognitive level, and so enhance the quality of life and school experience for the child with diabetes.

2.16.2 Available Teaching Programmes

Last year for the first time in Pretoria, a lecture specifically targeting teachers was conducted. It was organised by Sanofi (a pharmaceutical company) and the University of Pretoria. A paediatrician that specialises in treating children with diabetes spoke about diabetic issues pertaining specifically to teachers. It was held on 14 of November 2012 at the

University of Pretoria Medical campus, and it may be conducted yearly if teachers request it. Teachers from various schools in Pretoria were invited to attend. I also mentioned that in teacher training there are modules in the course that focus on health problems in children. (Refer to Chapter 1, section 1.3.)

I am unaware of other programmes available for teachers. To my knowledge, and having been a teacher for the past ten years, information on diabetes has always been limited to the teacher's personal resourcefulness. Information teachers may have required was obtained by using the various knowledge bases available to them in their personal capacity. The South African Diabetes Association provides information on their website; teachers may also ask their medical practitioners.

2.17 CONCLUSION

This literature study highlights certain important issues related to diabetes. Firstly, it is clear that the causes of diabetes are quite complex and several related factors all play a role in the development thereof. Secondly, the severity of the condition is also clear because of the possibility of complications and emergencies can be fatal. The various treatment options were also discussed as well as the effects of diabetes on meal planning and exercise.

Psychologically diabetes has far-reaching implications. It negatively impacts upon the child's self-esteem and it has also been linked to the development of psychological conditions such as depression, anxiety as well as eating disorders. Diabetes can also adversely affect the child's social development and exclude them from certain activities if the condition is not understood.

Finally, children with diabetes suffer cognitively too, especially if their sugar levels are not controlled. Teachers – if provided with all the information – ought to have a better understanding and may be more willing to assist children with diabetes.

The next chapter will expound on the proposed qualitative research design.

CHAPTER 3
RESEARCH DESIGN

3.1 INTRODUCTION

This chapter will focus on how the proposed research will be conducted. This includes: the research design, sampling procedures, data collection and analysis strategies suitable to this particular study.

3.2 PURPOSE OF THE RESEARCH

The purpose of this research, as explained in section 1.7.1, is to develop a set of guidelines for South African teachers in order to assist them in supporting learners with diabetes on a physical, emotional, cognitive and social level.

Robson (2007:12) states that the research question indicates the focus of a study, directs the literature research, and provides the focus for the collection of data. In Chapter 1 (see section 1.7.2.1) the research questions of this study were stated as follows:

- What are the physical, emotional, cognitive and social effects of diabetes in children in school?
- What knowledge do teachers require when faced with a child with diabetes in their classrooms?

3.3 RESEARCH PARADIGM

In Silverman (2005: 96), O'Brien is quoted as saying that a theory is like a kaleidoscope. A kaleidoscope is a tube with a number of lenses and fragments of translucent, coloured glass. When you turn the tube and look through it, shapes and colours are visible. Every time it is turned the shapes and colours change. In a similar way a social theory changes the shape of an investigation.

Each theorist will look at a topic by turning the kaleidoscope in a way that pleases them or the way in which they perceive the topic. Therefore the same topic will have different theories that could pin it down. I will be focusing on the physical, emotional, cognitive as well as the social aspects of the topic of diabetes. As explained in Chapter 1 (see section 1.3), this study is aimed at contributing to the knowledge and training of teachers in schools by providing a set of guidelines to help them when they are faced with the challenge of having learners with diabetes in the classroom.

The paradigm of praxis seems to fit this study. “Praxis is a term used by Aristotle (384-322 BC), and is the art of acting upon the conditions one faces in order to change them” (Ahmed 2009: 25). Knowledge is derived from practice, and practice is informed by knowledge in an ongoing process – a cornerstone of action research.

3.4 RESEARCH APPROACH OR DESIGN

Babbie and Mouton (2004:647) define a research design as "a plan or structured framework of how the researcher intends to conduct the research process, in order to solve the research problem".

This study will set out to explore diabetes in schools. It will begin by surveying teachers’ knowledge of and perspective on diabetes. It will then focus on the challenges and obstacles that parents who have children with diabetes experience in school. These will be used to determine what teachers need to be aware of about diabetes as well as how they can make it easier for children with diabetes to perform at their optimal levels in school. As such, it will combine the experience parents encountered with their children at school with the knowledge teachers may need.

This research is therefore qualitative in nature. Qualitative research is naturalistic, holistic and inductive (Durrheim 2006:47). It studies phenomena as they take place in the real world. Phenomena are thus viewed within the social context in which they occur. It is possible that the same experience will have different meanings in different contexts; this supports the theory of multiple realities. Qualitative research is informed by an inductive approach that involves immersion in the data in order to discover categories, dimensions and interrelationships. Instead of testing theoretical hypotheses, the qualitative inductive approach involves exploring the phenomena through genuinely open questions (Durrheim 2006:48).

According to Babbie and Mouton (2004:270), qualitative research is an especially appropriate way to view the world through the eyes of the participants, and so obtain legitimate and true insider perspectives. My aim is not to quantify, predict or generalise, but rather to create a thick description of diabetes and the challenges it may pose for children in school.

As far as the research strategy is concerned, an inductive, idiographic approach will be followed, with the emphasis on understanding this particular phenomenon within its context from a bio-psycho-social model, in order to develop any interpretations based on the data gathered during the study. The data obtained will therefore not be used to test hypotheses or

to draw inferences about larger populations, but rather to describe the needs of learners with diabetes in a school context.

3.5 RESEARCH METHOD

The type of research used will be action research. “Action research is designed to enhance and improve current practice within a specific classroom, school or district” (Lodico, Spaulding & Voegtle 2010:40). A recent variation of action research is collaborative action research which focuses on both the process and the outcome of a change strategy, such as a staff development programme (McMillan & Schumacher 2001:20).

> Typically, action research is undertaken in a school setting. It is a reflective process that allows for inquiry and discussion as components of the research. Often, action research is a collaborative activity among colleagues searching for solutions to everyday, real problems experienced in schools, or looking for ways to improve instruction and increase student achievement. Rather than dealing with the theoretical, action research allows practitioners to address those concerns that are closest to them, ones over which they can exhibit some influence and make change (Ferrance 2000:1).

> It involves people working to improve their skills, techniques, and strategies. Action research is not about learning why we do certain things, but rather how we can do things better. It is about how we can change our instruction to impact students. ... The process of action research assists educators in assessing needs, documenting the steps of inquiry, analyzing data, and making informed decisions that can lead to desired outcomes (Ferrance 2000:3).

In this study, the focus is on improving support to children with diabetes by developing a set of guidelines that teachers can have handy in the event of having a child with diabetes in the class. In this regard, action research is the method that seems most appropriate. As such it is educational action research.

There are two basic elements of action research, namely generating knowledge and changing social systems. The process is cyclical and involves a non-linear pattern of planning, acting, observing and reflecting on the changes in social situations (Ahmed 2009:22).

Figure 3.1 “is based on Kurt Lewin’s work. It is a simple: ‘look, think, act’ model of the continuous and iterative process. It involves research and development, intellectual inquiry and practical improvement, reflection and action” (Ahmed 2009:23).

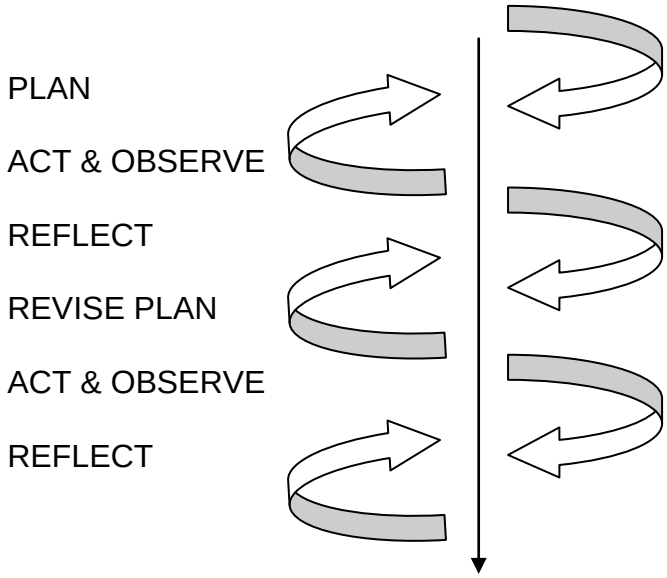

FIGURE 3.1: Model of the continuous and iterative process
Source: Ahmed (2009:23)

A "spiral" of recycling, acting and evaluating is involved. The steps in action research are: plan, act, observe, and reflect (Ahmed 2009:23).These steps will be followed in this research. A detailed explanation of the process is given below.

Refer to Figure 3.2 for a summary of the data collection procedure of this action research study.

3.5.1 Plan

The focus of this study is to ascertain what knowledge is of crucial importance for teachers that have learners with diabetes in their classrooms. Data will be collected during this phase of the study. Parents who have children with diabetes, and teachers that have or may have such learners in the classroom will be the participants. Data will be collected from the participants to determine what knowledge is already known and to gain a clearer picture of the information required in planning a set of guidelines for teachers. A discussion on the various stages of the data collection follows.

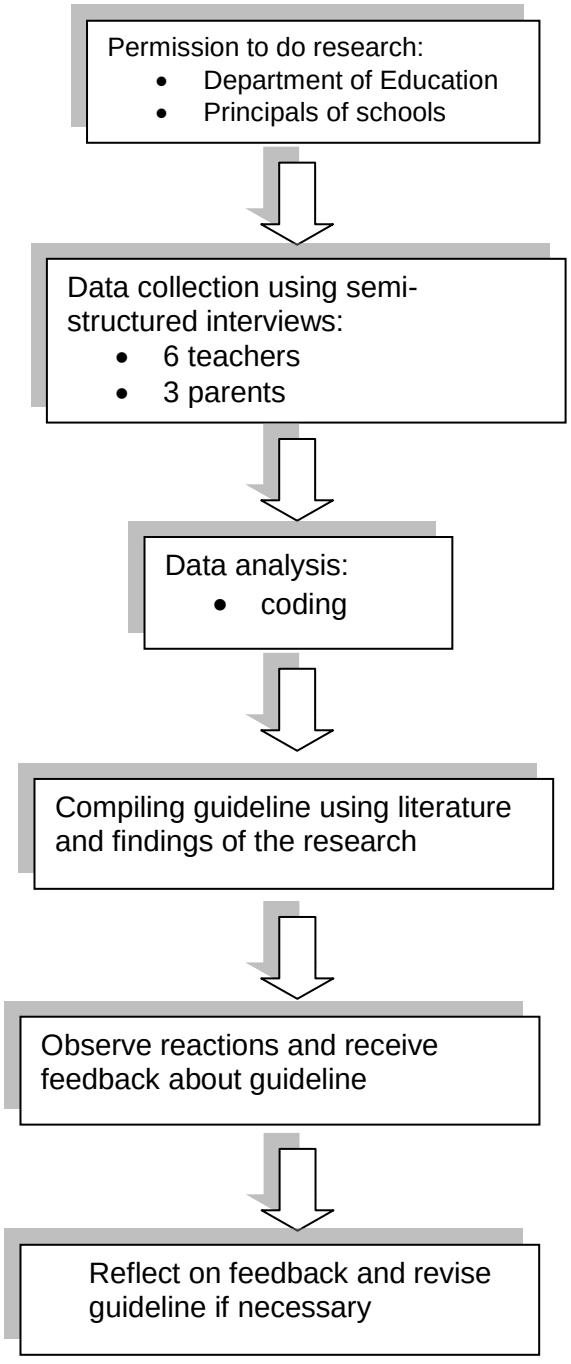

FIGURE 3.2: Graphic representation of the data collection procedure in this research

3.5.1.1 Stages of data collection

a) The population that will be used in this study

The population for this study will include Foundation Phase teachers and parents that have children with diabetes. Permission will be sought from the Department of Education to conduct research in the schools chosen for the study. Permission will also be sought from the principals of the schools selected.

b) Selection of the sample

For this study, purposeful sampling will be employed. This is a qualitative study; therefore random selection is not necessary. Purposeful sampling is used to select particular elements from the population that will be representative or informative about the topic of interest. Subjects that can provide the best information to address the research topic are selected, on the basis of the researcher's knowledge of the population (McMillan & Schumacher 2001:175). Teachers from the Foundation Phase of the schools selected will be approached by the principal of the respective schools, and those that volunteer will then be selected by the principal and head of department based on them having experience of dealing with children with diabetes in their classrooms. If no teacher with such experience is available, or willing to participate, then any teachers that are willing to participate will be included. All teachers will also be selected based on being proficient in English. The teachers must also have at least three years of teaching experience.

The research will be limited to teachers from three various types of schools so as not to limit the study by using only one category of school. The schools are as follows:

- School A is a private school in Pretoria.
- School B is a government school in Pretoria for children with special needs.
- School C is a government primary school in a suburb in Pretoria.

Interviews will be conducted with three parents who have children with diabetes. These parents will also be chosen by purposeful sampling. A parent from each school will be identified by the principal and approached by myself to assist with the study. In the event that parents cannot be identified or are not willing to be interviewed from any of the above-mentioned schools, then parents that have children with diabetes from any other school in the Pretoria area will be selected. A medical doctor will be used to identify parents with children that have diabetes in the event that no parents from any of the schools are willing to

participate. The parents will be approached by the doctor and if they are willing to participate their details will be supplied to me.

c) Number of data sources

Six teachers, two from each school selected, and three parents will be interviewed.

d) Location of data collection

All the schools are in the Pretoria area. All encounters with the teachers will take place at the respective schools after school hours. The parent encounters will take place at school if the child is from a school used in the study, or at the doctor's consulting room or at the researcher's home – depending on which is most convenient for the participant.

e) Frequency of data collection

It is anticipated that data will be collected from participants during one interview session. A second encounter will take place with teachers to give them a set of the guidelines compiled as well as a questionnaire in order to assess the guidelines. The questionnaire will be collected a few days later, as agreed by both the teacher and the researcher. However, if there is a need for more questions or clarification, a follow-up encounter will be conducted.

3.5.1.2 Data collection instruments

a) Interviews

Data will be collected using semi-structured interviews with the participants. The interviews will be audio-recorded. Observations, including demeanour, facial expressions, general mood and mood changes, body positioning, gestures, body movements, tone of voice and other nonverbal signs will be noted in a checklist. (See Addendum 6.)

The rationale for using semi-structured interviews is that it enables the researcher to explore the topic more freely and allows the respondents to share their experience more freely (Esterberg 2002:87). Robson (2007:74) agrees and adds that semi-structured interviews offer flexibility as they enable the researcher to collect the desired information. Creswell (2009:179) suggests that the advantages of interviewing as a means of data collection are numerous. In this study the advantages include:

- The researcher is able to take control over the line of questioning.
- Participants can be directly observed.

Koshy (2005:92) highlights the collection of information as the main purpose of interviews, and adds that interviews are more comprehensive than questionnaires and offer more information. Breakwell, Hammond and Fife-Shaw (2000:239) agree that interviews are utilized for a more detailed exploration of a specific topic/phenomenon. This is to the researcher's advantage as interviews provided significant evidence for presenting data and drawing conclusions.

According to Breakwell et al. (2000:239), interviews as a means of data collection can also have pitfalls or disadvantages, such as prejudice from the interviewee, lack of available media and flaws with recording mechanisms. Although these disadvantages can be present when collecting data, it is still a much recommended method of data collection (Breakwell et al. 2000:240).

An interview schedule for teachers and parents (see Addendum 1 & Addendum 2) was compiled, based on the literature review, which was used as a tool to ensure that information about specific areas of the topic was explored.

i) Interviews with teachers

The interviews with teachers will focus on the knowledge they may have about diabetes. This will also serve to analyse the needs in terms of knowledge as requested by teachers.

ii) Interviews with parents

The interviews with parents will focus on their experience of having to send their child with diabetes to school. This is done in order to obtain information on what obstacles or difficulties they may have experienced, as well as what information they would like teachers to have in order to assist them in the management of their children's condition during school hours. These will be practical ideas that parents may feel teachers will find helpful to assist them in the classroom.

b) Questionnaire

A questionnaire was defined by Kanjee (2006:484) as one of the most common ways of gathering data in the social sciences. They describe it as a group of written questions used to gather information from respondents. Open-ended questionnaires are most often used in qualitative research. Open-ended questions allow respondents to phrase their answers in their own words without any restriction.

Once the interviews are conducted, transcribed and coded, a set of guidelines on diabetes will be compiled. A brief open-ended questionnaire will also be compiled to assess the guidelines. Both will be handed to teachers with instructions to read the guidelines and thereafter fill out the questionnaire. The purpose of the questionnaire is to determine whether or not the guidelines are in keeping with the teachers' expectations, and at the appropriate level for them to understand all the terminology relating to the subject matter.

3.5.1.3 Literature review

As discussed in Chapter 2, the literature review serves as the theoretical framework to this study. It deals with the physical, emotional, social and cognitive effects of diabetes on an individual. The literature review serves as a knowledge base which will aid in compiling the interview schedules for the semi-structured interviews with the selected sample of teacher and parent participants.

3.5.1.4 Data triangulation

To increase the trustworthiness and credibility of the data, interviews will be conducted with both teachers and parents. This is to gain the perspective from both these parties so as not to obtain a one-sided view. Triangulation, according to Neuman (2000:124), serves as a means to view and investigate a phenomenon from different angles, and Giles (2002:221) notes that it offers different perspectives to the research questions. Creswell (2009:191) adds that it is the process by which different data sources are examined, and coherent justification for themes are established, which adds to the trustworthiness of qualitative research. Leedy and Ormrod (2005:27) highlight that the trustworthiness and credibility of a study have a significant influence on the extent to which the conclusions can be drawn from data and on its significance to the study.

3.5.2 Act

In this stage of the research, a set of guidelines will be developed from all the data sources and handed to the teachers that were interviewed in the planning phase. They will be requested to go through the guidelines and then provide their input.

3.5.3 Observe

The guidelines will be given to teachers together with a questionnaire. They will be given an opportunity to read through the guidelines and then will be required to fill out the questionnaire to critique the guidelines. This will assist in determining the effectiveness of the guidelines and to reflect on any recommendations in order to improve it. (See Addendum 7.)

3.5.4 Reflect

The comments of teachers will be reviewed and reflected on and then used to improve the guidelines, using the recommendations from the teachers.

3.6 DATA ANALYSIS

To analyse the data from the interviews, transcriptions will be made of each interview. Non-verbal communications will also be noted on these transcripts. “Transcripts offer more than just something to begin with. They have clear advantages compared to other kinds of qualitative data:

- Tapes can be replayed and transcripts improved.
- Tapes preserve the sequence of talk” (Silverman 2006:204).

The “full” transcripts will be analysed by means of content analysis. “Content analysis is an accepted method of textual investigation. A set of categories are established and then the number of instances that fall into that category are counted” (Silverman 2006:159). Another method which does not use numerical counts but rather records words into categories can also be employed (Silverman 2006:163). This type of coding is known as thematic analysis. In this study, thematic analysis will be employed.

The advantages of content analysis are that (1) it is relatively simple; (2) though time consuming, it does not require a large outlay of funding; (3) the researcher can add necessary information if it has been missed or incorrectly coded; (4) it forces careful examination of material, thus facilitating qualitative understanding; and (5) it is convenient in simplifying and reducing large amounts of data into organised segments (Rosnow & Rosenthal 1996:82; Silverman 2006:163). A disadvantage is that, because coding schemes used are based on a set of given criteria, they furnish a powerful conceptual grid which is difficult to escape from (Silverman 2006:163). The grids are helpful but they can deflect attention away from uncategorised activities (Silverman 2006:163).

Initial categories will be identified based on the research questions and findings from the literature. These are the predetermined or directed categories. Transcripts will be reread several times to gain an understanding of the phenomenon. The data will be scanned for possible new topics and themes. A top-down approach will be used, because categories are already identified as they correlate with the interview questions. However, this does not mean that these will not be revised, renamed or restructured. New categories that arise from the transcripts will be noted as emerging categories. The data from each transcription will be organised into categories and relevant themes. For example, all the information regarding

the emotional factors associated with diabetes from each interview will be combined under the theme “emotional effects”.

The groups of data will therefore be examined to identify the themes and recurring phrases, which will be colour-coded. Responses that fit into certain categories will be marked in a specific colour. Responses that do not fit into any specific category will be left in black and will be revisited to decide whether they form another category. The predetermined categories and understanding obtained from the teacher interviews will be compared to the information from the parent interviews to see whether the same categories emerged. New categories that emerge will be placed into emergent categories. The information will then be collated and used to decide what information should be included in the guidelines for teachers.

The main analytical instrument will be comparison. To ensure reliability a second coder will be used to code two transcripts, selected randomly to ensure agreement on the allocation of codes, and to assist with alternative explanations of the patterns in the data. Bracketing will be employed to suspend personal worldviews in order to access the essence of the respondents’ experience. Bracketing is a term used to describe preconceived notions that must be put aside or “bracketed” (Terre Blanche, Durrheim & Kelly 2006:322).

The categories/topics that are pertinent and that have thus far been identified from the literature review as the pre-determined categories are:

a) The term diabetes
b) The physical symptoms of diabetes
c) The emotional effects of diabetes
d) The social effects of diabetes
e) The cognitive effects of diabetes
f) The treatment of diabetes
g) Knowledge of what a diabetic emergency is
h) Recognising a diabetic emergency
i) Discrimination against children with diabetes
j) Information pertinent to teachers that can assist them in handling learners with diabetes
k) What parents require in terms of support from teachers

3.7 ETHICAL CONSIDERATIONS

According to Preissle (2008:276), ethics in qualitative research is a portrayal of the integrity of a research study. It is therefore one of the cornerstones that need to be taken into consideration in a research study. McMillan and Schumacher (2001:420) are of the opinion that qualitative research ethical guidelines include the following issues: informed consent, deception, confidentiality, anonymity, harm to subjects and privacy.

3.7.1 Permission to Conduct Research

Israel (2008:431) states that permission/consent can only be obtained when those involved in the research are informed of the methods, risks, benefits and purpose of the proposed research. Prior to the commencement of the data collection phase, permission will be obtained from the Gauteng Education Department, the Unisa Ethics committee, as well as the principals of the schools concerned. (See Addendum 8.) The conditions requested on the permission forms will be taken note of and upheld during data collection and interpretation. (See Addendum 8.)

3.7.2 Informed Consent

Informed consent refers to the consent received by a participant. Consent is usually obtained after the purpose of the research and the intended use of data are explained to each participant. It also includes the assurance of confidentiality and anonymity (McMillan & Schumacher 2001:420). The participants (teachers and parents) will be informed of the details of this study by means of an information sheet. (See Addendum 3.) The privacy of all respondents will be protected throughout the research process and the respondents will have to give their written consent for participation in the study (Strydom 2005: 61). (See Addendum 4.)

3.7.3 Confidentiality and Anonymity

According to McMillan and Schumacher (2001:421), this is the process by which participants and settings are not identifiable in print. Participants will be offered the opportunity to review the research to ensure them that their privacy is protected. (See Addendum 3.) The identities of the teachers, parents and schools used will be kept confidential and it will not be possible to identify which school each teacher is affiliated to. Parents' identities will also be protected in the same manner.

3.7.4 Potential Risk to Subjects

Strydom (2005:58) states that during the conducting of research, there exists a possibility that respondents might be harmed physically or emotionally. Debriefing of participants will be

put in place as proposed by Mitchell and Jolley (2001:29), in order to undo any emotional discomfort that the participants might possibly experience. No such effect is foreseen. However, if any discomfort in the form of outbursts of emotion or discomfort is observed during the interviews debriefing will be offered after the interview at a time convenient for both the researcher (who is an intern educational psychologist) and the participant.

3.7.5 Potential Benefits to Subjects and/or to Society

According to Mitchell and Jolley (2001:29), the researcher should determine the likelihood that the proposed study will benefit humanity. The researcher aimed to hereby equip and empower significant role-players, such as teachers, to understand and support the needs of children with diabetes. It will therefore benefit the teaching fraternity as well as children with diabetes in the schooling system.

3.7.6 Participation and Withdrawal

Participation in the study will not be forced upon any participant; it will be on a totally voluntary basis. Mitchell and Jolley (2001:29) state that all participants must be informed that they will be permitted to end their participation in the research at any point, if they feel the need to do so. This information is included in the information letter provided to participants before the interviews. (See Addendum 3.)

3.8 CONCLUSION

In this chapter I have attempted to give details surrounding the methodology of the research study, the purpose of the research, the research paradigm, the research approach or design, the research method, the data analysis, and the ethical considerations regarding the study. The purpose of the literature review guiding this study was also incorporated in this chapter. The following chapter will report on the results of the empirical investigation.

CHAPTER 4
EMPIRICAL STUDY

4.1 INTRODUCTION

This chapter focuses on the results of the empirical investigation regarding the knowledge around diabetes which is relevant in a school situation. The results of the interviews will be discussed. The aim is to describe, summarise and interpret the data and to link it to the findings of the literature study. Interpretations will be elucidated with quotations from the participants and the data will be coded to identify salient themes. Each question from the interviews will be discussed separately, as each is designed to investigate a particular aspect of diabetes. However, I will also correlate and combine the data of certain questions to highlight emerging patterns in the research.

A brief explanation on the development of the guideline will follow and then a synopsis of the responses to the questionnaire that reviewed the guidelines will be expanded on.

4.2 EMPIRICAL RESEARCH

The empirical research consisted of three stages: interviews with parents and teachers, followed by drafting a set of guidelines using the literature study and interview data and lastly receiving feedback on the proposed guidelines. The aim of the interviews was to ascertain the knowledge that teachers have about diabetes in order to develop a set of simple guidelines. Participants were read the informed consent and required to give their written consent. (See Addendum 4.) The interviews were transcribed and thereafter coded. (See Addendum 9.)

In the first stage (see section 3.5.1.1) after the interviews had been conducted, they were transcribed and then coded. The colour-coding used in the transcripts are as follows:

- Physical aspects of diabetes – blue
- Emotional aspects of diabetes – purple
- Social aspects – orange
- Cognitive aspects – red
- Exercise – green
- Diet and snacks – yellow
- Knowledge teachers should know – brown
- Misconceptions – pink
- The black font is also important and was used for information pertaining to medication and emergencies.

Thereafter the guidelines were given to teacher participants together with a questionnaire in order to receive their critique.

4.3 REPORT BACK ACCORDING TO TEACHER INTERVIEW SCHEDULE QUESTIONS

First the Department of Education and the schools chosen for the study were approached for their permission to conduct the research. (See Addendum 8.) Thereafter ethical clearance was sought and granted by the University of South Africa (see certificate number: 2013 APR/30240395/CSLR – Addendum 8) and the empirical process commenced by conducting the teacher interviews. The non-verbal behaviour of all the participants were also noted in a checklist during the interviews. (See Addendum 6.) In all cases the participants non-verbal behaviour matched their responses. All the participants were willing and eager to assist, which facilitated a good rapport during interviewing. All the participants were open and not afraid to give their honest opinions. Of the six teacher participants, five had already taught children with diabetes and therefore had first-hand experience.

The answers to each question were grouped. As each question was designed to examine a separate aspect of diabetes, this method automatically grouped the data together in rough categories. These categories will now be discussed in detail.

4.3.1 The Concept *Diabetes*

Questions surrounding the term *diabetes* and other terminology pertinent in diabetes were explored to ascertain whether teachers were familiar with any of them. In the literature, diabetes is described (see Chapter 2, section 2.2) as a complex, chronic disease resulting in an elevation in the glucose level in the blood. It is a metabolic disorder that affects the blood sugar levels because of the production of insulin or inaction of insulin. Insulin is a hormone**,** produced by the pancreas**,** which is central to regulating carbohydrate and fat metabolism in the body. Insulin causes cells in the liver, muscle**,** and fat tissue to take up glucose from the blood, storing it as glycogen inside these tissues.

All the teachers interviewed mentioned the word sugar when describing diabetes. Only one participant mentioned “inaction of insulin”. The knowledge that most of the teachers had was vague, and only one teacher knew that diabetes was caused by the inaction of insulin. None were confident in describing it though.

Some responses to the question of what diabetes is included the following:

> Teacher 1: “What I read and the knowledge I gained after the child I had in my class is that diabetes is not a thing to play with. It must be managed very well, and as far as I know there is

a special diet but there is controversy about that, because I read that they are not allowed any sugar. On the other hand, I read that it can't do any harm when their blood sugar levels are low. It is necessary to keep their blood sugar levels at a certain level."

Teacher 2: "I always understood that it had something to do with sugar."

Teacher 4: "I think it is when the body is not producing enough insulin."

4.3.2 Terminology about the Different Types of Diabetes

According to the latest research from the literature study (in Chapter 2 – see section 2.3), there are four main types of diabetes, which are Type 1 diabetes mellitus, Type 2 diabetes mellitus, gestational (the disease appears for the first time during pregnancy), and other types of diabetes which can result due to a specific condition such as genetic defects, drugs, defects, infections, genetic syndromes.

The type of diabetes most relevant for teachers is Type 1; Type 2 is also included here as it also affects children. Type 2 diabetes is also referred to as NIDDM (non-insulin dependent diabetes mellitus). Type 1 is also known as IDDM (insulin dependent diabetes mellitus) or juvenile diabetes.

Two of the six respondents knew that there are different types of diabetes. Of the two, both knew that there is Type 1 and Type 2, but neither knew what it meant.

Responses included the following:

Teacher 1: "I know that there is a Type 1 and a Type 2, but I don't know the difference between the two."

Teacher 2: "No, no. I always thought that diabetes had to do with old people or the aged, the over 50, you know, when the blood sugar goes low, but I didn't know that you get different types of diabetes."

Teacher 6: "I know there are two types. One the elderly get and one in children. I am not sure what they are called."

4.3.3 Hypoglycaemia and Hyperglycaemia

Hypoglycaemia and hyperglycaemia are terms used to describe low and high blood sugar levels. The teachers were not familiar with these terms. Two of the six had a vague idea that it meant high or low blood sugar. The teachers that had dealt with children with diabetes also did know that there are lows and highs.

Responses included the following:

> Teacher 1: “Hyper tells me it is the extreme, too much or too many of a thing, and hypo I would say not enough of a thing, but glycaemia, I don’t know.”

> Teacher 6: “Hypoglycaemia ... I have heard it, but I am not sure if it is high or low sugar. I am not sure.”

4.3.4 Prevalence of Diabetes

In Chapter 2 (see section 2.4), it was deduced that diabetes was becoming an epidemic in this century. The rate of diabetes is rising at an alarming rate.

Four of the six teachers said that they thought it was becoming more common. Only one thought it was not becoming common, and one teacher answered so vaguely that she gave no opinion on the question.

Responses included the following:

> Teacher 2: “Yes. It is becoming more common. You hear it from other teachers. We are getting pupils who are diabetic, so yes it is becoming more common.”

> Teacher 4: “I don’t know much about it. I don’t think so [that it is becoming more prevalent], because in my years of experience I have only come across two children so far.”

4.3.5 The Causes of Diabetes

Type 1 diabetes is caused by environmental, genetic, or autoimmune problems. The causes of Type 2 diabetes are not known; there are however risk factors discussed in Chapter 2 (see section 2.5.2). These include the following:

- Obesity
- Family history
- Belonging to a high risk ethnic population (black, native, Latino, Native Hawaiian, and people from East India, Japan and Australia that have migrated to Western cultures)
- Anyone that has been diagnosed with gestational diabetes or delivered a baby over 4,1 kg
- Having high blood pressure (140/90mm Hg or above)
- Having HDL High-density lipoprotein (also called good cholesterol)
- Ingesting alcohol in large amounts
- A high fat diet
- Sedentary lifestyle

- The elderly
- Stress
- Depression

Two teachers had no knowledge about the causes of diabetes. The other teachers' answers included only one or two of the following causes:

- Genetics
- Diet
- Weight
- Two teachers thought it was caused by excess sugar intake, which is a misconception

Responses include among others:

> Teacher 1: “It can be genetic, and the other thing I read the other day that weight can play a role in it. I don’t know if there is any other stuff but that is what I can remember of the knowledge I gained when I had the child in my class.”
>
> Teacher 2: “No idea really.”
>
> Teacher 6: “I think that it is genetic and I know in older people it has got to do with diet or obesity.”

4.3.6 Symptoms of Diabetes

The symptoms of diabetes were discussed in Chapter 2 (see section 2.6). They are as follows:

- Polyuria (frequent urination) as a result of glucose in the urine
- Polydipsia (excessive thirst)
- Polyphagia (increased appetite) as a result of cellular starvation and decreased storage of calories
- Excessive weight loss due to the presence of polyphagia (increased appetite), which is due to the ineffective metabolism of carbohydrate, protein and fat
- Weakness and lethargy results, due to inadequate energy production
- In females vaginitis (infection of the vagina) may be an early complaint
- Visual disturbances, e.g. complaints of blurred vision
- Muscular cramps in lower extremities
- Wounds that heal poorly due to poor blood circulation to the lower extremities
- Hyperalgesia (increased sensitivity to pain)

- Hypoglaecemic (low blood sugar)
- Coma (loss of consciousness)

Only one teacher was unaware of the symptoms of diabetes. All the others had knowledge of only one or two symptoms. The ones mentioned by the teachers included:

- Fatigue
- Sweating
- Thirst
- Frequent urination
- Coma

Feeling dizzy was also mentioned, but it does not feature as a symptom.

Responses about the symptoms of diabetes included the following:

> Teacher 1: “I am not very sure but what I read is that they sweat a lot, but I did not experience that with that child in my class. And thirsty, they drink a lot of water. I realised there was a problem, the child drank water constantly and had this craving for fluid. Then I phoned the parents and they said they forgot to inform us about the diabetes. It was a day scholar. If it was a scholar in hostel it would be a different story.”

> Teacher 2: “Now that I speak to parents of children with diabetes I know before they took the children to the doctors to be diagnosed. What they found was that their child got very tired and the child went to the toilet a lot. I spoke to one or two sets of parents and that is the symptoms that they know.”

> Teacher 6: “In children I know they get very tired, they get thirsty and go to the bathroom a lot. That is basically what I know.”

4.3.7 Complications Related to Diabetes

Complications of diabetes as discussed in Chapter 2 (see section 2.7) include the following:

- diabetic nephropathy (decline in kidney function) (Diakoumopoulou 2006a:176)
- macroangiopathy (atherosclerosis – cholesterol plaque in the arteries) (Ioannidis 2006c:199)
- diabetic foot (poor circulation and lack of sensation which leads to ulcers forming) (Tentolouris 2006a:217)
- skin disorders like dermatitis (Makrilakis 2006d:243)
- increase in infections (Liatis 2006b:267)

- diabetic retinopathy (eyesight problems) (Diakoumopoulou 2006b:159)
- hypertension (Makrilakis 2006b:277)
- due to nerve damage, digestion problems can occur; weakness due to nerve damage as well as erectile dysfunctions in men (Pubmed Health – *A.D.A.M. Medical Encyclopaedia*).

Only two teachers were aware of complications associated with diabetes. Eyesight problems and slow healing wounds were however the only ones mentioned.

Responses about complications included the following:

> Teacher 1: "I am aware that it affects their eyesight and they can go into a coma, that is what I know, which is the worst case scenario I suppose. And as I said, the child got very tired and I was aware of it then and I monitored it."

> Teacher 6: "I think, complications of diabetes ... I am not so sure. I know that it can affect the eyesight and wounds don't heal very easily. I don't know any others."

4.3.8 Treatment and Management

Diabetes is treated by a change in diet and by administering insulin (see section 2.8). Only one teacher had no knowledge about the treatment of diabetes. The others all knew that insulin is used. However, none knew exactly how the sugars are controlled. Some teachers mentioned the use of a pump by children.

Responses include among others:

> Teacher 5**:** "I think some of them get insulin and some of them get tablets. First they try the tablets, and if that doesn't work they give you insulin."

> Teacher 2: "I don't know about medication, but I know the elderly people who do have diabetes are always testing themselves to make sure if their sugar levels, I suppose, are accurate."

4.3.9 Diabetic Emergencies

Diabetic emergencies include hypoglycaemia, which can cause diabetic ketoacidosis (see section 2.11.2), and hyperglycaemia, which can cause convulsions, a coma and even death (see section 2.11.1).

The teachers were vague about what a diabetic emergency was or how to handle it. Two teachers had no idea what a diabetic emergency constituted. One teacher said she would

give the child a glass of coke; one teacher had been told to be aware when the child shakes and turns pale. Three of the six knew only that the child could go into a coma. One mentioned black-out. Not one teacher knew that they should first test the sugar before giving coke or before deciding what to do.

Responses about diabetic emergencies included the following:

> Teacher 2: “For a while it was very difficult. We had an emergency kit at school and all that, but it was so complicated. I don’t think even the parents knew how to use that emergency kit. So it was very, very difficult. I don’t think we even had an emergency; kit with some of the children we didn’t even have an emergency kit. With the high sugar I can’t remember. The mother was more concerned with the low sugar. She said the child would shake, but I never saw her shake or anything like that. There were times that the child would become quiet and her lips would become pale. But now you are sitting in a class with 30 children and you are not always going to notice this child’s lips becoming pale, you know. I used to look out for that as well.”

> Teacher 5: “I think the person that has got diabetes … they say you must just give them a quarter glass of coke. That is the only thing that I know that will just bring their sugar level up.”

4.3.10 Effects of Diabetes on a Child in School

Diabetes may have physical, emotional, social and cognitive effects on the child (see sections 2.12, 2.13 and 2.14). All the teachers agreed that it affected the children in school. Only one did not mention the emotional effects. All mentioned the physical effect. Only two mentioned the social effects.

Responses included the following:

> Teacher 1: “I think it can affect the child’s progress, because if a child is tired constantly or they don’t feel well, I don’t think they will be able to progress. I mean, when a child has a common cold or ’flu it affects them, and also I think it can affect them emotionally as well, and if you have an emotional barrier – my experience in my teaching years, I experienced that if there is an emotional barrier the child is not able to learn. You must first overcome the emotional barrier.”

> Teacher 2: “In class definitely, it had a big effect on her work. You could see she was a bright child. Obviously she was very, very bright. The minute she had to take up a pen, even though she was a very neat worker, she couldn’t work. She couldn’t put what she knew on paper.”

Teacher 4: “I think it is very stressful for the child. They become easily agitated or nervous. It affects their learning to some degree and their behaviour as well. I know the child I have, she becomes very teary too.”

Teacher 6: “In school, children feel different and I think that would have an emotional effect on them. They have to take insulin and some of them have insulin pumps, so it affects their self-image sometimes. I know physically they have to have their snacks and medication correctly. They can be tired. Socially sometimes they can’t eat the same foods that the other children can eat, if there is a party or so.”

4.3.10.1 Physical effects of diabetes

The physical effects are mentioned above in section 3.4.5. All teachers knew only one or two physical effects that diabetes has on a child. Most mentioned tiredness and frequent urination.

4.3.10.2 Emotional effects

From the literature study in Chapter 2 (see section 2.10), some emotional effects discussed are as follows:

- Children with diabetes are usually less independent when they start school due to over protectiveness of parents
- They fear for their safety while at school, due to their illness
- Can suffer from anxiety disorders
- Feel different
- Feel inadequate
- Feel their illness is a punishment
- Can display aggressive behaviour, especially if sugars are uncontrolled
- Can develop eating disorders
- Have a greater susceptibility to psychological disorders including depression
- Greater susceptibility to low self-esteem

Teachers noticed many of the above emotional effects when they dealt with children with diabetes in their classrooms. The emotional effects mentioned in the interviews were:

- Feeling different
- Embarrassment
- Stress
- Uncomfortable when testing

- Nervous about missing snack – preoccupied with routine surrounding diabetes
- Teary
- Difficult for child to cope

Some responses on the emotional effect teachers noticed were as follows:

> Teacher 4: “I think it is very stressful for the child. They become easily agitated or nervous. It affects their learning to some degree and their behaviour as well. I know the child I have, she becomes very teary.”

> Teacher 6: “In school, children feel different and I think that would have an emotional effect on them. They have to take insulin and some of them have insulin pumps, so it affects their self-image sometimes.”

4.3.10.3 Social effects of diabetes

From the literature study in Chapter 2 (see section 2.3), some social effects of diabetes are as follows:

- Difficult to maintain “normal” social relationships due to dietary restrictions, or not going on excursions or camps.
- Social stigma
- They feel less accepted
- Families are vulnerable to maladaptive family relationships
- Conflict in the home can affect the control of sugar levels

Teachers mentioned the following effects that they encountered, where diabetes seemed to affect the child socially:

- Feeling isolated
- Not able to share a friend’s lunch
- Not able to buy at tuck-shop
- Select group of friends based on those that had empathy for the condition

Some responses as to what teachers noticed about the social effects of diabetes:

> Teacher 1: “It was very difficult because one does not have the knowledge and support system in place to help you with that – so I really struggled. What I did then, is I got parents in and they also struggled with it.”

Teacher 2: “Socially also she would only speak with the children that are comfortable with it. And a lot of children were not comfortable with her. You know what I mean because she had to get tests and all – they didn’t want to be around her. They wanted to go play and do their own thing. She would always only hang around with a certain group of friends. She used to attend everything ... but I think since she was in preschool her mother doesn’t send her to school on sports day.”

Teacher 6: “Socially sometimes they can’t eat the same foods that the other children can eat if there is a party or so.”

4.3.10.4 Cognitive effects of diabetes

Diabetes can have negative consequences on cognitive functioning by causing mild, cognitive deficits (see section 2.14).

All except one of the six teachers knew it can affect cognitive function, but most thought due to the tiredness or feeling unwell, it would affect school work. One teacher thought it can affect the brain. None of the teachers seemed aware that a slight drop in blood sugar can cause a child to lose focus and concentration.

Some comments teachers made regarding cognitive effects of diabetes:

Teacher 4: “Yes, she can’t concentrate sometimes and is stressed.”

Teacher 1: “I think it can affect the child’s progress, because if a child is tired constantly or they don’t feel well, I don’t think they will be able to progress. I mean, when a child has a common cold or ’flu it affects them, and also I think it can affect them emotionally as well, and if you have an emotional barrier – my experience in my teaching years – I experienced that if there is an emotional barrier, the child is not able to learn. You must first overcome the emotional barrier.”

Teacher 5: “Yes it does, it does affect their learning. I have noticed the concentration also. She is more stressed out and she is more on her nerves. It is my snack time, it is time to check my pump. That’s how it is like with a person like that, with her especially.”

Teacher 6: “I don’t know, I don’t think it would have an effect on the cognitive functioning of the child.”

4.3.11 Exercise and Diabetes

Children with diabetes can exercise. It is actually a part of diabetes management (see section 2.15). It should, however, be conducted with advice from the child’s doctor, and

medication has to be adjusted to accommodate the extra energy used. It can lower the blood glucose levels.

Only one teacher was made aware by the parents that exercise can cause a low if not monitored. In one case the mother did not want the child to exercise and did not send the child to school for sports day. The children with diabetes are also described as being tired and not able to participate.

Responses about exercise included:

> Teacher 1: “They did not give me instructions, but I think maybe exercise can be good. It is always good. But if a child is tired constantly, how can you expect them to exercise.”
>
> Teacher 5: “Actually her mom didn’t want me to do some exercises. Initially, first she said I mustn’t do any exercises, then after that I just did slow exercises with her, and then she did exercises.”
>
> Teacher 2: “I know she used to get very tired. We used to have sport after second break, after 12 o’clock. Lots of times she asked to be excused. Because of her condition the teachers were sorry for her. We didn’t know if it was good for her or not good for her, so we would rather go with how she feels.”
>
> Teacher 6: “The children that I had, they used to exercise. Initially I did not even realise that it can have an effect on them, until the parents said that some of them did not want their children to exercise, because they are afraid that they are going to become too low.”

4.3.12 The Diet of the Child with Diabetes

The diet prescribed for a person with diabetes, from the literature study (see section 2.8.2), consists of having three meals per day and having snacks in between to prevent hypoglycaemia. The recommended diet includes the following (Delport 2002:35):

- Carbohydrates like brown bread, maize meal, cereals and potatoes, because they add bulk to the diet
- Food rich in fibre, e.g. legumes, oats, soya products, vegetables and some fruits
- A low-fat diet
- Vegetables can be eaten raw or boiled, without the addition of sugar, salt or butter
- Spices, herbs and salt recommended for people with hypertension should be substituted instead of regular salt
- Snacks like fruits and provita between meals
- A glass of low fat milk or yoghurt may be ingested per day

The teachers are not actually responsible for this because most schools in South Africa do not provide lunches. Parents send lunch with the children to school. In a hostel situation, the school kitchen will be responsible for the dietary requirements of the child.

One teacher that comes from a school for children with special needs that is fortunate enough to have a nursing sister employed by the school, spoke about parents not knowing about or not providing the child with the food recommended by the nursing sister. She also said she took the initiative to keep provitas and raisins in her class for the child. The child seems to be from a disadvantaged background, so she spent of her own money to ensure she had something for the child in case he needed it. The same teacher also consulted with a friend of hers that was a dietician to give her guidelines for the child's diet, as the parents could not afford to go to a dietician.

One teacher said that the child could not share food with others or have party foods, which made the child feel different. It was also mentioned that the parents with children with diabetes packed different kinds of lunches for them, and teachers are confused about what the children can or cannot eat.

Comments on the issue of diet included the following:

> Teacher 2: "The diabetic children that are coming through us, the diets are not the same, you know, the mothers are not packing the same lunch boxes. We can see the difference so we need to know what they can eat, what they can't eat. Also very important that we found is that ... look here, lots of food companies are putting how much carbs, but some of them are so unclear, so unclear you wouldn't know ... The child just feels different, when the child looks at other kids at how they are coping and how they can eat things and enjoy things."

> Teacher 4: "The mother... she made a list of what I should do if the child's sugar is low or too high. The sweets she can have and what drinks she can have. Socially sometimes they can't eat the same foods that the other children can eat, if there is a party or so."

4.3.13 Extramural Activities

Due to the management of the diabetes, as it was discussed in Chapter 2 (see section 2.8) children with diabetes can be socially restricted. Teachers wanted to know how to accommodate the child with diabetes. One teacher said that the child with diabetes missed out because extramural activities are after school. She said that if they knew what they could do, the parents could leave the children so that they don't have to be excluded. Teacher 2 had this to say on the issue:

Teacher 2: “Some days at school are longer than other days. Because of that the child doesn’t get involved. This child is a normal child, we treat the child as a normal child, but how we can fit this child into the extra-curricular activities, after school hours, so that the child can get involved with everything. Lots of our diabetic children don’t get involved with after-school activities. They have to excuse themselves because they have another programme at home. If we as teachers are trained then we can give the parents confidence. We can give them confidence and say that, no, don’t worry she will be fine. It is going to affect the child because the child is already feeling isolated because of the sickness. But now because of the activities and school work and everything else, their problems are increasing.”

4.3.14 Discrimination against Children with Diabetes

Of all the teachers, only two knew of a child with diabetes experiencing discrimination. Most of the teachers took pity on them, took extra care with them, and experienced other children as accepting and helpful.

Teacher 1: “Not bullying, but I think that the lack of knowledge caused that they did not understand the child and the child’s needs necessarily. I don’t think it is on purpose, but if you haven’t got the knowledge and the insight in a situation, then you would not treat the situation as it is needed to be treated.”

Teacher 2: “And a lot of children were not comfortable with her. You know what I mean, because she had to get tests and all, and they didn’t want to be around her. They wanted to go play and do their own thing. She would always only hang around with a certain group of friends.”

Teacher 4: “I haven’t come across any discrimination; in fact the child I have, everyone is sensitive to her needs and helpful towards her actually.”

4.3.15 Attitude and Emotions towards Taking the Responsibility for a Child with Diabetes

Most of the teachers expressed their fear of taking the responsibility for a child with diabetes. Two said they had no choice; if they have a child with diabetes, they have to accommodate the child. One described it very well by saying it is like looking after a newborn baby, because she felt she had to keep an eye on the child all the time.

The teachers reported the following about their emotional reactions to having to teach a child with diabetes:

Teacher 1: “I don’t think one has a choice. You are there for the children and if you have a child with diabetes you must accommodate the child. It is very important and that a child has

the same rights as any other child, to be educated and to get the best education and the best treatment for him or her, in spite of their condition."

Teacher 2: "I was so scared because it was like having a newborn baby that you keep on checking, you know, like the child doesn't fall off the bed. It is like the child is totally dependent on you. I was very scared and I really, really didn't know anything about diabetes. Nothing. It was very daunting for me."

Teacher 6: "I would, but it was very difficult. It is very difficult, it can be very disrupting sometimes, and it is scary, because there can be emergencies. We have to. We are forced to when the children come to our classes. I don't think we have a choice."

4.3.16 Knowledge about Diabetes to Handle a Child with Diabetes

Four of the six teachers felt that their knowledge was insufficient. One of the two that said they have sufficient knowledge, added that she will obtain information from the Internet and doctors. The other one, despite not showing enough knowledge, felt she had sufficient experience with one child.

Responses to the question on whether they have sufficient knowledge about diabetes in order to manage a child with diabetes, included the following:

Teacher 1: "No, I think it is very important that the people who are in charge of special schools or children with special needs in schools, in mainstream schools, must get special training in how to handle a child like that."

Teacher 4: "I feel I know just the basics about it and I need to know more."

Teacher 2: "I just feel that teachers need to be more equipped with lots of sicknesses. Not only diabetes."

4.3.17 Training in Dealing with Diabetes in Teacher Training

Two teachers said that they had brief sections on diabetes in their training, but it was not sufficient to get them by with a child with diabetes in the classroom. The other four had received no training on diabetes in college, and one had received some training by the education department in the last year, but said it was also very brief and basic.

Some responses about exposure to diabetes in teacher training included:

Teacher 1**:** "Not until recently. I attended a course with district officials in Johannesburg from head office, and they had a video clip. They showed us epileptic children, and with diabetes, but they did not go into deep information about it."

Teacher 2: “No. There were modules on it. I mean they’ve got a small section on diabetes, they’ve got a bit of a larger section on cerebral palsy, and other types of children we are going to encounter. No, not very much information. I think the same information that I gave you in the beginning to say that diabetes is something to do with sugar. I think that is the information I learned in college. You don’t think you are ever going to be in a class where you are going to have to...”

4.3.18 The Need for Guidelines on Diabetes for Teachers

All the teachers were unanimous in saying they need guidelines about diabetes to assist them.

Responses to the need of a set of guidelines included:

Teacher 1: “Definitely, definitely it would be helpful.”

Teacher 2: “It would have made a very big difference. Because you know, once you are trained and now you are working with a child and you can use your training so much easier. And you need to be trained.”

4.3.19 The Format of Guidelines/Training

Four of the six teachers prefer a written set of guidelines. Two preferred a workshop. Two mentioned a CD or DVD. One said a workshop, then a booklet as well as assignments on the topic.

Responses on what format the guidelines should take included the following:

Teacher 1: “Written, because you can always go back to it and it is hands on. A CD is somewhere and you first have to put it in and ... no, I think written.”

Teacher 2: “You know what I think? A workshop. Maybe people like teachers, ex-teachers that work with diabetic children, medical doctors and medical people, booklets, and you go for a workshop for proper training and all that. We can have case studies where we can see what is happening. The child won’t exactly get high while we are at the workshop or get low while we are at the workshop, but we can use dummies and things like that and we can just see ... certain places are sensitive, like where we touch them … preferably I think a workshop over a certain period of time. Then training booklets and the programmer can then get feedback from us students, and they give us feedback and we complete assignments and things.”

4.4 INFORMATION FROM TEACHERS

The salient points of information obtained from teachers during interviews are summarised in Table 4.1.

TABLE 4.1: Summary of information obtained from teacher interviews

Categories	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5	Teacher 6
Term diabetes	No sugar Keep blood level at certain level	Something to do with sugar	Blood levels not okay	Body not producing insulin	Need to take insulin	Something to do with sugar
Types of diabetes	Types 1 and 2 but don't know what it means	No	No	No	No	Types 1 and 2
Prevalence	More or less	Yes becoming more common	Yes	I don't know, I don't think so	Yes	Yes, see more children with diabetes in school
Hypo-	No	No	No	No	No	No
Hyper-	No	No	No	No	No	No
Symptoms	Sweat Thirsty Tired coma	Tired Frequent urination	Feel unwell Coma	no	Dizzy Weak Blackout	Tired Thirsty Frequent urination
Complication	Eyesight	No	Coma	No	No	Eyesight Wounds heal slowly
Treatment	Prick finger Inject Insulin	Testing themselves	Insulin injection	Take insulin	Tablets – if it does not work, then Insulin	Insulin
Physical effects	Sweat Thirst Tired Coma Eyesight	Tired Frequent urination (toilet a lot) Shake Lips go pale	Coma Feeling unwell Incoherent (talk like they do not know what they're saying)	Coma	Weak Dizzy Blackout	Tired Thirsty Frequent urination Coma
Emotional effects	Emotional barrier Depression	Feel un-comfortable when testing Very quiet Embarrassed to have snack in class Only speaks to certain children Nervous to do things alone (lacks autonomy)	Very emotional Stressed	Stressful for child Easily agitated Behaviour Teary	Stress Nervous at snack time (anxious) Worry about health	Feel different Affects self-image

Categories	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5	Teacher 6
Social effects	Other children lack under-standing Withdraws from group (isolation) Pity from teacher	Some children uncomfortable around them. Pity from teachers Excluded from certain activities Difficult and disruptive for teacher	Communicate with parents	Everyone sensitive and helpful to child No discrimi-nation Initially snack time during class is disruptive	Pity from teacher	Can't eat some foods
Cognitive effects	Not able to learn due to feeling unwell	Great effect on school work (after break can't work) Can't put things down on paper Slow worker	Affects brain Memory loss Affects school work	Affects learning	Affects concentration	Don't know, don't think it can affect cognitive function
Exercise	Exercise can be good but tired so how can they	Missed sports day	Exercise is good and healthy	Don't know if it is good	Slow exercises first, then she did exercises	Can exercise, was not aware it can affect sugars
Adequate knowledge at present	No	More confident now because of having a child with diabetes already, but teachers need training. Teacher training on it is not sufficient	Yes, or I will get information from the Internet and doctors	No, I need to know more	Yes, I will manage	No
Training obtained	No	No	Yes, I'll get more information from Internet or doctors	No, I need to know more	Yes it is because of having a child already in the class	No
Form of training preferred	Written so I can refer back to it	Workshop, then Training booklets, then Complete assignments	Workshop Let doctors talk to us, listen to CD	DVD/ pamphlet	CD, written	Written
How did you feel having a child with diabetes in the class	It was difficult, I struggled	I was scared, it was daunting Like looking after a newborn baby	Did not have a child with diabetes in class	Scared and nervous. It was disruptive initially	I was scared, it was a big respon-Sibility	Scared It was difficult Took a long time to get used to. It was disruptive sometimes

4.5 PARENT INTERVIEW ANALYSIS

From the parent interviews, I extracted information that related to developing the guidelines.

4.5.1 Parents' Feelings when Leaving their Children for the First Time

Parents all expressed how difficult it was for them to leave their children at school. One parent went to school everyday at the two lunch breaks to check on her child, and one parent talks about being paranoid and crying every day after taking her child to school. Their fears and anxiety come through clearly.

Responses to the question of their feelings included among others:

> Parent 3: "Initially it was a very difficult adjustment at the time she was diagnosed. Starting school was even harder for me, because I was extremely afraid of what might happen every day. I have been suffering with paranoia ever since she started school, and every day is a new challenge because the conditions differ every day and the emotions differ as well. It is more a fear everyday of what is going to happen. That is my biggest worry."

> Parent 3: "Initially the first two years of school were very difficult for me ... I think I would actually get to work and start crying. That is how I would feel and if I left her at school in the morning till the time she came out of school, I would stress about how is the child, what were her readings, did the teacher see anything, and she was very emotional about it. She would cry every single day for the first two years because she was unaware of what was going to happen … so it affected me a lot in that regard, especially because she was so small."

> Parent 1: "The first time he was at Montessori so I used to go once a day. Leave him at school in the morning, go at about 11 o'clock just to check his sugar, because he couldn't read numbers and things, so I used to go and check his sugar, and if his sugar was high I would give him a little dose of insulin just to bring it to normal. Then he would finish at half past 12 and at one o'clock I would pick him up."

4.5.2 Disclosing the Health Status of their Children

All the parents were actually very open about their children's health status. They actually felt that the more people that knew, the safer they felt. One parent said that the child should be asked whether peers should be told.

Their responses on disclosing that their child had diabetes included the following:

> Parent 1: "No, no, no, I don't have a problem with that. The more people that know your child is a diabetic; it is safer for your child. Actually my child's (child Y) friends, they are very supportive of him being a diabetic. You know, the lunch break, they used to gather around him

while he was checking his sugar. Now they all remember his glucose reading and now they tell him (child Y) you need to take hundred carb. So now he needs to take insulin. So you know his friends really gave him the support. With the children they never victimised him or never like bullied him or gave him a hard time. The children were very supportive."

Parent 3: "I actually prefer it. I know that some people hide it because of the fact that children are teased, but in my situation I prefer that they all know, because this child could be helped by all of them. Secondly there should be that emergency kit in the fridge so that it is accessible to everyone. I would say that in the guidelines there should be a trained diabetes educator ... this is how you can inject Glucagon. Everyone should get experience on how to inject even if they are not … leaders. Then the third thing would be to exaggerate the fact that in the class, if you were to be low, they need to know that the child may not even have registered the lesson so don't use it against the child's mother to say the child hasn't registered the lesson, because you want an extra favour because you want the lesson repeated. You have to believe the mother because in the situation ... because of the low sugar."

4.5.3 Parents' Experience of Teachers' Reactions and Teachers' Knowledge

Two parents felt that teachers were impatient, irritated, and some were unconcerned about their children. Teachers were also described as confused and afraid. The lack of knowledge was seen as the cause of such reactions. Some teachers even thought that the child was being naughty by wanting to have a snack in class. One parent did however acknowledge that the responsibility for a child with diabetes is great, and this can cause stress for the teacher.

Responses included the following:

Parent 1: "One of them was, like you know, vigilant ... you know ... like being a diabetic, he needed to go to the loo quite often, you need to go to the toilet. Then the sugars go quite low and they need to eat in between. Because he knows his condition he needs to tell his teacher. And some of them understood, but some of them got very irritated: 'You are disrupting the class', 'Can't you wait for the lunch break?' Or things like that. It was not easy going with all the teachers. They ... need to understand about diabetic kids."

Parent 3: "When I spoke to them and explained to them the condition, they all seemed a bit confused, because I don't think anyone is fully aware of it until you are in the situation and you have to treat the child. All of them seemed a bit confused and asked 'What is diabetes'? Many people have a perception that diabetes is that, perhaps this child eats too much sweets or the mother is negligent. That is the first thought you get. I don't know about teachers mostly, but also from a lot of other parents. With regard to the teachers I saw fear and confusion. I ... but

by the time we … I saw much more clarity. There is a lot for teachers to still learn in this regard."

Parent 1: "Some of the teachers I think were totally clueless on diabetic children. And some of the teachers like ... she knew a little bit because there were a few diabetic kids in her class in the previous years. But most of the teachers, I can say, they did not know how to cope with diabetic kids ... like taking a snack or his sugars are low, please I want him to eat even if it is during class time, and you are doing work, just allow them to have a snack. Because if he doesn't have a snack, you are going to get into trouble, because they don't even know how to cope with a child if his sugars run low, what they need to do ... I explained to them, but I also explained to my child, if you have felt low and felt you wanted to eat, just go ahead and eat, don't worry even if the teacher gets upset or gets angry with you. I will answer to the teacher for you. Because my child was so small, you know, and teachers ... when kids are still small and they are being naughty and mischief and things, there is some who just say, 'Just go and sit down' or 'Get out of my way, I am busy' or something of that sort. So if my child needed that attention at that time and if he wanted to eat at that time, I told him, just eat and don't worry about the teacher, and sometimes if you want to go to the toilet. And if it is a diabetic kid they need to run because their number one is quite heavy, or whatever, so I told him just leave the class, don't worry, you don't have to wait and ask the teacher. Don't worry. I think the teachers are clueless, but you know as the years went on and he grew up and he learnt reading his numbers and taking his own insulin, it was very easy for them because he handled it himself."

4.5.4 Questions Asked by Teachers

All the parents felt that the teachers did not ask appropriate questions due to their lack of knowledge.

The responses to the questions teachers asked were as follows:

Parent 1: "No, I won't say they asked appropriate questions."

Parent 2: "They were clueless … The classes were not that small but Child Z was the only diabetic in the school and people ... the headmaster ... there were quite a few Type 2s, and I think he was telling them, it is not that bad, don't take it too seriously."

Parent 3: "I don't think so, because the questions would be just like if we want to know anything we will call you or if we are not sure, we will ask you. Not really in depth where they would say, 'How would this affect her in school?' 'What do we do to make sure this doesn't happen or that doesn't happen?' I think if there was more guidance at schools where there would be diabetes education, it would really help much more than if the parents just come … I feel they lack the knowledge in that regard."

4.5.5 Teachers' Willingness to Help the Child and Accommodate their Treatment Routine

One parent did require the teachers to help with testing as well as with assisting in dosing the child using the pump. She took the initiative to teach the teachers everything they needed to know. She even made notes to assist the teacher, and she would call the teacher initially to remind the teacher about the snack her child needed at a certain time.

The other two parents said that teachers were not very helpful; they found the treatment and management to be a disruption. They showed impatience or, as said above, thought the child was being mischievous by wanting a snack. The teachers did not realise how important the snack in between is to keep the child's sugars from running low. One parent went to the extent of telling her child to eat his snack and to go to the toilet without the teacher's permission, to prevent him from going low or soiling his pants.

One parent described how her child was even chased out of class for having her snack, and also not allowed to finish her lunch because of the time taken to inject. This shows the limited knowledge of teachers, as well as an unwillingness to accommodate these children and their treatment and the management of their disease. This also gives some insight into the exceptions and allowances that need to be made when teachers have children with diabetes in their classrooms.

Responses included the following:

> Parent 1: "Basically, basically the teachers didn't bother, they didn't give a lot of attention to my child."

> Parent 1: "I explained to them but I also explained to my child, if you have felt low and felt you wanted to eat just go ahead and eat, don't worry even if the teacher gets upset or gets angry with you. I will answer to the teacher for you. Because my child was so small you know and teachers when kids are still small and they think they are being naughty and mischief and things, there is some just say 'just go and sit down' or 'get out of my way, I am busy' or something of that sort. So if my child needed that attention at that time and if he wanted to eat at that time I told him just eat and don't worry about the teacher and sometimes if you want to go to the toilet. And if it is a diabetic kid they need to run because their number one is quite heavy or whatever so I told him just leave the class, don't worry, you don't have to wait and ask the teacher."

> Parent 1: "I used to go to first lunch break, luckily I was a stay at home mom, so I used to go the first lunch break, and then the second lunch break I used to give him his insulin and he used to have his lunch in the car."

Parent 2: “At first she was on injections. Because once she injects she has to eat. As she went low they chased her out of class and when she was still on the injections and of course she knew all the carbs and how they related to everything . I had to stick it in her lunch box so even though she is low and she has to eat she still has to inject the insulin because not injecting for that something she eats now can make her go to high again. They couldn’t get past that one. So they kept on saying silly things like you don’t have to eat now if you have just injected. They just didn’t realise just how very volatile Type 1 can be. It goes from anything. She can be 23 now and just now she says she is 3.2. When she injected at lunch time they wouldn’t give her 5 minutes before lunch just to test. So as soon as the bell went she had to go out of class and then test, then inject so by the time the bell went she was half way through her sandwich. So eventually I had to go and fight and she got permission to finish whatever she was eating. Then they started saying she was taking chances and prefects started saying she has to stop eating. Then she had to go to the hall …They don’t understand why she has to keep on eating.”

4.5.6 Medication, Emergency Kit and Supplies

One parent left a glucagon injection in the staff fridge, labelled in case of an emergency. while another parent described how her child was not allowed to keep sweets with her in the event of her developing a low blood sugar level. One parent had to leave all the child’s supplies with at the school reception, even her sweets and juice, which she needed immediately in case she had a low. One parent that stayed home went in to check on her child and administer insulin.

In this regard, teachers need to make exceptions and keep sweets or juice in case a child’s sugars run low. Extra supplies should also preferably be kept with the teacher in a locked cupboard so that it can be is available can be accessed immediately when required. A child experiencing low blood sugar is not capable of walking around in order to collect emergency supplies, and because they lack concentration during a ‘low’ they may not be alert enough to take necessary measures to help themselves.

Responses from parents about the supplies and emergency items included:

Parent 2: “She had one teacher where I could leave a 500 ml coke, but as she went up in classes they didn’t want to know. They said she can go down to reception or to the other teacher. I had to leave things like Super Cs and those sorts of things. Most of those things also stayed in that little box in reception.”

Researcher: “So every time she felt maybe she was going low, she had to go down to the secretary and get stuff?”

Parent 2: “Yes, because she was not allowed to have sweets in the class.”

Parent 3: “With regard to the Glucagon emergency kit, firstly I think even though, let us say there is no diabetic kid in the school, I think every school should keep an emergency kit in the fridge. It should be stored with the Glucagon, the Lucozade and some jelly beans, just anything that can bring up sugars … because … The higher grade could be needing this and there would be someone in the school who would be in charge of it. But what I do is I make sure because … the emergency kit is kept in the school and should be labelled with the child’s name where all the teachers in the Foundation Phase should know that this is her food, but this can be used for another diabetic child. You must always know what it is for. The Glucagon emergency injection, a sugary drink as well, yes and sweets or whatever.”

4.5.7 Excursions and Camps

Two of the three parents never allowed their children to go on overnight trips. One parent reported that she went with her child on the school day trips when he was younger. One parent did send her child for overnight trips, but her child had to sneak in a phone so that she could contact the mother to tell her what her sugars were. The teacher also had to wake the child at night, because she suffered from bedwetting. The issue of lack of knowledge on the part of teachers came up again when discussing such trips.

Parent 2: “The first one she went for two days. She went with her initial teacher. They are not allowed any cell phones or anything like that. She was allowed to sneak one in. She obviously caused a lot of fighting among the other kids because now Child Z gets special treatment. Teacher Z was very nice; she would sms me during the day, told Child Z to keep her phone off. Then at night I would phone Child Z … let her put the phone on, then at one o’clock I had to phone her to test. While Child Z was testing, Teacher Z would come in and she would tell me if Child Z was groggy. Child Z is prone to wetting the bed. She always had to go to the loo in the middle of the night. Teacher Z would be very discreet and wake her up twice a night and tell her to go quickly. Then she would sms me to say that everything is fine. Then the next year they went on another trip and the lady that went with, her brother had died of diabetes. So she went overkill. But I think her brother had Type 2. She would say no, Child Z is not allowed this and Child Z is not allowed that. She tried putting the Type 2 diet restrictions on a Type 1. Since we are on the insulin pump she has quite a lot of freedom. I don’t like a lot of stuff she wants to eat, but she has a lot more freedom and to try and explain that to the woman. So they got to Spur and she says to Child Z, ‘I don’t think you should eat this’ … Then the other one she went just outside of town for two nights. I had to charge through with the cooler box because they freaked out when they heard she was a diabetic. So I had to go with the cooler box and say, alright she is allowed to eat this. Because she can eat most things, juices are the big thing. We try and keep her on … Finally, I found this guy and he said they

would try and incorporate everything, but every time she had to eat, she would sms me and I would give her a carb reading. Her cell phone was vital."

Parent 1: "Recently, like the last four years, I have allowed him day excursions, but when he was a little younger I used to actually go with him. Yes I used to go with him. I went to the zoo with him, to animal farms and things."

4.5.8 Exercise and Sports

Parents all found this to be a huge issue because a low sugar level can develop while doing physical activity. One parent went in when her child was practising for athletics to keep an eye on her. Another parent asked if her child could participate in certain races, so that she was done early in the day and not later in the day. The effect it can have on a child is seen in parent 2's response. Parents are afraid, therefore they are cautious when it comes to exercise and sports for their children.

Responses about exercise were as follows:

Parent 2: "The problem with them is if they get anxious and stressed they go up. So with practice she nosedives, so halfway even if we take the insulin pump off. She takes it off as soon as school ends because she is set to inject the basal every hour now, because of all the pre-teen hormones. So she would take it off after school and practice would be round about 45 minutes later. I would go and sit and then halfway through practice, she would run and come eat and quickly run back. Sometimes she could get it up and she could carry on and focus, and other times she would have to sit out."

Parent 3: "I have made all the teachers aware of it. The good thing is they accommodated me in terms of the sport … allow her to just run every two or three races, then get her off the field to have a snack and go back on the grounds, but a diabetic child shouldn't be eliminated from sports; they should be allowed to fully participate. My fear as a mother is that the child would come back with too low sugar levels."

4.5.9 Discrimination

One parent reported that her child was discriminated against and looked upon as the "broken one". Two parents talked about other children wanting to report their children, because they thought the insulin pump was a cellular phone. The other children need more knowledge too in order to understand that children with diabetes are not getting special treatment when the teachers show concern for their health.

Friends of the children with diabetes are actually their support in school. All three parents mentioned this at some stage during the interviews. One parent talked about how her son's

friends check on him and give him things when he has low blood sugar. She actually feels that more than the teachers, his friends will help him in an emergency. However, he is now in high school where he does not require assistance to manage his illness from teachers at this stage.

One parent complained that her child was not catered for when there was a party. She mentioned one incident where her child received a party pack specifically for someone with diabetes. She really appreciated the gesture from the parents.

Responses on the question of discrimination against their children included:

> Parent 2: “They did think that she got special treatment. Obviously the teachers never bothered to explain to them. They would tell the kids that she is a diabetic. The kids had no idea; when she got her insulin pump they thought it was a cell phone. So she would walk and put in her carb reading and the prefects would come and say that, ‘You are not allowed to have a cell phone at school.’ It would take about ten minutes of her break just to explain to them. There was one specific girl who targeted Child Z from the word go, when she thought Child Z was getting special treatment. She would go out of her way, she would say, ‘You are not that special that you can come and sit here’ or ‘Why are you up here?’ And she has to go to the loo and there is nothing there where they have to play, and she said, ‘You are not that special, you can keep it in till the rest of us come up,’ She had this one bully and I phoned the headmaster, and he eventually had to phone the mom and explain to the mom how it affected her. Mostly she was sort of labelled as the broken one, the diabetic child. I suppose it made them aware that there was something wrong with her, but they didn’t know how to treat her. The prefects had no idea. That is the funny thing. The kids her age were mostly fine. The ones that were supposed to understand, they would be the ones saying she gets special treatment. Her class was fine. Her friends helped her.”

> Parent 3: “You know, because my child is so quiet and she has been so … perhaps the diabetes has also affected her in that regard, because she would always feel a bit emotional and cry a lot, and when you ask her what is wrong, talk to me, she just cries. As she has grown up and become a little bit more independent and able to talk to me without being afraid, she still … Initially the children would laugh and say, what are you doing with needles in your bag? A certain child told her when she took out her pump … she was on the grounds and she took out her pump … to give herself carbs, and the child said I am taking you right now to the HOD because you are using your Blackberry in school. She had a shock and she started crying, because she knows she is not doing that, but immediately I think that if they hear they are being taken to the HOD, they think they are doing something wrong. So she would try and hide things … it can affect them a lot ... Some children laughed and it affected her a lot.”

Parent 1: “You know if it happens at school, his friends are very well informed and he’s got a group of very supportive friends. I can say if anything has to happen to my kid in school his friends are going to stand with him, nobody else. The teachers are not going to be there for him.”

4.5.10 Parents’ Recommendations on Information in the Guidelines

Parents wanted the following information to be imparted to teachers in the guidelines:

- Helping children to test sugar
- Assisting in administering insulin
- Checking on snacks
- Allowing toilet breaks when they are needed
- Knowing the symptoms of low and high blood sugar levels
- Showing compassion to the child or being sensitive to their needs

Responses on the information to be included in the guidelines were as follows:

Parent 1: “The first thing is you should tell each and every teacher of your child’s diabetes and that he is on insulin. I think they should at least be able to help them to check their sugars especially the little ones. To check their sugars and help them out, they can’t read so well. Help them to dial out their insulin. Like at snack time. They need to have 6 snacks a day. Three meals a day, broken up to six meals a day for a diabetic child. It is breakfast, then your ten o’clock, then your lunch, then teatime, then your supper, and then before you go to bed.”

Researcher: “In terms of teachers?”

Parent 1: “In terms of teachers ... allow them to give the child an opportunity to have that snack, even if it is class. Let them have it in class. Let them be informed that they have to go to the loo quite often. They should also be kept hydrated, they need lots of water. And I think they should be informed about the lows, what to look for. They feel tired, they feel lethargic, or they might just fall asleep on the desk. You know the signs of being low and also the signs of being high. The highs also, extramural activity. Sometimes the child is not very well, keep an eye on them. Also make sure they are checking their sugars.”

Parent 2: “Education is necessary. That is where Diabetes SA comes in. Say if a school had a diabetic child, they could send someone to come and do training. But Diabetes SA, they … this body ... So you can’t fight with the schools until you get the main thing right, and that’s training teachers.”

Parent 2: “I think a little bit of compassion would go a lot further than that irritability when she says, ‘I don’t feel well’. Sometimes she tests and she is fine. She just feels yukky. She doesn’t

understand that there are other illnesses. If she is nauseas it has to be diabetes, if she is hungry it has to be diabetes. It would be nice if they would be a little less irritable if something happens to her."

Parent 3: "The first thing with the guidelines is that perhaps everyone should have a copy of the diabetes booklet as such. Obviously, with low blood sugar this is the steps to take, then the steps to take for an emergency. What to look out for with high blood sugar, because usually high blood sugars they are dangerous, I do agree, but if it is just one high it could be based on stress and then everyone is freaking out at school that the child is not controlled, which is not true. The case of Type 1 diabetes … could result in a reading of 20. Then you have to … so you need to just learn about that, as well and the fact that also when a high becomes dangerous, because a high can be just as dangerous as a low. That is when you have to look for signs like if the child is vomiting, the child has got severe nausea or stomach pain, don't ignore, don't say go lie in the sick bed, because with a diabetic child that almost could become an emergency where a child could die because of high blood sugar. Things like that where they have to differentiate between high and low blood sugar, and just like more information about insulin pumps as well as injecting insulin, injection Glucagon. Perhaps also emotions of children, how they feel, it matters."

Parent 3: "I would actually have liked to see that there was a group of educated teachers walking into the school and everyone having this knowledge, so that it eliminated 50% of what I used to do as a mother. It eliminated my stress as such at home as well, because it is a continuous paranoia if you are worried about your child the whole day. There are some mothers who actually go in both the breaks to test, they are completely paranoid. I feel I don't want that, I want the child to lead a normal life, but if there is more education involved, yes that would be great and also the fact that everyone was more informed and willing to learn. Okay, never mind, I just give you a note that is one thing, but maybe after one week … Do you have a book I would like to read more, I am interested now. Or you know what, call me again and say, 'Don't you have more info for me or a DVD for me?' because then I know you care."

4.5.11 Diet

All the parents spoke about how they worried about their children going low due to not getting their snack or exercising. Above in section 4.3.12 the recommended diet was included. One parent provided a list to the teachers as well a list of party snacks that her child was allowed.

4.6 MISCONCEPTIONS ABOUT DIABETES

From the interviews with both parents and teachers some misconceptions that teachers had in their knowledge about diabetes were as follows:

- Eating sugar gives you diabetes.
- Diabetes can be contagious.
- Diabetes is caused by parental neglect.
- Type 1 and Type 2 diabetes are treated in the same manner.

4.7 SUMMARY OF FINDINGS

The teacher interviews brought to light that teachers do not have sufficient knowledge about diabetes. Their knowledge is vague and their responses to many questions showed a lack of conviction and great uncertainty. They also all admitted that they are in need of training or information which will assist them with children that have diabetes. Knowledge on symptoms of high and low blood sugar levels as well as what to do in an emergency is lacking. This is troubling especially since most of the teachers have had children with diabetes in their classes and should already have been aware that a child can easily experience a low if they are stressed due to a test or even while playing outside during lunch break.

In the interviews, another important aspect came to light which is the fears that teachers have initially when they have to assist or monitor a child with diabetes. Once teachers have the necessary knowledge it is hoped that it will reduce their fears to a large extent.

Children with diabetes are also excluded from certain activities like sports and after school extramural activities. This restricts their social development to large extent. Once teachers know how to monitor a child with diabetes, these children can fully participate in all activities.

Parents found teachers to be “clueless” about diabetes, which created anxiety and stress. Parents also disclosed that they had to come to school to give insulin as well as to monitor their children during lunch breaks and sports. If teachers have the necessary knowledge to assist children with diabetes, parents will be spared these trips to school.

Children with diabetes are also described by teachers and their parents as being stressed and nervous when they start school for the first time. They are preoccupied with worries of their snack which they have to eat during class time, as well as having to take their medication. (Refer to Figure 4.1 for a perceptive cartoonist’s view of the issues that a person with diabetes has to bear in mind constantly.) These anxieties will decrease if they know that their teachers know the consequences of them not getting their snack and insulin on time.

Parents also complained about teachers that have so little knowledge and understanding that they even scold the child when they need to test their sugar level or have a snack. One parent even described how her child was accused of being disruptive when she needed to

test or was sent out of the class when she needed to snack. The stress and complaints became so much for one parent that she removed her child from school and opted to do home schooling.

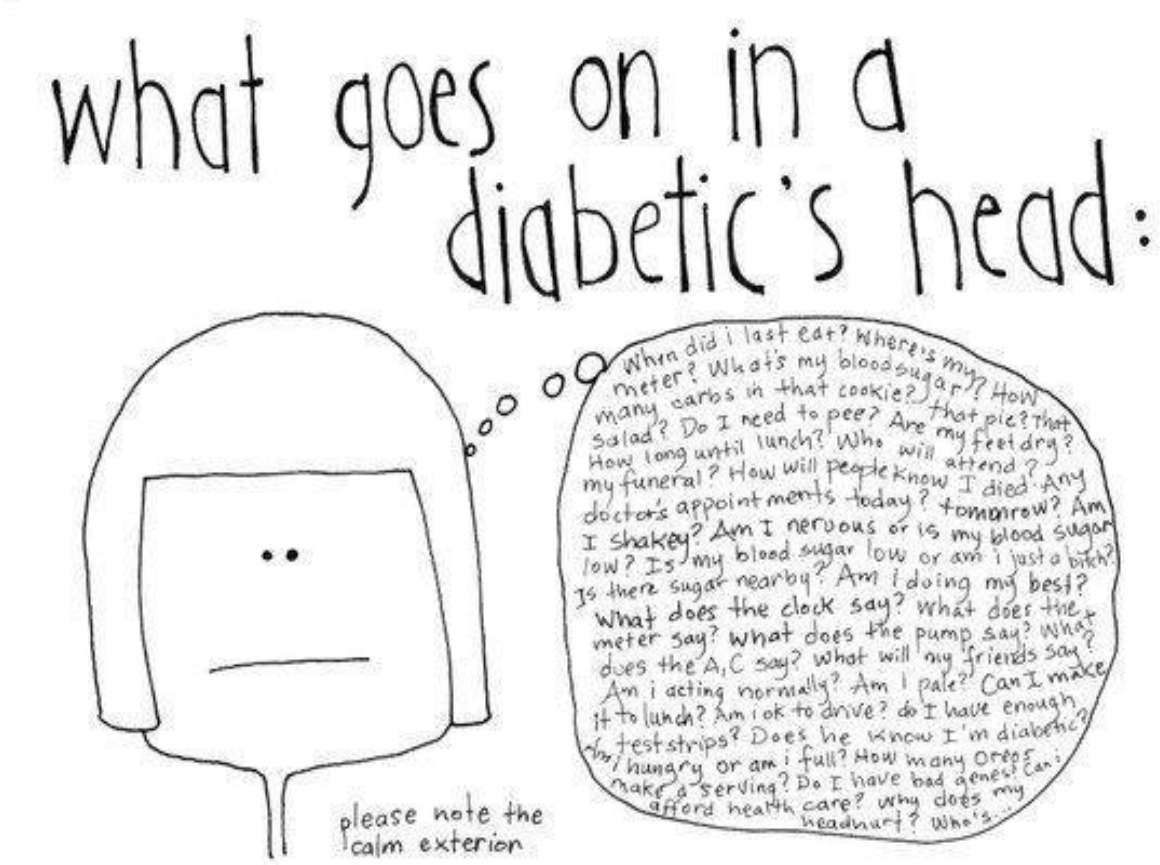

FIGURE 4.1: A cartoonist's impression of the thoughts of a person with diabetes
Source: (Sunday Funnies: All in Our Heads)

The information from the teacher interviews and parent interviews is contradictory in many cases because teachers claimed to accommodate children with diabetes and noticed no discrimination against them. Parents however described incidents of lack of cooperation as well as discrimination by both teachers and children.

A set of guidelines which include the emotional, social and cognitive effects of diabetes may make teachers more patient to accommodate and make special allowances for the child with diabetes. If teachers know about the anxiety and preoccupation with treatment and consequences of mismanagement that children with diabetes experience they may show more empathy towards them.

One purpose of this study was to determine what knowledge teachers require when faced with a child with diabetes in their classrooms. The interviews brought to light the various aspects of diabetes that teachers need to be aware of. Parents gave valuable information in this regard too. The guidelines will include the information teachers suggested they would like to be included, as well as parents' requests of the information they think teachers should be made aware of.

4.8 DEVELOPING THE GUIDELINES

Using the themes from the interviews as well as the literature study, the guidelines were drawn up. From the themes and from the interviews the following were identified as important topics to be included in the guidelines:

- An explanation of diabetes
- The symptoms of diabetes
- Identifying the symptoms of low and high blood sugar levels
- Procedures to follow in case of a high or low blood glucose level
- Helping children to test sugar
- Assisting in administering insulin
- Checking on snacks
- Allowing toilet breaks when they are needed
- What to do about exercise, sports and excursions
- Awareness of the emotional, social and cognitive effects of diabetes
- Making concessions for children to accommodate the treatment regimen
- Showing compassion to the child or being sensitive to their needs

All the above information was extracted from the literature and from the interviews – and the guidelines were compiled. The questions teachers ask parents reflects on the knowledge they have about the topic. The guidelines therefore included some pertinent questions teachers need to ask parents in order to gain relevant information on the condition of the child with diabetes.

When compiling these guidelines, the following aspects were also considered: language, the font, the layout and the length of the document. (See Addendum 11.)

- Language – I wanted to simplify the terms and use language that would be easily understood.
- Font – An easy clear font in comic sans is easily deciphered and can be used when printing the guidelines.

- Length – I tried to keep the guidelines as short as possible. This was because I did not want to overwhelm teachers with a lengthy, detailed and complicated set of guidelines. It is meant to introduce them to the topic so that they can ask informed questions to parents when they encounter a child with diabetes.
- Format – An A5 booklet can be used to print the guidelines because it is small and therefore easier to handle.

4.9 RESPONSE TO THE GUIDELINES

The guideline was compiled as well as a questionnaire (see Addendum 7) to critique the guideline; both were given to the teacher participants. In action research, knowledge is derived from practice, and practice is informed by knowledge in an ongoing process (see section 3.3). As already mentioned, the focus was on improving support to children with diabetes by developing guidelines (see section 3.5), through consulting the literature (see Chapter 2), as well as parents and teachers (see Chapter 4). The action research therefore involved research and development of the guidelines; in this section the responses to the questionnaire critiquing the guidelines will be reflected on in order to improve them.

A summary of the responses to the questionnaire will be discussed next.

4.9.1 What is your Impression of the Guidelines?

The guidelines were well received by all the teachers. The words used to describe it were: “Good, acceptable, very informative, well thought out, excellently laid out.”

Criticism on this question was that it needs colour because the guidelines were in black and white. In the final guidelines, some colour will be added to make it more attractive. (See Addendum 11.)

4.9.2 Do you understand Diabetes better after reading the Guideline?

To this question all the teachers agreed that they had a better understanding, and comments included

- It is clear and informative.
- It clears what parents share with teachers.

4.9.3 Is it Easy to Understand?

All the teachers agreed that the guidelines were easy to understand.

4.9.4 Was there anything that you did not understand or that was not clear?

Of the six teachers, only one teacher commented that more information on how the insulin pump works should be included, as well as more pictures. In the final guidelines, the merit of this suggestion will be borne in mind to decide if it is practical to include this information because there are many different models of insulin pumps that operate differently. (See Addendum 11.)

4.9.5 Is the Font Legible and Appropriate?

The font was easy to read and appropriate, according to all the teachers.

4.9.6 Is the Document Length Appropriate? Or is it too Long or Short?

Three teachers said the font should be made bigger. The font used was 11 point. The reason I used a smaller font is so that the guideline does not look so long, that it would discourage teachers from reading it. Perhaps a larger font will be easier to read. This will also be considered when creating the final guidelines. (See Addendum 11.)

4.9.7 Is there Anything you would Like Changed and Why?

Two teachers said that a more detailed section on the use of the pump should be included. One teacher said that a little more on the causes of diabetes should be included.

The reason that detailed information on the pump was not included was because it is not the only device being used. This information can be relayed by parents directly to the teachers, because there are always new devices or new pumps that can come onto the market that may differ from the ones used now. The causes of diabetes were not elaborated on because it will make the guidelines too long, and the purpose of the guidelines is to give guidance on how to handle a child with diabetes and not to relay complicated medical information.

4.9.8 Do you Think it will Help Teachers?

All the teachers agreed that the guidelines will benefit them.

4.9.9 Do you Think it is Sufficient to Assist a Teacher that has a Child with Diabetes in the Classroom? If not, what else is Required?

All the teachers thought that the set of guidelines was sufficient. One teacher added that it was sufficient, provided that parents assisted too.

4.9.10 Is there Anything you are Not Clear About or would Like Included in the Guidelines?

One teacher included a few more symptoms that she would like included, namely nausea and cool pale skin. Nausea is already included in the first draft of the guidelines. Becoming pale will be included as one teacher did mention that a parent told her the child becomes pale when she gets a low blood sugar level. One teacher commented that it must be stated that the strip for testing sugar must be covered fully or else the tester will say “error”. This is important too, and was overlooked in describing the testing of blood sugar. The final guidelines will be revised to include this information.

4.10 CONCLUSION

In this chapter the empirical data was analysed using content analysis. A set of guidelines was developed, using the data as well as the literature study.

The teachers that were interviewed acknowledged their lack of knowledge about diabetes, and welcomed the idea of guidelines to assist them. Teachers also described their fear at the daunting task of taking charge of a child with diabetes. “It’s like looking after a newborn child,” was the way one teacher described it.

The lack of knowledge in teachers also points to parents’ reluctance to entrust teachers with their children with diabetes. One parent used the term “clueless” to describe her encounter with her child’s teacher. Parents therefore showed enthusiasm for the guidelines. One parent said it would cut down 50 per cent of her work and stress in explaining her child’s condition to the teacher.

The feedback from teachers showed that they shared similar experiences and emotions when they were confronted with children with diabetes. Parents also share similar experiences and obstacles when they have to send their children with diabetes to school.

Once all the data was analysed the guidelines were devised and given to teachers to review. The suggestions and comments given by teachers were used to revise the guidelines.

The effects of diabetes are enormous on a child, and by educating teachers, children can have more positive experiences and may be less stressed or anxious if they know that their teachers will be there to assist them with managing their diabetes. With an increase in knowledge and education, acceptance and tolerance will more likely increase.

In the final chapter, a summary of the literature study and empirical investigation will be discussed. The strengths and limitations of this study will also be evaluated and recommendations for future research will be discussed.

Courage and strength is not the absence of fear –
it's refusing to assume the role of a victim.
Anne Wafula Strike

(Disability quotes - collection of quotations regarding disabilities)

CHAPTER 5
FINDINGS, RECOMMENDATIONS AND CONCLUSION

Who I am
Mummy calls me sugar babes,
Daddy calls me cuppy cakes

Yes that's me I am so sweet, I am diabetic yet I am energetic

Today I may be high I feel like I can fly
Tomorrow I am low then I become slow

But each day I smile a while and run a mile
It's so much fun eating a bun in the sun with a label stuck while I'm not on the run

My best friend is my insulin pump
That hangs on me like a bump
Who I will never dump

Oh what fun it is to be this sweet

Mummy calls me sugar babes,
Daddy calls me cuppy cakes

Anonymous
(7 years old, diagnosed August 2007)

5.1 INTRODUCTION

The Education White Paper 6, which uses the principles of the South African Constitution, was quoted in Chapter 1 (see section 1.3) as developing an inclusive education that will infuse special needs and support services throughout the system, as well as a barrier-free physical environment and a supportive and inclusive psycho-social learning environment. The *White Paper* further states that it envisages providing effective developmental programmes for teachers (Department of Education 2001:9). It was with this in mind, as well as the rising numbers of children with diabetes, that this study was undertaken. It was found that teachers are not geared to provide the appropriate support to children with diabetes (see section 1.3).

In Chapter 4, the data received from interviews with teachers and parents of children with diabetes was analysed, with the compilation of the guidelines for teachers in mind. After the various aspects of diabetes were researched, it proved to be a challenging task to simplify and carry across the information in "layman's" terms. The guidelines devised were simple, with basic terminology to render it user-friendly. The needs of teachers and parents alike were considered as they both form part of the team involved in the life of the child.

The guidelines were handed to teacher participants in the study, and feedback was obtained by means of a questionnaire. (See Addendum 10.) The guidelines received unanimous approval by all the teachers, and the feedback was positive regarding the information it contains as well as its usefulness. The guidelines were also revised based on recommendations received from the teachers. (See Addendum 10.) The enthusiasm of the teachers for the guidelines was encouraging, and it seems that the goal of the study was accomplished.

5.2 PURPOSE OF THE RESEARCH

The primary objective of this research, as stated in section 1.7.1, was to develop a set of guidelines for South African teachers, in order to provide support to learners regarding the physical, emotional, cognitive and social effects of diabetes.

In order to achieve the primary aim, the following research questions had to be answered first:

a) What are the physical, emotional, cognitive and social effects of diabetes in children in school?
b) What knowledge do teachers require when faced with children with diabetes in their classrooms?

The information from the literature was used to determine the first question, and then the knowledge that teachers require was identified by teachers and parents during the empirical investigation. The knowledge from all three sources was then collated to develop the guidelines.

5.3 SUMMARY OF LITERATURE STUDY

5.3.1 The Physical, Emotional, Cognitive and Social Effects of Diabetes in Children

The effects of diabetes were discussed at length in the literature review. The emotional effects ranged from developing anxiety disorders, feeling “different”, and thereby developing a low self-esteem as well as a higher risk for developing psychological disorders (see section 2.12). It was also found from the literature review (see section 2.14) that diabetes does have an effect, although mild, on cognitive functioning. The effect on cognitive functioning is worse if the child’s diabetes is not controlled by keeping the blood glucose levels stable.

Social effects of diabetes, especially in school-going children, can be restricting because of the treatment regimen as well as dietary restrictions. It was found that parents more often than not do not send their children on school outings or for sporting activities, because of the fear of their children's sugar levels going out of control. In the initial school years, parents accompany their children on outings and sports activities to ensure their children's safety (see section 4.5.7 & 4.5.8). This deprives the child of exposure to experiences outside the normal school routine.

5.3.2 Knowledge Teachers Require when Faced with Children with Diabetes in their Classrooms

The literature study highlighted the knowledge that teachers should acquire in order to deal with learners that have diabetes. The literature study began by explaining the terms related to diabetes. It also comprised explanations about the different types of diabetes, the causes of diabetes, as well as the various treatment options of diabetes. The various medical devices used in treating diabetes were also briefly researched, as well as injecting and care of equipment. Testing of blood sugar levels was also included as it is vital in determining how much of medication should be administered. The emergencies that can arise due to diabetes, such as too high and too low blood sugar levels were discussed at length, because of their relevance in guidelines on diabetes.

The literature study was then used to develop themes surrounding diabetes and children, as well as their needs within the school setting. This served as a tool to devise the interview schedule for the teachers and parents. Once the interview schedules were compiled, permission was requested from various institutions in order to execute the empirical study.

5.4 SUMMARY OF THE EMPIRICAL INVESTIGATION

The empirical investigation began by surveying teachers' knowledge about and perspective on diabetes. It then focused on the challenges and obstacles parents who have children with diabetes experience in school. These were used to determine what knowledge teachers need about diabetes, as well as how they can accommodate children with diabetes to assist them to perform at their optimum in school. As such, it combined the experiences of parents with knowledge that teachers may need.

The information from the literature study and the interviews was compared, to see if they correlated. In all cases the information from the two concurred. However, it must be explicitly stated that only when one comes directly into contact with a parent that has a child with diabetes, does the extent of the implications and effects really come to life. The literature study in my opinion did not do justice in illuminating the plight of children with diabetes in the

school environment. Diabetes is life-threatening as well as life-altering. The routine and complications as well the emotional, social and cognitive effects can be debilitating if not correctly handled.

Parents and teachers alike spoke about the emotional effects of diabetes on a child; the anxiety it creates in a child because of missing a snack or not being able to test; the social stigma and lack of confidence due to “feeling different” were also noted by teachers (Anderson & Brackett 2005:10). Teachers also clearly noticed the cognitive effects that diabetes has on a child. They indicated that it causes the child to become tired and to lose concentration, particularly as the school day progresses (McCarthy et al. 2002; Fritsch & Olshan 2011:2; Ohmann et al. 2010).

Parents and teachers both discussed the huge social implications that diabetes has on a child in school. Children with diabetes cannot share lunches with other children, they feel self-conscious because they have to have snacks and take medication at odd times during teaching time. They are also restricted or excluded from sporting activities and outings due to fear on the part of their parents. Children are also victimised due to their routine and having to wear a pump on their abdomens. However, it was also ascertained that once the child becomes more mature, they actually receive support from their friends and much of their anxiety decreases once they are able to test and medicate themselves without assistance from teachers.

The empirical study also uncovered the effects on parents who have children with diabetes as well as teachers that have to assist these children. Parents’ emotional reaction to sending their children to school was a very prominent theme. Parents constantly fear that their children will become ill at school. This causes a great deal of stress and anxiety in them (see section 1.3). They also often have to be available to go to school to test and administer medication to their children. Parents also showed disappointment in the lack of knowledge and understanding teachers have about diabetes. Parents spoke openly of how their children were victimised by being sent out of the classroom when they needed a snack to maintain their blood glucose levels. Parents also opened up about how in some cases their children could not have their emergency medication and sweets required during low blood glucose on their person. This could compromise their health. These issues were alarming to me because it goes against the constitutional right of equity, respect of differences and inclusion within the education system. (See Addendum 9.)

Teachers on the other hand voiced their reactions to being responsible for a child with diabetes. They confessed that they are afraid to have children with diabetes in their

classrooms because of complications that may develop as well as having to assist the young child with testing glucose levels and administering insulin. They also mentioned that the routine of the child with diabetes needs adjustment on their part because it can be disruptive to their teaching schedules. They did however say that once they got used to it, it became part of their routine. In most cases teachers had to look up information themselves or rely totally on parents for information on how to handle the child. Teachers also empathized with the plight of the child and in all cases teachers showed a willingness to have children with diabetes, provided they receive the appropriate guidance. (See Addendum 9.)

It must be reiterated that certain information received from the teachers seemed incongruent to the perception of the parents who have children with diabetes. Parents experienced that their children were discriminated against by both teachers and children. Parents also implied that teachers lacked empathy and concern and in some cases prevented the treatment regimen of their children with diabetes to proceed as prescribed. The merit of choosing to use data triangulation for this study to gain an objective view seems to have been a wise choice because it brought to light some of the conflicting viewpoints between the teachers and parents.

Once all the input from the interviews were analysed they were grouped under the themes identified by the literature study. The common issues that both parents and teachers emphasised, were identified. The guidelines were then designed with the information from three sources: the literature study, teacher interviews and parent interviews. As stated above this gave a broader perspective on the topic and ensured integration of both the needs of teachers and the expectations of parents that have children with diabetes.

The empirical investigation also confirmed that teachers' knowledge about diabetes is not sufficient to assist a child with diabetes in the class (see section 1.3). Despite the fact that five of the six teachers interviewed had already taught children with diabetes, they were not adequately informed about most aspects of diabetes or the procedures to follow in the case of a diabetic emergency. Most of the teachers admitted that a set of guidelines would be very useful.

From the empirical investigation, parents and teachers alike gave their opinion on what the guidelines should contain. This information proved invaluable as it immediately zoomed in on the practical needs of the main stakeholders in the life of a school-going child with diabetes. An explanation of diabetes, the symptoms of diabetes, procedure to follow in case of a high or low blood glucose level were deemed important. Testing of blood glucose levels was also something that was requested to be included in the guidelines because it is a vital part of the

life of a diabetic. Parents also requested that certain concessions should be made for their children due to having diabetes. These include being allowed to go to the bathroom at any time and being allowed a snack without being singled out as being difficult. These allowances are required to avoid embarrassing accidents and to optimise health. All the above was extracted from the literature and from the interviews – and the guidelines were compiled.

Parents of children with diabetes were very enthusiastic about the guidelines, because they all admitted to facing great challenges when their children started school or moved to a new class while in the Foundation Phase of their schooling careers. Parents complained about the lack of knowledge of teachers regarding diabetes and its treatment. They also voiced concern about their children's safety, because they had little confidence in the efficiency of teachers in picking up signs of low or high blood sugar levels. Parents in fact showed more confidence in their children's friends assisting them than in their teachers. The empirical investigation opened up the doors to the world of the child with diabetes in school, and the many barriers they face in merely maintaining their health as well as being included in all activities in school. This concurs with the research findings (Wagner et al. 2006) in which parents reported that they adjusted their children's medication because of lack of cooperation at school, and their children's diabetes affected decisions they made regarding field trips, extracurricular activities as well as their future plans after school .

It was concluded that the task of handling a child with diabetes is daunting and challenging for teachers, and guidance is most definitely required. Parents in particular said it would help them because it would give them peace of mind as well as more confidence in teachers when they entrust their children in their hands. The guidelines that were compiled were then handed to teachers, with a questionnaire that contained questions to review the guidelines. After having read the guidelines, teachers filled out the questionnaire to assist in fine-tuning it to their needs. The feedback received was used to revise the guidelines based on the reviews. All the teachers were satisfied with the guidelines and expressed that such a set of guidelines would have helped them when they had a child with diabetes for the first time.

5.5 SHORTCOMINGS OF THIS STUDY

Due to the qualitative nature of the research, the findings apply only to the sample used in this study, and can therefore not be generalised.

- Although the themes arising from the data are adequately varied, it is assumed that a larger sample could have offered more diversity.

- Interviews with medical doctors would add more credibility to the guidelines. Certain aspects such as blood sugar counts were written in consultation with a specialist physician and a professor.
- Consultation with teachers who are members of the Diabetes Association of SA to review the guidelines should have been included.
- Interviews with learners could have shed more light on their expectations of teachers as well as their own experiences.

5.6 RECOMMENDATIONS FOR FURTHER STUDY

This study focused only on the effects of diabetes in school with the goal of compiling a set of guidelines. The perceptions of teachers and parents were used to decide what knowledge was required. It could be informative to talk to children to get their perceptions of how their diabetes affects them in school.

- Literature on the psychological issues could benefit from attempting to understand why some learners with diabetes and parents that support them are more resilient and experience the disease as less traumatic than others.
- It could be interesting to examine health care providers' attitudes and to determine whether they consider psychosocial factors when treating children with diabetes.
- The emotional consequences of the treatment that uses invasive injectables could also be an area for further investigation.
- The role of an educational psychologist in the school setting can be studied to determine how they can be a means of support to both children with chronic illnesses and teachers that are required to assist them.

5.7 CONCLUSION

This study uncovered the tremendous difficulties that children with diabetes encounter at school. The study also concurs and confirms what other studies have found with regards to the social, emotional and cognitive problems that diabetes creates for children. The study further emphasises the necessity for effective support for children with diabetes that are in the Foundation Phase of school.

The study culminated in integrating information gained from the literature study and interviews with teachers and parents in developing a simple, short set of guidelines for teachers. The guidelines should give teachers a head start when faced with a learner with diabetes. The type of questions teachers ask parents reflects on the knowledge they have about the topic. The guidelines therefore included some pertinent questions teachers need

to ask parents in order to gain relevant information on the condition of the child with diabetes.

Teachers' knowledge regarding diabetes at present seems too vague to render competent assistance to a child with diabetes especially in the event of a diabetes related emergency. One has to however also understand the plight of teachers when faced with the overwhelming task of taking responsibility for a child with diabetes. The following remark from a teacher participant gives us some idea of the emotions they experience when challenged with handling a child with diabetes. "I was so scared because it was like having a newborn baby that you keep on checking, you know, like the child doesn't fall off the bed. It is like the child is totally dependent on you. I was very scared and I really, really didn't know anything about diabetes. Nothing. It was very daunting for me." Some teachers however seemed unaware of this enormous responsibility placed on their shoulders when they have a child with diabetes in their classrooms. This seemed to make them complacent about taking extra precautions with a child with diabetes.

The parent participants in this study all voiced their concerns about this complacency and lack of knowledge which creates feelings of fear in them about their children's safety at school. The most salient factor that emerged from this study is the reality of the various challenges faced by parents and their children with diabetes in negotiating the otherwise simple day to day routine of school. One incident that stands out to highlight the fears and concerns of parents was the incident in which a parent spoke about her reaction on seeing an ambulance parked outside the school one day. It was the end of the school day and on her arrival to collect her child she saw the ambulance at the school entrance. She thought her worst fears had come true. She graphically described how she kicked off her sandals, leaving the key in the ignition and the car door open and ran to see who was in the ambulance because she was convinced it was her son who had experienced a diabetic 'low'. These parents and children live with the reality of having to constantly worry about a treatment regimen that can ultimately determine the difference between life and death.

I would like to conclude with the words of Helen Keller, "Although the world is full of suffering, it is also full of the overcoming of it" (Hellen Keller Quotes). Her words encapsulate the vision for this study which is to open doors and smooth the pathway for children with diabetes who have every right to feel safe, secure and happy in school.

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ADDENDA

ADDENDUM 1 – TEACHER INTERVIEW SCHEDULE

1. What do you understand by the term diabetes?
2. Do you have any knowledge about the different types of diabetes? If so, please elaborate.
3. Do you think it is an illness that is becoming more prevalent? If so, tell me more.
4. Do you have any idea what causes diabetes? If so, please elaborate.
5. Are you aware of any symptoms of diabetes? If so, can you tell me the symptoms?
6. Diabetes has complications; are you aware of any of them? If so, please name them.
7. How do you think diabetes is treated and managed?
8. Are you aware of what a diabetic emergency is?
9. Have you heard the term hypoglycaemia before?
10. If so, what do you understand by this term?
11. What do you understand by the term hyperglycaemia?
12. What effect do you think diabetes has on a child that has diabetes in school?
13. Do you think diabetes has an effect on the cognitive functioning of the child? If so, tell me more.
14. What is your take on exercise and diabetes?
15. Do you think a child with diabetes can exercise or participate in sports?
16. Have you ever had a child with diabetes in your class?
17. Would you be willing to take responsibility for a child with diabetes in your class if you have not already done so?
18. Do you think your knowledge at this point is sufficient to handle a child with diabetes?
19. What training, if any, did you receive in dealing with diabetes in your teacher training?
20. Do you think teachers need guidelines handy to handle children with diabetes?
21. If you indicated that teachers need guidelines, in what form would you suggest information about diabetes? Printed guidelines or CD or both?

ADDENDUM 2 – INTERVIEW SCHEDULE FOR PARENTS

1. You have a school-going child with diabetes; when was your child diagnosed? What was the diagnosis (i.e. the type of diabetes)?
2. How does the diagnoses affect your day-to-day life?
3. When your child started preschool or school, how did you feel about leaving him/her in the care of a teacher for the full school day?
4. Did you inform the school and teacher about the diabetes?
5. How did the teacher react?
6. In your opinion, was the teacher knowledgeable about diabetes? What gave you the impression? How did you feel?
7. Were you confident that the teacher realised the implications of diabetes on the life of a child?
8. Was the teacher willing to assist your child?
9. In your opinion, was the teacher anxious about the care of your child?
10. Did you have to explain to the teacher the symptoms they need to be aware of in the event of a high/low blood sugar level and what to do?
11. How were the lunch and snacks handled when your child started school? Is it different now?
12. Did/does your child need medication during school hours? If so, who helped your child with it? What form of medication is it? If injections, who gives it and how is it disposed of in school?
13. Did/does your child have to test his/her sugar level in school? If so, who assisted and where did/does your child do it?
14. What worried you the most about your child's health when you had to leave your child at school? Do you still have the same concerns?
15. Did your child ever have an emergency, e.g. having a low blood sugar/high blood sugar level at school? If so who reported it? How was it handled?
16. Do you leave anything in school that can be used in the event of an emergency? Glucagon/juices etc.
17. Has the diabetes made you wary in sending your child on trips? Day/overnight?
18. Does your child participate in sports at school? Do you have to adjust the medication if they do sports?
19. What information do you think should be contained in guidelines for teachers about handling children with diabetes in the classroom?
20. What would you have liked your child's teacher to know when your child started school?

21. Has your child ever been discriminated against/bullied at school due to their diabetes? If so, what was done about it? Were you satisfied with the outcome?

ADDENDUM 3 – CONSENT LETTER

Dear research participant,

Thank you for allowing me to approach you to assist me with my research. The goal of this study is to obtain detailed information on the knowledge that teachers and parents have about diabetes, in order to draw up guidelines to assist teachers when they encounter children with diabetes in the classroom. This in-depth, qualitative study is intended to uncover experiences, problems and practical solutions in this regard.

Please be informed of the following:

- This is a Master-level study conducted by myself at the University of South Africa (UNISA) with no sponsorship from any company or organisation.
- The title of the dissertation is “Teachers supporting learners with diabetes”.
- The supervisor at UNISA for this study is Professor D. Kruger.
- The ethical research issues surrounding this study will be approved by UNISA as well.
- Your participation is voluntary and you may withdraw at any stage without any consequences.
- Participants that have experience in the topic will be preferred.
- No remuneration will be provided to you or any family, parent, teacher or otherwise in return for such participation.
- Your identity is protected and you will be given a false name in the final write-up of the interview. Your real name will never be mentioned in any presentation of the findings of this study and you will therefore remain anonymous.
- You will be required to sign a consent form should you wish to participate.
- This interview will be tape-recorded. I will transcribe the interview personally and no one else will have access to my raw data or the recordings except for my supervisor. This means that your responses in the interview is treated as highly confidential.
- No risk to participants is foreseen.
- Your responses, along with those from other interviewees, will be combined in the presentation of the findings to further protect your privacy.
- The data for this study is obtained from volunteer interviewees from different sites in Tshwane.
- There will be a total of 10 participants at the most, which will comprise teachers and parents.

- The interview will take about 20 minutes to 1 hour. Once I have all the data required I will compile a set of guidelines for teachers about diabetes. I will then hand the guidelines to all the teacher participants and ask them to fill out a questionnaire to determine if the guidelines are user-friendly. The guidelines will then be revised according to suggestions given.
- This study will be used for dissertation purposes and the guidelines may be published to help teachers.
- The interview will be stored on my personal password locked computer and will be kept for a period of 5 years.
- A copy of the guidelines that will culminate from this study will be given to each participant.
- Should you like to read the dissertation, please tell me and I will give it to you as soon as it is available for publishing.
- You are welcome to ask any other questions that you may have.

I thank you again for your most valued cooperation.

Lutfiyya Chothia

Tel: 0832363069

Fax: 012-370-3424

E-mail: luts04@gmail.com

ADDENDUM 4 – CONSENT FORM

Research Study by Lutfiyya Chothia
Title of research study: "Teachers supporting learners with diabetes"

I, _____, (name and surname of parent/teacher) hereby give my consent to participate in the above-mentioned research study. I am aware that no risk is anticipated in relation to my participation in this study and that I am entitled to withdraw this consent at any time without penalty or consequence.

I am further aware and accept that no remuneration will be provided to any family, parent, and child or otherwise in return for such participation.

I understand that I am under no legal obligation to provide this consent and same is herewith given on a voluntary basis. By providing this consent and by appending my signature to this document, I irrevocably confirm that I authorised consent to the researcher to use the information I will provide.

Signed at _____ on this the _____ day of _____ 2013.

_____ _____

Signature: Parent/Teacher Date

ADDENDUM 5 – LETTER SEEKING PERMISSION FROM THE SCHOOL

Lutfiyya Chothia

BA (Unisa), PGCE (Unisa), BEd Honours (Unisa), Med Educational Psychology (Unisa)
Intern Psychologist
PSiN 0124591

429 Van Dyk Street
email:luts04@gmail.com
Erasmia
1803

Tel: 012 370 3424

Cell: 0832363069

Name of school: Date:

The principal

Permission to conduct research

I am a master's student and require your assistance with my research project. I require your permission to interview two Foundation Phase teachers from your school. I would prefer teachers that have had experience with learners that have diabetes.

The goal of this study is to obtain detailed information on the knowledge that teachers and parents have about diabetes. This will be used to draw up a set of guidelines to assist teachers when they encounter children with diabetes in the classroom. This in-depth, qualitative study is intended to uncover experiences, problems and practical solutions in this regard. Please be informed of the following:

- This is a Master-level study conducted by myself at the University of South Africa (UNISA) with no sponsorship from any company or organisation.
- The title of the dissertation is "Teachers supporting learners with diabetes".
- The supervisor at UNISA for this study is Professor D. Kruger.
- The ethical research issues surrounding this study will be approved by UNISA as well.
- Your participation is voluntary and you may withdraw at any stage without any consequences.
- Participants that have experience in the topic will be preferred.
- No remuneration will be provided to you or any family, parent, teacher or otherwise in return for such participation.

- Your identity is protected and you will be given a false name in the final write-up of the interview. Your real name will never be mentioned in any presentation of the findings of this study and you will therefore remain anonymous.
- You will be required to sign a consent form should you wish to participate.
- This interview will be tape-recorded. I will transcribe the interview personally and no one else will have access to my raw data or the recordings except for my supervisor. This means that your responses in the interview is treated as highly confidential.
- No risk to participants is foreseen.
- Your responses, along with those from other interviewees, will be combined in the presentation of the findings to further protect your privacy.
- The data for this study is obtained from volunteer interviewees from different sites in Tshwane.
- There will be a total of 10 participants at the most.
- The interview will take about 20 minutes to 1 hour. Once I have all the data required I will compile a set of guidelines for teachers about diabetes. I will then hand the guidelines to all the teacher participants and ask them to fill out a questionnaire to determine if the guidelines are user-friendly. The guidelines will then be revised according to suggestions given.
- This study will be used for dissertation purposes and the guide may be published to help teachers.
- The interview will be stored on my personal password locked computer and will be kept for a period of 5 years.
- Should you like to read the dissertation, please tell me and I will give it to you as soon as it is available for publishing.

If the school is willing to accommodate my request I will require a letter stating such consent.

The school's cooperation will be highly appreciated.

Thank you

Lutfiyya Chothia

ADDENDUM 6 – OBSERVATION CHECKLIST

Name: _____

First impression : (Positive/ negative/ nervous/ confident)
General demeanour : (Friendly/ unsure)
Posture : (Open/ closed)

The checklist below will be ticked in the event that changes that are not considered to be normal, occur.

General mood – positive	
General mood – negative	
Posture – upright	
Posture – slouching	
Posture – open and turned towards researcher	
Posture – closed – arms and legs crossed	
Facial expression – neutral	
Facial expression – smiling	
Facial expression – frowning	
Facial expression – disapproving/ pursed lips	
Stroking chin	
Eye contact – appropriate/ good	
Eye contact – blinking rapidly	
Eye contact – frequently looks away	
Eye contact – thoughtful – stares up or down	
Eye contact – sustained/ staring	
Hands – fidgeting/ biting nails	
Hands – palms open, relaxed	
Hands clenched into fists	

Hands clasped behind back	
Hands to cheek – in thought/ evaluating	
Hands on hips/ commanding stance	
Legs – tapping constantly	
Legs – crossed	
Legs – apart / comfortable	
Legs with knees towards researcher	
Legs – apprehensive – locked ankles	
Tone – friendly/ enthusiastic	
Tone – loud/ aggressive	
Tone – soft/ unsure	
Tone – bored/ distracted	
Change in skin colour – reddening	
Change in skin colour – becoming pale	
Congruence between verbal and non-verbal messages	

Other comments or observations that are relevant:

_____

_____

ADDENDUM 7 – QUESTIONNAIRE FOR TEACHERS REGARDING GUIDELINES

Feedback on the guidelines

1. What is your impression of the guidelines?
2. Do you understand diabetes better after having read the guidelines?
3. Is it user-friendly and easy to understand?
4. Was there anything that was not clear or difficult to understand e.g. the language?
5. Is the font legible and appropriate?
6. Is it an appropriate length or too long or too short?
7. What would you like changed if anything?
8. Do you think it will help teachers?
9. Do you think they will use it or file it and forget about it?
10. Is there anything else that you would to ask or tell me regarding the guidelines?

ADDENDUM 8 – PERMISSION FROM INSTITUTIONS

Gauteng Department of Education

GAUTENG PROVINCE
Department of Education
REPUBLIC OF SOUTH AFRICA

For administrative use:
Reference no. D2013/323

GDE RESEARCH APPROVAL LETTER

Date:	**18 March 2013**
Validity of Research Approval:	**18 March 2013 to 20 September 2013**
Name of Researcher:	**Chothia L.**
Address of Researcher:	**P. O. Box 7133**
	Centurion
	0046
Telephone Number:	**012 370 3424 / 083 236 3069**
Fax Number:	**012 322 1224**
Email address:	**luts04@gmail.com**
Research Topic:	**Teachers supporting children with Diabetes: A Psycho-educational perspective**
Number and type of schools:	**TWO Primary and ONE LSEN School**
District/s/HO	**Tshwane South**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

Office of the Director: Knowledge Management and Research
9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0506
Email: David.Makhado@gauteng.gov.za
Website: www.education.gpg.gov.za
2013/03/19

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
4. *A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

Makhado
.....

Dr David Makhado
Director: Knowledge Management and Research

DATE: 2013/ 03/ 19

Making education a societal priority

Office of the Director: Knowledge Management and Research
9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O Box 7710, Johannesburg, 2000 Tel: (011) 355 0506
Email: David.Makhado@gauteng.gov.za
Website: www.education.gpg.gov.za

University of South Africa

UNISA | college of education

Research Ethics Clearance Certificate

This is to certify that the application for ethical clearance submitted by

L Chothia [30240395]

for a M Ed study entitled

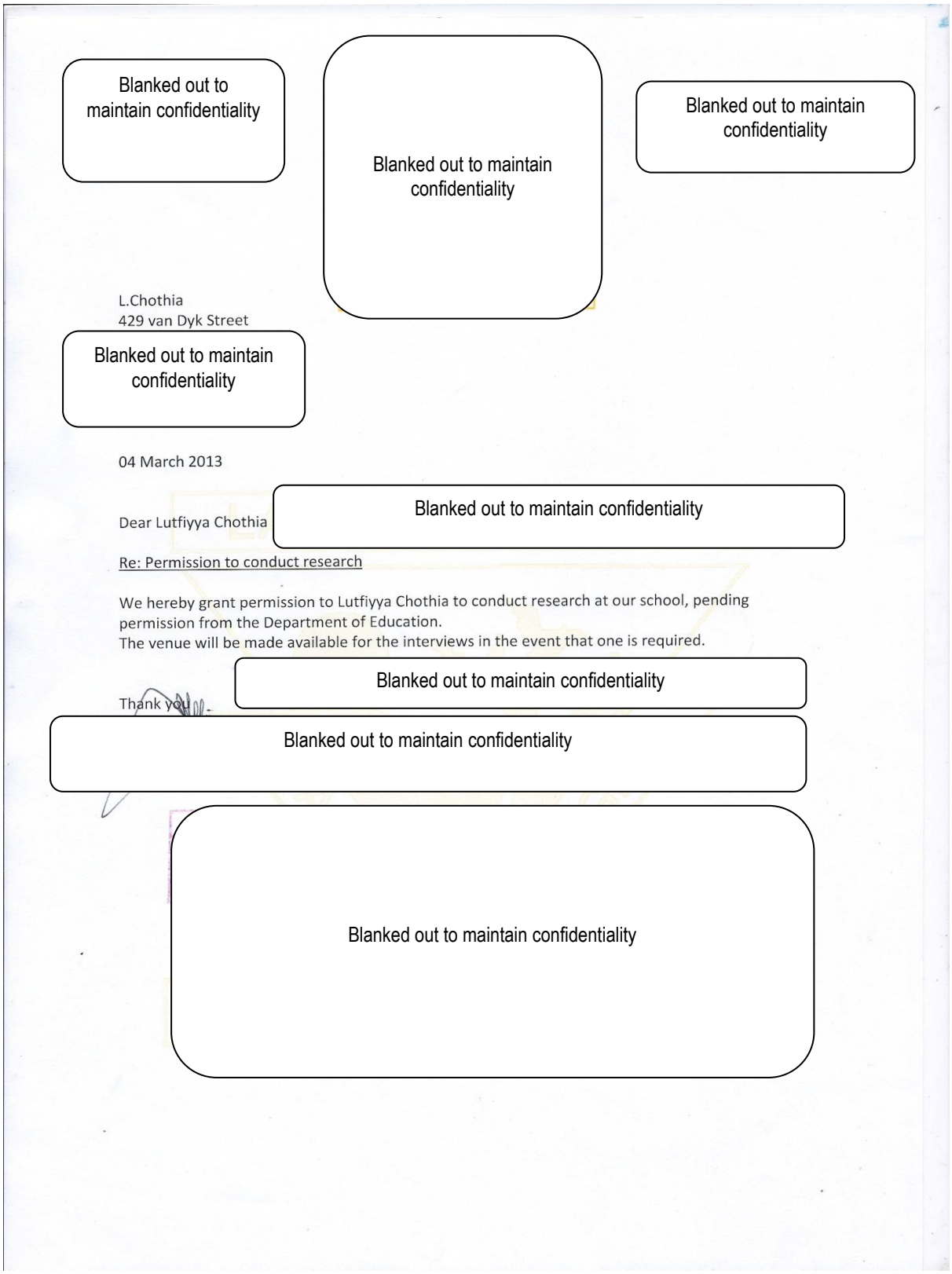
Teachers supporting learners with diabetes: a psycho-educational perspective

has met the ethical requirements as specified by the University of South Africa College of Education Research Ethics Committee. This certificate is valid for two years from the date of issue.

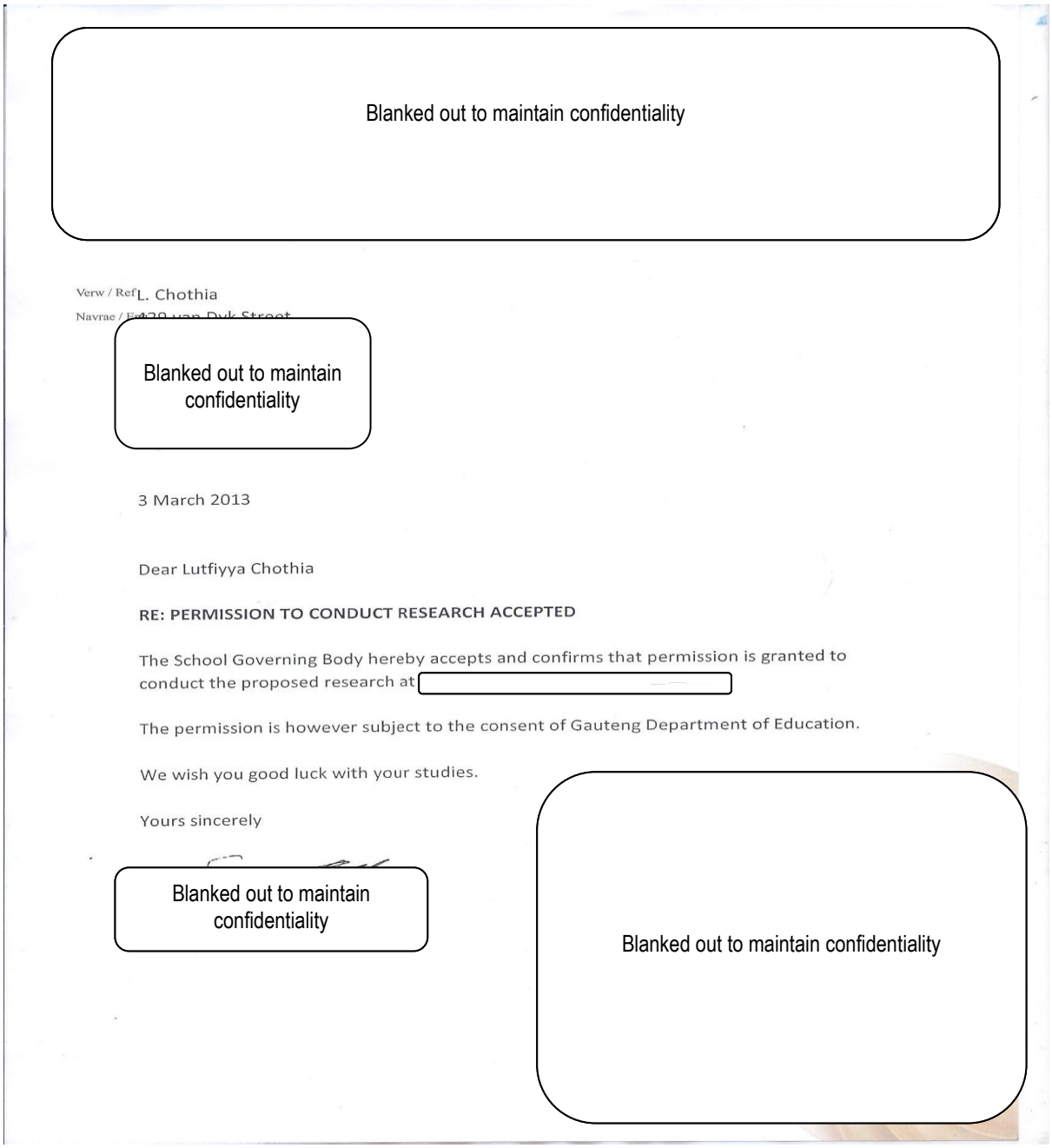
Prof CS le Roux
CEDU REC (Chairperson)
lrouxcs@unisa.ac.za
Reference number: 2013 APR/30240395/CSLR

18 April 2013

School (anonymous)



School (anonymous)



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Verw / Ref L. Chothia

Navrae / Enq 139 van Dyk Street

Blanked out to maintain confidentiality

3 March 2013

Dear Lutfiyya Chothia

RE: PERMISSION TO CONDUCT RESEARCH ACCEPTED

The School Governing Body hereby accepts and confirms that permission is granted to conduct the proposed research at

The permission is however subject to the consent of Gauteng Department of Education.

We wish you good luck with your studies.

Yours sincerely

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School (anonymous)

Blanked out to maintain confidentiality

L. Chothia

Blanked out to maintain confidentiality

3 March 2013

Dear Lutfiyya Chothia

Re: Permission to conduct research

It is with great pleasure that the school board of governors hereby accepts, confirms and would be most welcome to accommodate your request to conduct the proposed research at our school.

A venue will be made available to you for interviewing on the days you may require one. Prior notice is however required of the days and times to ensure that the necessary arrangements are in order.

It will also be appreciated if the outcome of the study be made available to the board once the study is completed.

I would like to wish you the best in your endeavour.

Thank you

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ADDENDUM 9 – TRANSCRIBED INTERVIEWS

Teacher Interview 1

This is basically just something about diabetes. I want to know what teachers know because I am trying to prepare a little guide for teachers.

RESEARCHER: I want you to tell me how long you have been a teacher.

TEACHER 1: Twenty seven and half years, no longer. In January it will be 28 years.

RESEARCHER: Have you ever, in the role in teaching, had a child with diabetes in your classroom?

TEACHER 1: Yes, once.

RESEARCHER: How did you handle that?

TEACHER 1: It was very difficult because one does not have the knowledge and support system in place to help you with that so I really struggled. What I did then is I got parents in and they also struggled with it.

RESEARCHER: We are just going to go through a few things about diabetes and then we are going to go back to when you had a child in your class. Tell me what you understand by the term diabetes?

TEACHER 1: What I read and the knowledge I gained after the child I had in my class is that diabetes is not a thing to play with. It must be managed very well, and as far as I know there is a special diet but there is controversy about that, because I read that they are not allowed any sugar. On the other hand I read that it can't do any harm when their blood sugar levels are low. It is necessary to keep their blood levels at a certain level.

RESEARCHER: Anything about the different types of diabetes that there are?

TEACHER 1: I know that there is a Type 1 and a Type II, but I don't know the difference between the two.

RESEARCHER: Have you got any idea how prevalent diabetes is?

TEACHER 1: I think more or less, but the full implications and management isn't known very well to me, because after that child left you were not into it anymore to gain the knowledge which is necessary for it. You can't because it is like language, you learn it. You lose it when you don't use it anymore. So I think this a case like that.

RESEARCHER: Any idea what the causes are?

TEACHER 1: It can be genetic and the other thing I read the other day that weight can play a role in it. I don't know if there is any other stuff but that is what I can remember of the knowledge I gained when I had the child in my class.

RESEARCHER: The symptoms?

TEACHER 1: I am not very sure but what I read is that they sweat a lot, but I did not experience that with that child in my class. And thirsty, they drink a lot of water. I realised

there is a problem, the child drank water constantly and had this craving for fluid. Then I phoned the parents and they said they forgot to inform us about the diabetes. It was a day scholar. If it was a scholar in hostel it would be a different story.

RESEARCHER: So there was no medication or anything that you had to give to the child at school?

TEACHER 1: No,

RESEARCHER: No emergency kit, nothing?

TEACHER 1: We did not have an emergency kit, but because we have a clinic on our premises and a qualified sister, I was not very worried about it. And I remember the child sometimes got tired. The child got tired and then the school sister said that when I see that, it is when the blood levels are too low and she told me what to give him to eat. Raisins. I always had raisins in my class and provitas.

RESEARCHER: So, you took it upon yourself or the parents that gave you the stuff?

TEACHER 1: No. I took it upon myself, because it is parents that ... their socio-economic circumstances are not very good and so I did not expect them to do it. I was prepared to do it.

RESEARCHER: Then the complications of diabetes, anything that could happen because of diabetes, other complications? Are you aware of any of them?

TEACHER 1: I am aware that it affects their eyesight and they can go into a coma, that is what I know, which is the worst case scenario, I suppose. And as I said, the child got very tired and I was aware of it then, and I monitored it.

RESEARCHER: And then the treatment and management. You said you did not have to give the child any medication at school.

TEACHER 1: No.

RESEARCHER: So you don't know?

TEACHER 1: As far as I know the parents gave the child medication at home and I know a friend of mine's daughter has got diabetes. She has to test her blood, and she has to prick a finger and I know she had to inject herself with insulin when she needed it. I don't know, but I think it is type 1 or 2 diabetes, but that is the treatment.

RESEARCHER: You did say a coma? I suppose a child could go into a coma. That would be considered a diabetic emergency. Would you know how to identify a diabetic emergency? You already said the tiredness and the coma is the extreme. Are there any other symptoms that you would recognise as a diabetic emergency?

TEACHER 1: I don't know. I would run to the clinic as quickly as I can with the child. I really don't know.

RESEARCHER: Have you heard of the term hypoglycaemia?

TEACHER 1: I did.

RESEARCHER: What do you understand by this term?

TEACHER 1: I don't know.

RESEARCHER: And hyperglycaemia?

TEACHER 1: Hyper tells me it is the extreme, too much or too many of a thing, and hypo, I would say, not enough of a thing, but glycaemia, I don't know.

RESEARCHER: Then what effect do you think diabetes has on the child in school?

TEACHER 1: I think it can affect the child's progress, because if a child is tired constantly or they don't feel well, I don't think they will be able to progress. I mean when a child has a common cold or 'flu, it affects them, and also I think it can affect them emotionally as well, and if you have an emotional barrier my experience in my teaching years, I experienced that if there is an emotional barrier the child is not able to learn. You must first overcome the emotional barrier.

RESEARCHER: My next question was actually going to be the cognitive functioning of the child, but as you have already said that because the child is tired, obviously it would have an effect.

TEACHER 1: And it is not as if the child does not have a cognitive ability, but the diabetes as such ... I don't know, but what I realised with that child, there were signs of a little bit of depression. So I spoke to the school sister and she said it can affect the child emotionally.

RESEARCHER: Exercise in diabetes. Did the parents give you any instruction or did you know? Did you think that exercise would affect the diabetes?

TEACHER 1: They did not give me instructions but I think maybe exercise can be good. It is always good. But if a child is tired constantly, how can you expect them to exercise.

RESEARCHER: Did this child participate in the normal sports or exercise programmes without a problem?

TEACHER 1: No. Didn't. Sometimes the child participated and other days I think the child did not feel well always, and then he didn't want to participate, withdrew himself from the group and the activities.

RESEARCHER: At the present moment. You have already had a child with diabetes, but right now, do you think you would like to take on the responsibility of having a child with diabetes in your class?

TEACHER 1: I don't think one has a choice. You are there for the children, and if you have a child with diabetes you must accommodate the child. It is very important that a child has the same rights as any other child to be educated, and to get the best education and the best treatment for him or her, in spite of their condition.

RESEARCHER: Do you think that the knowledge that you have right now is sufficient for you to support a child with diabetes in your class?

TEACHER 1: No, I think it is very important that the people who are in charge of special schools or children with special needs in schools, in mainstream schools, must get special training in how to handle a child like that.

RESEARCHER: When you were in college, did you learn anything at all about children with diabetes?

TEACHER 1: No, not even handicaps or anything.

RESEARCHER: Would you find a guide in a written form, would that be helpful to you.

TEACHER 1: Definitely, definitely it would be helpful.

RESEARCHER: What form do you think would be the best? What would you think would be most helpful for the teachers? A CD, training, written, which do you think would be most effective?

TEACHER 1: No, written, because you can always go back to it and it is hands on. A CD is somewhere and you first have to put it in and ... no, I think written.

RESEARCHER: Do you think that children with diabetes would be discriminated against or did you find it in your experience with that child? Was that child ever discriminated against, perhaps by other teachers or by other children, or bullied or anything at all?

TEACHER 1: Not bullying, but I think that the lack of knowledge caused that they did not understand the child and the child's needs necessarily. I don't think it is on purpose but if you haven't got the knowledge and the insight in a situation, then you would not treat the situation as it is needed to be treated.

RESEARCHER: Are you now saying that from a teacher's perspective or are you saying it from the children's?

TEACHER 1: I think it is broader. Teachers and children and anyone that is involved with that child, and I think the parents also need special parental guidance on how to manage the situation, because the diet as far as I know is also very important. The school sister from the school's side gave them guidelines what to give the child to eat, and then they sent the right food and if I opened the lunch box and it wasn't the right food, then I kept food that is appropriate and that the child needs. Then I gave it to the child and then I wrote in the communication book, this did not work, can you please try this or that. You must be very careful not to attack the parents, because they do not know better.

RESEARCHER: What you are saying is that the parents themselves did not have the knowledge so that they were even able to impart it to you. In this situation, the tables were turned, because you had the nursing sister on the premises that could advise you as well.

TEACHER 1: Yes. Because I had the right advice for it so I could give the parents guidelines, because they do not have the facilities or money available to go to dieticians and all those people who are specialised in that ...What I also did is I have a friend who is a dietician and she gave me guidelines for what the child could eat or not eat.

RESEARCHER: So, all the knowledge that you gathered when you had this child was by your own personal means and by your own resourcefulness? Nobody on the teaching staff and nobody from the department.

TEACHER 1: No.

RESEARCHER: In all these years have you as a teacher, and you have been teaching now for many years, more than 20 years, received anything about special needs children? In particular now I am talking about children with diabetes.

TEACHER 1: Not until recently, I attended a course with district officials in Johannesburg from head office and they had a video clip. They showed us epileptic children, diabetes ... but they did not go into deep information about it.

RESEARCHER: So even that information you feel would not have been sufficient for you to be able to help the children.

TEACHER 1: No.

RESEARCHER: How recently was this?

TEACHER 1: It was in September – so you can see for yourself, it is at a late stage they realised that it is necessary to give training and to be aware of it.

RESEARCHER: So until this year you did not get any training, any guidelines, nothing written?

TEACHER 1: No

RESEARCHER: Do you think there is a reason that they are starting now? Are they becoming more aware of the diabetes and handicaps, or are these becoming more common? What do you think?

TEACHER 1: No, I think the reason is, the awareness that they started with full service schools which flowed from the white paper at the education department that says that mainstream schools can also accommodate children with handicaps or special needs, and they realised that there is nothing in place for that.

RESEARCHER: And if, for example, you had a child with diabetes in your class and this child is on insulin injections. Would you be comfortable in giving the child an injection if the need be, or testing the sugar? Would you be comfortable with that?

TEACHER 1: I would be very comfortable to do the testing for the child, but the injection is a big problem. I don't know if I would be able to do that. I would be sorry for the child and would be afraid I hurt the child, but thank heavens we have a school sister – for how long I don't know.

RESEARCHER: So the support system at least in the school enables you to send a child like this?

TEACHER 1: But all the schools don't have this, so it is very important to have a person who is capable to do it.

RESEARCHER: Say, for example, if there was no sister at the school, would you then feel comfortable to have this child in your class?
TEACHER 1: Not if I did not have the appropriate training, and I would first expect to get the right training and support for that, because I think it is a child's life and you don't play with anyone's life.

Summary from observation form: Very talkative, friendly, open and honest.

Teacher Interview 2

RESEARCHER: I first want to thank you for doing this interview for me. Thank you for signing the informed consent. You do realise that I am taping it and we have discussed that? I have explained to you that the study I am doing is about diabetes. I just want to know from you, what do you understand by the term diabetes?
TEACHER 2: I always understood that it had something to do with sugar.
RESEARCHER: Do you have any knowledge about the different types of diabetes that you get?
TEACHER 2: No, no. I always thought that diabetes had to do with old people or the aged, the over 50, you know, when the blood sugar goes low, but I didn't know that you get different types of diabetes.
RESEARCHER: In your personal experience being at schools, do you think that diabetes is becoming more common?
TEACHER 2: Yes. It is becoming more common. You hear it from other teachers. We are getting pupils who are diabetic, so yes, it is becoming more common.
RESEARCHER: Do you have any idea what causes diabetes?
TEACHER 2: No idea really.
RESEARCHER: And symptoms to look out for with diabetes. Do you have any idea of the symptoms?
TEACHER 2: Now that I speak to parents of children with diabetes, I know before they took the children to the doctors to be diagnosed, what they found was that their child got very tired and the child went to the toilet a lot. I spoke to one or two sets of parents and that is the symptoms that they know.
RESEARCHER: Complications that come due to having diabetes – are you aware of any of those?
TEACHER 2: No, not at all. I don't know. I know that with normal children if they have a lot of sugar in their body they are very hyperactive. I would assume it is the same with a diabetic child. I don't know.
RESEARCHER: Are you aware of any of the treatments that are used for diabetes? Like medication.
TEACHER 2: I don't know about medication, but I know the elderly people who do have diabetes are always testing themselves to make sure if their sugar levels, I suppose, are accurate.
RESEARCHER: You did tell me before this that you have had children in your class that were diabetic. What kind of medication were those children taking?

TEACHER 2: I have no idea what kind of medication they were taking. I just know their lunch boxes were packed by their mothers. They had to eat what was in their lunch boxes; they couldn't really use the tuck shop. They couldn't share with other children either, because they could only eat what their mother's sent with, and the testing of the sugar, but the medication that they took, no I have no idea.

RESEARCHER: Are you aware of what a diabetic emergency is, or how to recognise a diabetic emergency in a child with diabetes?

TEACHER 2: For a while it was very difficult. We had an emergency kit at school and all that, but it was so complicated. I don't think even the parents knew how to use that emergency kit. So it was very, very difficult. I don't think we even had an emergency kit, with some of the children we didn't even have an emergency kit.

RESEARCHER: And the symptoms to look out for in a child?

TEACHER 2: With the high sugar I can't remember. The mother was more concerned with the low sugar. She said the child would shake, but I never saw her shake or anything like that. There were times that the child would become quiet and her lips would become pale. But now you are sitting in a class with 30 children and you are not always going to notice this child's lips becoming pale, you know. I used to look out for that as well.

RESEARCHER: You said highs and lows. Have you heard of the term hypoglycaemia before?

TEACHER 2: No.

RESEARCHER: Hyperglycaemia?

TEACHER 2: No.

RESEARCHER: What do you think? What influence does it have on the child in school?

TEACHER 2: The child just feels different. When the child looks at other kids at how they are coping and how they can eat things and enjoy things. [Child X] as well. The child is a very quiet child. The child did not like the other children to see when we test the sugar.

RESEARCHER: Where did you learn to test the sugar?

TEACHER 2: It took me a very long time; it took me a while to get used to it.

RESEARCHER: Who taught you?

TEACHER 2: The mother, the mother taught me. The mother is a working mother so I had to learn very quickly. Fortunately, the one child knew a little bit how to cope. The procedures, you know. Testing and things like that.

RESEARCHER: You spoke about [Child X] feeling different. Those are all emotional aspects. Were there any other effects on the child, do you think?

TEACHER 2: In class, definitely, it had a big effect on her work. You could see she was a bright child. Obviously she was very, very bright. The minute she had to take up a pen, even

though she was a very neat worker, she couldn't work. She couldn't put what she knew on paper.

RESEARCHER: Is this generally, or perhaps when her sugars were low?

TEACHER 2: Probably a bit worse when her sugars were too high or too low, or something like that. Like work when she had to copy off the board and that she was slow, but a bit more confident. Work after second break, there was no work. Then the child is totally tired, exhausted, you know. Even though, like, we did allow her to have her snack, but she didn't feel comfortable doing that. Because the other children couldn't do it, she didn't want to eat her nuts that her mother had sent for her to snack on. She didn't want to do that, she was embarrassed to do that.

RESEARCHER: So in that respect socially she was …

TEACHER 2: In work where she had to think on her own, that was definitely. As she grew older she became more confident. Hopefully she is more confident now. I remember the first year in Grade 1 it was difficult. Emotionally, socially also, she would only speak with the children that were comfortable with it. And a lot of children were not comfortable with her. You know what I mean, because she had to get tests and all, they didn't want to be around her. They wanted to go play and do their own thing. She would always only hang around with a certain group of friends.

RESEARCHER: Then tell me, do you know anything about how a child with diabetes is affected by exercise?

TEACHER 2: I know she used to get very tired. We used to have sport after second break, after 12 o'clock. Lots of times she asked to be excused. Because of her condition the teachers were sorry for her. We didn't know if it was good for her or not good for her, so we would rather go with how she feels.

RESEARCHER: You said already that she ... Do you feel exercise maybe she couldn't participate in sport? What about sport, did she attend sport?

TEACHER 2: She used to attend everything ... But I think, since she was in preschool her mother doesn't send her to school on sports day. No she didn't come to school. Training ... we always did the training in the morning. This is the one child. The other children they participated in team games, but not individually. Nothing individually.

RESEARCHER: My next question was going to be, would you be willing to take responsibility, but like you told me you already had a child. What was your initial reaction when you got a child with diabetes?

TEACHER 2: I was so scared because it was like having a newborn baby that you keep on checking, you know like the child doesn't fall off the bed. It is like the child is totally dependent on you. I was very scared and I really, really didn't know anything about diabetes. Nothing. It was very daunting for me.

RESEARCHER: And how did you learn to cope with it? Where did you get the information from?

TEACHER 2: You know what, the one particular child we are talking about. Her mother is a working mother. So what we had to do was she had to take time off and explain to me. There were a lot of times I made mistakes. Because the child was so tiny and she started school, and the child is too nervous to do anything on her own or to even tell me. She wasn't very comfortable. The first few weeks were very, very difficult for me, the child and the mother. She was a working mother so she could not stay at the school and assist. It was very difficult. I had no idea about testing or giving her carbs.

RESEARCHER: Do you feel it would have made a difference to you if you had some knowledge or questions to ask. What to look out for. What the medication was. What testing was involved? Do you think it would have made a difference to you and the parents?

TEACHER 2: No definitely. It would have made a very big difference. Because you know, once you are trained and now you are working with a child, and you can use your training, it's so much easier. And you need to be trained. Why I say you need to be trained is because, even though I wrote down notes and when the child went to other grades I gave the teacher the notes that I was comfortable with. The mother also made notes. But you know what, I feel you can't just give a set of notes and tell this teacher now you are going to be dealing with this child, this is the procedure. Because it doesn't work. You need to be trained. Every teacher needs to be trained because it is becoming so common. I think it is just fair on the teacher to know what to expect. The child needs to feel and the parents need to feel comfortable ... We are dealing with children who are dependent on us as teachers; these are not children that are independent and can do it on their own. That is very important, the training.

RESEARCHER: When you were at college or when you were doing your studies, was there any sort of information that you got about diabetes in the classrooms?

TEACHER 2: No. There were modules on it. I mean they've got a small section on diabetes; they've got a bit of a larger section on cerebral palsy, and other types of children we are going to encounter. No, not very much information. I think the same information that I gave you in the beginning to say that diabetes is something to do with sugar. I think that is the information I learned in college. You don't think you are ever going to be in a class where you are going to have to …

RESEARCHER: If a set of guidelines is made for teachers, that is what I would like to do – what do you think? What kind of information should be in these guidelines? …

RESEARCHER: What kind of information would be valuable for you before you got a child?

TEACHER 2: I think like, something like procedures, the testing, signs that we have to look out for when a child is high. Just basic information, but everything has to be there. What

types of diabetes you get. How some children cope, like all children don't cope at the same level? I know if you look at the diabetic children that we have, the diabetic children that are coming through us. The diets are not the same, you know, the mothers are not packing the same lunch boxes..We can see the difference, so we need to know what they can eat, what they can't eat. Also very important that we found is that, look here, lots of food companies are putting how much carbs, but some of them are so unclear, so unclear you wouldn't know. We don't want to keep on troubling the parents, because most of the parents are working mothers and working fathers. I just feel like phoning the parent and asking what do I need to do. Some days at school are longer than other days. Because of that the child doesn't get involved. This child is a normal child, we treat the child as a normal child, but how we can fit this child into the extra-curricular activities, after school hours, so that the child can get involved with everything. Lots of our diabetic children don't get involved with after school activities. They have to excuse themselves because they have another programme at home. If we as teachers are trained then we can give the parents confidence. We can give them confidence and say that, no don't worry, she will be fine. It is going to affect the child because the child is already feeling isolated because of the sickness. But now, because of the activities and school work and everything else, their problems are increasing.

RESEARCHER: In what form do you think these guidelines should be? Like, in what form would be most helpful to you?

TEACHER 2: You know what I think? A workshop. Maybe people like teachers, ex-teachers that work with diabetic children, medical doctors and medical people, booklets ... and you go for a workshop for proper training and all that. We can have case studies where we can see what is happening. The child won't exactly get high while we are at the workshop or get low while we are at the workshop, but we can use dummies and things like that and we can just see ... certain places are sensitive, like where we touch them … preferably I think a workshop over a certain period of time. Then training booklets and the programmer can then get feedback from us students, and they give us feedback, and we complete assignments and things like that, you know … and we also discussed …

RESEARCHER: Is there anything else that you would like to add to this that would be helpful to me? Anything else that would be relevant with regard to teachers and diabetes or children and parents?

TEACHER 2: I think it is very important for every teacher to know. You can' wait for a diabetic child to come in. You can't wait for that moment when a diabetic child comes in. You must be equipped, you must be equipped; because if you think about it, even parents must be equipped. We don't know when our own children or when children are going to be diagnosed with diabetes. As teachers I just feel everyone must be equipped. Even a teacher,

like I am a bit more confident now after having children with diabetes in my class. Still the day you stay absent, the next teacher has to take over. So principals and HODs ... there must be a backup. Just as the parents also need to learn, learn, learn about the child's condition, the child has to learn, learn, learn. We also ... It came as a shock to the parents and even the parents still don't feel comfortable. I know they have children. The children are growing up; the children are becoming more confident. The parents are becoming more confident, but somehow they will always be scared. This is a second home to the child, and if we are equipped then it won't be so difficult for the parents to leave the child in our care and not worry and stress and go on with their work. The minute we are equipped the child somehow becomes braver. The child somehow feels more part of you because he knows, you know. You know what, if we are nervous, like I was really nervous, I was totally nervous, the child picks it up. Picks up on it, and then the child doesn't know how to cope and the child gets nervous. I just feel that teachers need to be more equipped with lots of sicknesses ... not only diabetes.

RESEARCHER: Thank you so much for this information; it will really be helpful to me. If I have any other questions and would like to clarify it with you, would you mind if I came back to you?

TEACHER 2: No problem. Anytime.

Summary from observation form: Nervous initially, but relaxed in the end. Genuine and helpful.

Teacher interview 3

RESEARCHER: What grade do you teach?

TEACHER 3: Grade 2.

RESEARCHER: How long have you been teaching?

TEACHER 3: I am teaching for say about 32 years, all in all. That is a long time.

RESEARCHER: I explained to you that my study is about diabetes and children in the classroom. I want to know what you understand by the term diabetes.

TEACHER 3: What I understand is that ... Must I talk about the child or must I talk about diabetes in general?

RESEARCHER: About the child, what do you understand?

TEACHER 3: It is just like people are diagnosed with sugar. Their blood levels are not ... they have got all this stuff in their blood and then afterwards I think they are getting sick of it when they are not looking to their health.

RESEARCHER: Do you know anything about the different kinds of diabetes that you get?

TEACHER 3: No, I don't know. The only thing I know about it is that it is in your blood.

RESEARCHER: Do you think that diabetes is becoming more common in these times?

TEACHER 3: Ja, even children are also getting diabetes.

RESEARCHER: Do you have any idea what causes it?

TEACHER 3: As I think, it is if you are not eating the right food I think, and you are getting stress or anything, then I think you can get it. The main thing is your diet must be right.

RESEARCHER: Do you know any of the symptoms of diabetes?

TEACHER 3: Not actually, but I think it is when people are getting sick of it. I think it is when they, as I know people who have got this, sometimes they go in a coma. They are not feeling very healthy.

RESEARCHER: Complications that can happen when you have diabetes?

TEACHER 3: You can go in a coma or you just get sick.

RESEARCHER: Do you have any idea how diabetes is treated and managed?

TEACHER 3: As I said, afterwards they diagnosed, you use a certain kind of injection like insulin.

RESEARCHER: And a diabetic emergency, do you know anything about what can be a diabetic emergency?

TEACHER 3: No actually. No. Does it mean like at the time they get sick, then you must get treatment or something.

RESEARCHER: Yes.

TEACHER 3: When you are getting sick at that time, they had to rush you to hospital and you must get help.

RESEARCHER: Did you ever hear of the term hypoglycaemia?

TEACHER 3: No.

RESEARCHER: Hyperglycaemia?

TEACHER 3: No.

RESEARCHER: Do you think that diabetes would have an effect on the child in school?

TEACHER 3: Yes, because if they do not get the right medication or they are not on a certain medication or they are not looking after their diet, then there can be complications, or it can affect their schoolwork. The main thing is that they must get the right medication.

RESEARCHER: Do you think it would have an effect on their cognitive function, diabetes? Intellectual?

TEACHER 3: Yes, you know what, it can, because what I know, when it is in a very high stage or it has affected certain parts of your body, it can affect your brains because you can get memory loss. As I said, or you can talk like somebody who doesn't know what he is talking about.

RESEARCHER: Do you know anything about exercise and diabetes for a child in school?

TEACHER 3: No, it is just to look after. Yes you can, they can exercise. I don't know what kind of exercise you can treat it with, but with the right diet also definitely, and exercise also, because when you eat the right food and do the right exercise the child can get healthy.

RESEARCHER: Did you ever have a child with diabetes in your class?

TEACHER 3: No, not that I know of.

RESEARCHER: Would you be willing to take responsibility for a child with diabetes?

TEACHER 3: Yes, yes and I will also actually look after their diet. As I said, that they eat the right food, and I will also talk to the parents, communicate with the parents and ask them to give the child the right food as. I did in the past. No, I didn't have a child in my class with diabetes, but I also looked at the health of my children. It is very important.

RESEARCHER: Do you think that the knowledge that you have now would be sufficient for you to help a child with diabetes?

TEACHER 3: Yes. Or I will get more information; I will even go on the Internet or talk to the doctors about this if I have a child with diabetes in my class.

RESEARCHER: Did you have any training on the difficulty of having a child with diabetes in your class, any training at all? At college or even recently?

TEACHER 3: No not training or workshops, but as I said, when you talk to people or you talk to doctors, we have a sister here at school and I can ask her for more information.

RESEARCHER: Do you think the teachers need guidelines to help them if they have a child in their class with diabetes?

TEACHER 3: Yes, I think that is very important. If you don't have any other information about this or whatever, then that will help you.

RESEARCHER: And in what form would you prefer this information to be handed to you? Written forms, workshop, CD or what?

TEACHER 3: Workshop, workshop, I think. Yes, and let doctors come and do this with us or someone give us more information, like doctors, or we can check videos or listen to CDs or whatever.

RESEARCHER: Did you hear of or know of any training from the school or the department or health personnel that was coming around, giving information about diabetes or anything? Did you hear of anything?

TEACHER 3: Not actually, not that I can remember. No.

RESEARCHER: Socially. Do you think that socially diabetes would affect the child or emotionally?

TEACHER 3: Yes it can, especially when the child knows he has diabetes. Some of them can handle it if they start getting used to it. Say for instance a child is diagnosed with diabetes; at that moment some of them can be very emotional. It all depends on which way the child can handle it.

RESEARCHER: Is there anything else you would like to add about diabetes? Or what do think teachers need or what do you think you would want? What kind of information would you want about diabetes in your guidelines or in a workshop? What do you think?

TEACHER 3: Just give us information as I said. Ask the right people to come and talk to us, give us workshops so that we can also get more information and know about this sick. because if anything happens to our children, or we can if we have a child in our class, then it is important for us to know this is the way to handle a diabetic child. Or this is what we must do when things can happen to a diabetic child. And it is important for us to get more, certain material or someone to give us a workshop or talk to us.

RESEARCHER: Would you be willing, if you have a child with diabetes in your class, would you be willing to test the sugar, or give an insulin injection or whatever form of medication they are taking? Would you be willing to do that?

TEACHER 3: Yes, I will definitely, because some of our parents they work early in the morning or they work late in the evening. I will even teach the child how to inject himself, because when there is time I am not there. He must be able to do it himself.

Summary from observation form: Face became red when she did not know the terms, a little embarrassed, but talkative.

Teacher Interview 4

Mrs X, thank you for signing the consent form. I have asked you if I could tape the interview and you were fine with it. I am going to ask you a few questions because you are a teacher who has dealt with a child or children with diabetes in your class before. The topic is diabetes, and I am only going to ask questions related to that and to your experience.

RESEARCHER: My first question is: What do you understand by the term diabetes?

TEACHER 4: I think it is when the body is not producing enough insulin.

RESEARCHER: And do you have any knowledge about the different kinds of diabetes that you get?

TEACHER 4: No.

RESEARCHER: In your opinion, from your experience as a teacher, do you think diabetes is becoming more prevalent?

TEACHER 4: I don't know much about it. I don't think so, because in my years of experience I have only come across two children so far.

RESEARCHER: Was it recently?

TEACHER 4: Yes.

RESEARCHER: Are you aware of the symptoms? Did you know any symptoms of diabetes?

TEACHER 4: No.

RESEARCHER: And the complications that diabetes can cause?

TEACHER 4: I only know if it too low they can go into a coma and if it is too high they can go into a coma. That is it.

RESEARCHER: The treatment and management of diabetes...?

TEACHER 4: I know some people take insulin.

RESEARCHER: Are you aware of what a diabetic emergency is?

TEACHER 4: No.

RESEARCHER: Have you heard of the term hypoglycaemia before?

TEACHER 4: I have heard about it, but I don't know what it is all about.

RESEARCHER: Hyperglycaemia?

TEACHER 4: No.

RESEARCHER: What effect do you think diabetes would have on a child in school?

TEACHER 4: I think it is very stressful for the child. They become easily agitated or nervous. It affects their learning to some degree and their behaviour as well. I know the child I have she becomes very teary …

RESEARCHER: You said it does have some effect on the learning …

TEACHER 4: Yes, she can't concentrate sometimes and is stressed.

RESEARCHER: What do you know about exercise and diabetes?

TEACHER 4: I don't know.

RESEARCHER: So with the child that you have in your class, how do you handle physical education or sports practice and those kinds of things?

TEACHER 4: I don't do the sports practice with the child. I only have the child during normal teaching time.

RESEARCHER: Does the physical education teacher know that she has diabetes?

TEACHER 4: I think she is aware that the child has diabetes.

RESEARCHER: Obviously, you said you have a child so you were willing to take responsibility for the child with diabetes in the class. How did you feel when you first had a child with diabetes in the class?

TEACHER 4: I was very scared because I was not sure if I would be able to handle the situation properly. So I was very scared and nervous.

RESEARCHER: And what information did the parents give you? The information you needed to know in the handling of the child, who gave you that information?

TEACHER 4: The mother gave it to me. She made a list of what I should do if the child's sugar is low or too high. The sweets she can have and what drinks she can have.

RESEARCHER: And the testing of the sugar, who does that?

TEACHER 4: The mother would test the child when the child left home.

RESEARCHER: So there was no testing at school? Do you think that the knowledge that you have at this point is sufficient to help you with this child in the class?

TEACHER 4: No.

RESEARCHER: Why do you say that?

TEACHER 4: I feel I know just the basics about it and I need to know more.

RESEARCHER: Knowing more, what would that do for you?

TEACHER 4: I think I would feel more comfortable and I would feel more able to help the child if something happened. I would be more at ease.

RESEARCHER: When you were at college did you receive any education about diabetes at all?

TEACHER 4: No.

RESEARCHER: Nothing? Any training now while you were in school that have you heard about for teachers who have children with diabetes? Have you come across anything?

TEACHER 4: No.

RESEARCHER: What sort of training do you think would be beneficial to you? In what form?

TEACHER 4: Showing us how to test the sugar. Informing us about the symptoms when they are low and when they are high, so that we could look out for it.

RESEARCHER: Would you prefer, like you said you wanted someone to show you. Do you think that having it in written form, DVD form or whatever from, which would be best?

TEACHER 4: Yes, like a DVD or even a pamphlet or a little booklet that we could keep.
RESEARCHER: In your opinion, is there any discrimination towards children with diabetes from children in the class or from teachers?
TEACHER 4: I haven't come across any discrimination, in fact the child I have, everyone is sensitive to her needs and helpful towards her actually. That is excellent.
RESEARCHER: I think we have covered about all of the questions here. After hearing some of the questions, do you feel that, like yourself, are there other teachers also that need this kind of information? Who would benefit from it? How do you think it would be received by the teachers?
TEACHER 4: I think it would be well received because we know so little about it. When we come across cases like this we feel scared. We feel like we won't be able to handle it. I think if we have the information we will be more at ease and be more confident to have a child like this in our class.
RESEARCHER: The child that you have at the moment, are there any other special needs that she has with regard to her illness that you have to see to? Like snacks in between, or anything else that you have to do that is extra?
TEACHER 4: Just the snack time; I had to put an alarm to remind me.
RESEARCHER: You don't find that disruptive, or are you okay with that and are the other children?
TEACHER 4: Initially it was disruptive, but now we are already used to it.
RESEARCHER: When a guide or training is ... when I develop one … you said you want things like testing. What else do you think besides those would you need to know, or that you have to know about diabetes in a child?
TEACHER 4: What are the signs when the sugar is too high or when it is too low. What do you do to treat it? I think we need to treat it immediately, because I think otherwise it could be detrimental for the child. Things like that would help us a lot.
RESEARCHER: I did explain to you that I am going to maybe do training or develop a guide … and then I will do a follow-up interview. Are you okay with that?
TEACHER 4: Yes.
RESEARCHER: Thank you so much, Mrs X.

Summary from observation form: Nervous throughout the interview; she said before the interview that the dictaphone made her nervous, because she does not like to be recorded. Soft spoken and a little unsure.

Teacher Interview 5

RESEARCHER: Mrs Y, I have spoken to you about the informed consent and signing the informed consent form. You are aware that this interview is being taped?
TEACHER 5: Yes I am okay with that.
RESEARCHER: Tell me what grade do you teach?
TEACHER 5: The junior group. The nursery class.
RESEARCHER: You have had children with diabetes in your class.
TEACHER 5: Yes, I had...
RESEARCHER: I want to know, it is just a few questions on diabetes and on your experience of having a child with diabetes in your class. What do you understand by the term diabetes?
TEACHER 5: I don't know much about diabetes. I know there is something, they have to take insulin and some of them, there is a new method, they call it the pump. The child that I had, she was taking the pump so I used to give her insulin and check her sugars in the morning and then at midday.
RESEARCHER: Do you know anything about the different types of diabetes that you get?
TEACHER 5: No, I don't know.
RESEARCHER: Do you think, in your opinion, is it becoming more common?
TEACHER 5: Yes, diabetes is becoming common among the little ones.
RESEARCHER: Do you know anything about the causes of diabetes?
TEACHER 5: I think, I am not sure, but I think sugar, lots of sugar, fizzy drinks, too much … sugar, I don't know.
RESEARCHER: Do you know any of the symptoms of diabetes?
TEACHER 5: Dizziness. They feel dizzy and also nauseous. They feel weak, you know, some of them just collapse and have a blackout. Just that much I know about it.
RESEARCHER: Complications that come with diabetes. Are you aware of any complications that come from having diabetes?
TEACHER 5: No, nothing.
RESEARCHER: And the treatment of diabetes?
TEACHER 5: I think some of them get insulin and some of them get tablets. First they try the tablets and if that doesn't work they give you insulin.
RESEARCHER: And diabetic emergencies, do you know what a diabetic emergency is or what to do in the case of a diabetic emergency?
TEACHER 5: I think the person that has got diabetes … they say you must just give them a quarter glass of Coke. That is the only thing that I know that will just bring their sugar level up.

RESEARCHER: Are you aware of the term hyperglycaemia?

TEACHER 5: No.

RESEARCHER: Hypoglycaemia?

TEACHER 5: Yes I have heard, but I don't know what it is all about.

RESEARCHER: What do you think is the effect of diabetes on the child that is in school?

TEACHER 5: Very, very difficult for the child that has got diabetes, especially in school ... The child is stressed out; she is always looking at her pump you know. It is time to eat or time for a snack and she is like nervous. She was really on her nerves. It was very heart sore to see a child with diabetes ... a five-year-old. The child is more stressed out than anything else. She was more worried about herself than her work.

RESEARCHER: And any other effects that you noticed? Do you think it has an effect on their learning?

TEACHER 5: Yes it does, it does affect their learning. I have noticed the concentration also. She is more stressed out and she is more on her nerves. It is my snack time; it is time to check my pump. That is how it is like with a person like that, with her especially.

RESEARCHER: And exercises and things like physical activity? Were there any precautions ...?

TEACHER 5: Actually her mom didn't want me to do some exercises. Initially, first she said I mustn't do any exercises, then after that I just did slow exercises with her, and then she did exercises.

RESEARCHER: When you took responsibility for this child in your class, what did you experience?

TEACHER 5: At first I was very scared because it is a very big responsibility. It is somebody else's child. I didn't know how to inject the child. First at one stage I thought I had to give an injection so I didn't take that responsibility. I can't, I am not one to give an injection. Then she taught me how to do the pump … so she wrote it in detail, showed me how to use the pump. As time went on, I used to give her the pump, and then eventually I became used to it. It just became part of me.

RESEARCHER: And any other experiences with this child that would benefit other people? How did it affect you as a teacher in your class?

TEACHER 5: Actually I became very close to this child. She became part of me, I took her as my own child and I made sure she had all the snacks. And made sure that she had it on time. I used to monitor the pump and I used to check her. Something else the mom told me to check on. It was to check the sugar levels, so I made sure. I had like a separate time for her. I put everyone aside and concentrated more on the child.

RESEARCHER: And snack times. How did you handle that?

TEACHER 5: At snack times she had to have bread at 9:30 and at 11 she had to have a snack. I used to make sure that at 11 she had a snack … Her snack was on my table so I knew exactly the snack time. ……

RESEARCHER: Do you think that the knowledge that you have at present is enough for you to handle any situation within the classroom with a child with diabetes?

TEACHER 5: Yes, I will definitely manage. Now I will definitely manage after a year. It was so rewarding … She was like part of me and I would handle any diabetic child.

RESEARCHER: Do you think that guidelines for teachers on how to handle and what to look for, specifically for teachers; do you think if you had something like that before you got this child, it would have helped or given you more confidence? Do you think teachers would benefit from a set of guidelines?

TEACHER 5: Definitely, you need guidelines because now there are quite a few people having sugar. So it is nice to have a set of guidelines. If I had guidelines it would have been so much easier. To know exactly what to do and what type of sugar the child has got; how to work it out, the testing.

RESEARCHER: If there is a set of guidelines – in what form would you like it to be in? Written, CD, what form would you most benefit from?

TEACHER 5: Even a CD that I can take home and then look at it, you know. And then the written would also be fine. So the written form I could have it on the wall, so if any emergency occurred I could just quickly look onto the wall. I could just put it on the wall … So it would be quick, quick … A CD would be nice also, to go home and have a look at it, but then we have this also.

RESEARCHER: What do you think? What kind of information should be in these guidelines?

TEACHER 5: For diabetes. For teachers?

RESEARCHER: For teachers.

TEACHER 5: It must just be simple basic guidelines to tell us how to go about it, for diabetes, and how to help the child. It is more important to help the child. As long as we have got the guidelines and the help of the parents also.

RESEARCHER: But like specifically in your experience as a teacher. What do you think would benefit other teachers? Like you said the parents taught you and gave you stuff. What like for another teacher if this child was going to another teacher's class, what would she need to be able to handle this child?

TEACHER 5: Like what I did, I knew this child you know. At the end of the year, I called this teacher, I spoke to her and told her, this child is diabetic and we had to work around this. If she needed help I would help her. In the beginning, she needed help so I went and I helped. I helped give pump and at 11 o'clock I had to remind her it is snack time. And anytime she needed help I would help her.

RESEARCHER: When you were doing your studies did you do any training in diabetes? Did they give you any knowledge of diabetes?

TEACHER 5: No … Actually now it is now coming … It is more advanced now, not like in those days.

RESEARCHER: Have you heard of any training for teachers, not in college or anything, but for teachers specifically who are teaching, on diabetes?

TEACHER 5: No.

RESEARCHER: Is there anything else you would like to add that would help me with the guide?

TEACHER 5: We would really appreciate it in all the schools if you could give us a guide, because you know there are a lot of kids that have diabetes. It would be nice if we had like a … just to show us how to go about it and things like that. So it would make it easy for us also, and then we will know exactly what to do for the child also. Because the child is important … I think that covers all the topics so far.

RESEARCHER: Thank you so much, Mrs Y for the input I really appreciate it. I will be doing another interview, just a short one, once the guidelines ...

Summary from observation form: Open, honest, congruence between verbal and non-verbal messages.

Teacher Interview 6

RESEARCHER: Thank you for signing the consent and for giving permission to tape this interview. You have already told me that you have taught children that have diabetes. As you know, this interview is related to that. Tell me what do you understand by the term diabetes?
TEACHER 6: I know that it has got to do with the sugar levels in the blood; it is either too high or too low.
RESEARCHER: Do you have any knowledge of the different types of diabetes?
TEACHER 6: I know there are two types. One the elderly get and one in children. I am not sure what they are called.
RESEARCHER: Do you think it is an illness that is becoming more prevalent? If so, tell me more.
TEACHER 6: I think it is becoming more prevalent in children; we can see it because, as before, we hardly used to have children with diabetes in the classroom. Recently in the last four or five years, we have had a few.
RESEARCHER: Do you have any idea what causes diabetes? If so, please elaborate.
TEACHER 6: I think that it is genetic and I know in older people it has got to do with diet or obesity.
RESEARCHER: Are you aware of any symptoms of diabetes? If so, can you tell me the symptoms?
TEACHER 6: In children I know they get very tired, they get thirsty and go to the bathroom a lot. That is basically what I know.
RESEARCHER: Diabetes has complications, are you aware of them? If so, would you please name them?
TEACHER 6: I think, complications of diabetes I am not so sure. I know that it can affect the eyesight and wounds don't heal very easily. I don't know any others.
RESEARCHER: How do you think diabetes is treated and managed?
TEACHER 6: I know that they get insulin to control the sugar level.
RESEARCHER: Are you aware of what a diabetic emergency is?
TEACHER 6: I know that they can go into a coma in an emergency if the blood sugar goes too low. That is all I know.
RESEARCHER: Have you heard the term hypoglycaemia before?
TEACHER 6: Hypoglycaemia ... I have heard it, but I am not sure if it is high or low sugar. I am not sure.
RESEARCHER: What do you understand by this term?
TEACHER 6: I am not so sure.
RESEARCHER: What do you understand by the term hyperglycaemia?

TEACHER 6: When I hear the term hyper I think maybe too much sugar.

RESEARCHER: What effect do you think diabetes has on a child with diabetes in school?

TEACHER 6: In school children feel different, and I think that would have an emotional effect on them. They have to take insulin and some of them have insulin pumps, so it affects their self- image sometimes. I know, physically they have to have their snacks and medication correctly. They can be tired. Socially sometimes they can't eat the same foods that the other children can eat if there is a party or so.

RESEARCHER: Do you think diabetes has an effect on the cognitive functioning of a child? If so, please tell me more.

TEACHER 6: I don't know, I don't think it would have an effect on the cognitive functioning of the child.

RESEARCHER: What is your take on exercise and diabetes?

TEACHER 6: The children that I had, they used to exercise. Initially I did not even realise that it can have an effect on them, until the parents said that some of them did not want their children to exercise because they are afraid that they are going to become too low.

RESEARCHER: Do you think a child with diabetes can exercise or participate in sport?

TEACHER 6: The children that I have had, one did participate in sport but the mother was there all the time with the child to check on the child. I think they can, but I know that it can affect them.

RESEARCHER: Would you be willing to take responsibility again for a child with diabetes in your class?

TEACHER 6: I would, but it was very difficult. It is very difficult, it can be very disrupting sometimes, and it is scary because there can be emergencies. We have to. We are forced to when the children come to our classes. I don't think we have a choice.

RESEARCHER: Do you think your knowledge at this point is sufficient to handle a child with diabetes?

TEACHER 6: After all the questions you have asked me, I don't think so.

RESEARCHER: What training, if any, did you receive in dealing with diabetes in the teacher training?

TEACHER 6: I had no training in my teacher training.

RESEARCHER: Do you think teachers need guidelines to handle children with diabetes?

TEACHER 6: I think it would have helped a lot if I had something with me when I had the first child with diabetes. I had to find out all the information on my own with the parents. That would help, to know what to do, what kind of snacks to have or how to test the sugar. I think if I knew I would have been more confident. The parents initially, when I had the first child, the parents were very worried because I knew nothing. I would have liked to have put them at ease from the beginning but it took me a while. After I knew I was going to have a child

with diabetes, that is when I started researching a little bit and asking a nurse or a doctor a little bit about it. If I had known, I think it would have been much easier, because it took me a long time to get used to it, to get used to the different routine. You have so many other children in the class and then you must worry about the one that has this special need. It was difficult.

RESEARCHER: If you indicated that teachers need a set of guidelines, in what form would you suggest information about diabetes? Like printed guidelines or CD or both?

TEACHER 6: I think printed guidelines would be very helpful, because that you can always keep with you in your file, or keep in your classroom and go back to it whenever you need. A CD not in class, because we don't have facilities to put on a CD in the classroom. Maybe take it home, but I would prefer a written copy of something.

RESEARCHER: Is there anything else you would like to add?

TEACHER 6: I think it would be wonderful if you made up a set of guidelines, but all the questions that you asked, I think covered a lot of other things I wasn't even aware of till you asked me questions, like the terms I don't know what they really mean. I don't have anything else to add.

RESEARCHER: Thank you very much.

Summary from observation form: Open, honest, confident and friendly.

Parent Interview 1

RESEARCHER: I have already explained to you the confidentiality and you signed the informed consent form for me. You understand that I am taping this interview and that it will be transcribed?

PARENT 1: Yes, okay.

RESEARCHER: We are here to discuss your child. I want to know, how old is your child at the moment?

PARENT 1: Thirteen at the moment.

RESEARCHER: When was he diagnosed?

PARENT 1: He was diagnosed just before he turned four. He was about three and a half; three years six, seven months.

RESEARCHER: I know that the diabetes must have affected your daily life a lot but I am going to focus on school, because that is where my study lies. I want to know, when he started school, how did you feel about leaving him in the care of a teacher for a full school day?

PARENT 1: The first time he was at Montessori so I used to go once a day. Leave him at school in the morning, go at about 11 o'clock just to check his sugar, because he couldn't read numbers and things, so I used to go and check his sugar, and if his sugar was high I would give him a little dose of insulin just to bring it to normal. Then he would finish at half past 12, and at one o'clock I would pick him up.

RESEARCHER: When you told the teachers, what was normally their initial reaction?

PARENT 1: One of them was like, you know, vigilant – you know, like being a diabetic he needed to go to the loo quite often, you need to go to the toilet. Then the sugars go quite low and they need to eat in between. Because he knows his condition he needs to tell his teacher. And some of them understood but some of them got very irritated. "You are disrupting the class," "Can't you wait for the lunch break?" Or things like that. It was not easy-going with all the teachers. They ... need to understand about diabetic kids.

RESEARCHER: When you told them about the diabetes, did you feel that they knew anything about diabetes? Did they ask more questions or did you have to explain everything to them? What was their knowledge?

PARENT 1: Some of the teachers, I think, were totally clueless on diabetic children. And some of the teachers, like …, she knew a little bit because there were a few diabetic kids in her class in the previous years. But most of the teachers, I can say they did not know how to cope with diabetic kids. [Child Y] like taking a snack or his sugars are low, please I want him to eat even if it is during class time, and you are doing work, just allow them to have a snack. Because if he doesn't have a snack you are going to get into trouble, because they don't

even know how to cope with a child if his sugars run low, what they need to do … I explained to them, but I also explained to my child, if you have felt low and felt you wanted to eat just go ahead and eat, don't worry, even if the teacher gets upset or gets angry with you. I will answer to the teacher for you. Because my child was so small, you know, and teachers ... when kids are still small and they are being naughty and mischief and things, there is some just say, "Just go and sit down," or "Get out of my way, I am busy," or something of that sort. So if my child needed that attention at that time and if he wanted to eat at that time, I told him just eat and don't worry about the teacher; and sometimes if you want to go to the toilet. And if it is a diabetic kid they need to run, because their number one is quite heavy, or whatever. So, I told him, just leave the class, don't worry, you don't have to wait and ask the teacher, don't worry. I think the teachers are clueless, but you know, as the years went on and he grew up and he learnt reading his numbers and taking his own insulin, it was very easy for them because he handled it himself.

RESEARCHER: At what age was that?

.**PARENT 1: …** at about four years and then 5 years at pre-school.

RESEARCHER: But at what age was he able to handle his own diabetes?

PARENT 1: I think about six, maybe as a Grade 1, he was quite intelligent he could read numbers and he used to test his sugar whatever the reading was. I used to always write on his lunch the amount of carbs that he needs to take, like for a slice of his lunch how many carbs; you need to learn to do carb counting. I used to tell him how many carbs and how much of insulin for these carbs. And he used to dial out; actually the teachers never even used to stand there. I think they were too busy. He used to dial out on his own with a Nova rapid pen, and he used to check his own insulin. He used to take his own insulin on his tummy or his thighs. He used to do it on his own.

RESEARCHER: Didn't this stress you out?

PARENT 1: It used to, it used to [stress]. One or two times he did seem quite weak at school, but I also used to leave sweets with him, and when it happened for a few times, then I used to go between lunch breaks just to check him out. I used to go to first lunch break – luckily I was a stay-at-home mom – so I used to go the first lunch break and then the second lunch break I used to give him his insulin, and he used to have his lunch in the car. Then I used to wait until he finished up school and bring the child home.

RESEARCHER: Then basically your child did not need a lot of assistance?

PARENT 1: Basically, basically the teachers didn't bother, they didn't give a lot attention to my child and I am not saying only my child, there was another diabetic kid in my child's class. I know for a fact that that child ... really stressed, and that mother was also very stressed, because that child used to run low all the time and she used to be like living in the school, because like the teachers were really not understanding. They used to get very

irritated that he used to have to take out his lunch and like eat in the class … he could … a little bit because my husband got us onto medical aid ... So we got medical aid so I got my child onto insulin pump therapy. So with insulin pump therapy it's so much easier being a diabetic. He could just put in the carbs … and it would just give it to you directly into his body ... I could say it was a tortuous time for him as a child at school being a diabetic. The teachers were taunting and taunting him. They did not have any understanding of the child's grief. They don't know the feeling of being a diabetic and what the child is going through, you know, just by his sugar going low. You can't experience it if you are not a diabetic; you can never experience the feeling of what our kids are going through. My heart really went out to … that is [name of child] mother. She really, really had a hard time with [name of the child] and the teachers.

RESEARCHER: And then when, like you said, the teachers did not help much and that, but when you told them that your child is a diabetic and they may have to help him at times, did they ask appropriate questions?

PARENT 1: No, I won't say they asked appropriate questions. It is like I informed them that Child Y was a diabetic and like they told me, like, whenever he wanted to go to the loo they would send him. And if he wants to eat we will let him eat … Being quite a smart kid, that is my son, I may be biased. He coped very well with his diabetes. He used to check his sugars when he got used to it. He listened to me, like when he wasn't allowed to eat anything; he never ate anything that he wasn't supposed to eat. And what I gave him and how much of carbs and how much insulin he needs to take. That made my child very independent. The teachers actually used to complain to me about the other kid. They used to tell me, "Why isn't [name of child] like your kid?" You know, at that time like I didn't know [name of child] and his parents and whatever they are going through. With my child being as early as we could, like maybe seven or eight years, we got him onto the insulin pump. [Name of child] was still on manual injections and that was so difficult for him … Being a diabetic's mother my heart goes out to him. I feel my child coped better. My child loves sports, [name of child] loves sports. This child here they used to insist that he come out and play and run around and do all the activities. But he was totally, he couldn't do it, he just couldn't do it. You know you get two kinds of kids, two different kinds of kids. Some of them love sports, and some of them hate sports. But Child Y is the kind of guy who is an all-rounder. He managed very well.

RESEARCHER: So, you feel it is only because he is a smart kid and you made him independent from a very young age in handling his diabetes, that he coped better than the other child?

PARENT 1: Definitely, definitely.

RESEARCHER: Then you spoke about sports and that. Now what special precautions were taken by you or your son? Did the teacher know that strenuous exercise could also affect the blood sugar?

PARENT 1: Definitely, definitely. They used to ask me for very special requests. I know he wants to go for training, I would give him extra glucose sweets and a little bottle of Coke, just to be safe. He knows only if he starts to feel a little bit weak, he can have these sweets. But I feed him, you know, healthy food, like he used to have his low GI brown, corn beef, cheese and tomatoes and lettuce, and when he plays sports, he loves a little extra sweets now and then; I used to allow it just as a special treat.

RESEARCHER: I am coming to special treats now. When there were birthday parties and that at school.

PARENT 1: Oh that is a big disadvantage for diabetic kids. There was very little room for our kids like they never catered for our kids. It is either that they have popcorn that was there and maybe they will get a diet soda or something for them. Maybe they will give them a little bit of cheese curls or something. But there was nothing like special diabetic sweets or like little fancy sandwiches, you know, or something ... you know, something attractive for kids. Nothing of that sort. They never catered for our kids being diabetic.

RESEARCHER: Then cupcakes and things like that. Is [name of child] allowed to eat the cake and adjust the medication?

PARENT 1: No, no. But he was on manual injections. It is very difficult to get a proper reading. It is either too low or it is too high; there is no middle ground when you are taking manual injections. That is why I am telling you, like I am stressing to you that [name of child] diabetes was so much worse than my child, because my child was on the pump and [name of child] was on manual injections. It was quite difficult for him.

RESEARCHER: So when he was on manual injections he couldn't even have birthday cake and you feel that maybe ... Do you think they knew ... ?

PARENT 1: You know, I wouldn't say all parents ... there is some very, very considerate parents who catered for one birthday party. I think he may have been around seven, I think ... and his mom made a party pack for Child Y that was totally diabetic. She went to Dis-Chem and she bought him lollipops and little suckers and sweets and gum, you know. That was so thoughtful of that woman. You know, I actually informed her, you know, thanking her for treating my child. That was so thoughtful.

RESEARCHER: If you tell the teacher your child's status of diabetes, do you mind the teacher telling parents?

PARENT 1: No, no, no, I don't have a problem with that. The more people that know your child is a diabetic it is safer for your child. Actually my child's friends, they are very supportive of him being a diabetic. You know the lunch break they used to gather around

him while he was checking his sugar. Now, they all remember his glucose reading and now they tell him, [Child Y] you need to take 100 carb. So, now he needs to take insulin. So, you know, his friends really gave him the support. With the children they never victimised him or never like bullied him or gave him a hard time. The children were very supportive.

RESEARCHER: So you say he wasn't really bullied?

PARENT 1: No.

RESEARCHER: Did he ever have an emergency at school or did he ever go low and if he did, how did you handle it?

PARENT 1: Actually there was one emergency that he had, but he wasn't at school at that time; he had a bit of a 'flu and he was at home. Whenever he was a little bit sick I kept him from school because I knew that automatically his sugar goes high. Whenever a diabetic child is sick their sugars tend to go high. So this one time he was sick and his sugars went high, then you have to check for ketone and he did have ketones. Then you have to start giving him a lot of water to flush out the ketones. Then from the ketones he started to vomit black, and once you start to vomiting black, totally black, then you need to get hospitalised immediately. That was a new year's day.

RESEARCHER: How old was he then?

PARENT 1: He must have been about eight years.

RESEARCHER: So it wasn't at school?

PARENT 1: No it wasn't at school.

RESEARCHER: As you say, whenever he had a little bit of fever ... or was a little sick ...

PARENT 1: I kept him away, kept him away, because I knew that if I left him in school he wasn't going to get the attention that he needed.

RESEARCHER: So you sacrificed his school …?

PARENT 1: I rather kept him home with me; I could take better care of him.

RESEARCHER: Did you ever leave anything at school in case of an emergency, Glucagon or … Did you show the teachers how to use it in an emergency?

PARENT 1: No, I always had the Glucagon, but the Glucagon must always be kept in the fridge. I didn't find anybody responsible enough to leave the Glucagon with at school. When he is at the stage when he needs the Glucagon, he may not be at school, so I left a lot of different numbers at school. My husband's cell number, my cell number, the house number, my friend's number – someone who could get hold of me. I had the Glucagon with me, but funnily enough, he never needed the Glucagon at school.

RESEARCHER: And it did not worry you at all that he could have an emergency?

I**PARENT 1:** It did, it used to worry me a lot, but I was fortunate enough that I am a stay-at-home mom and I have a car and stay with my mom.

RESEARCHER: Do you live far from the school?

PARENT 1: I am quite far from the school.

RESEARCHER: How many minutes?

PARENT 1: About 5 or 6 minutes; whenever they needed me I would have been there.

RESEARCHER: Did they ever call you and tell you that he wasn't looking well or that he had any symptoms?

PARENT 1: No never. But I can give you an incident when I went to pick him up at school and I saw an ambulance parked in the school yard. I just left the car, and I left the key and I just kicked off my sandals at the door of my car. I don't think I even closed the door. I ran down, the teachers are looking at me, it's like after school but I just ran. I thought it was Child Y and I ran. I promise you ... the mothers that were sitting there must have thought I was mad because … I ran to see who was getting into that ambulance, but it was just an ambulance that came to the wrong school. But you know, it is only such a fright for me, because once he gets into a low ... No mother wants to see her child go into a low, because it did happen to me once when he was small, but that time he was very, very newly diagnosed as a diabetic. His sugars had run low but he couldn't recognise the symptoms in his body. He just put his head on the table; then I picked him up and he never opened his mouth, then I picked him up and I put him on the kitchen counter. All of a sudden his head was flinging back. I didn't know what to do. I had Coke in the fridge, I was taking sugar in my hand, clumps of sugar I was just shoving it down his throat. My child's teeth were just totally stuck together I couldn't even open his mouth. I took the bottle of Coke and just poured it into his mouth, I didn't care where it fell. And then, I don't know, it's like Allah [God] gave me the strength and he came out of it. That was like a terrifying time for me. That was one very bad experience. It was so traumatic. So it is very scary, but it never happened at school.

RESEARCHER: If it did, do you think the teachers could have handled it?

PARENT 1: … the teachers are fine but they are not capable of looking after a diabetic child. They need to be more informed, that if a child has a low what to do in a case like that … The child is carrying Glucagon and parents need to inform the teachers: my child has a Glucagon, can I have ... usually schools have like a kind of medical place, they keep like a little fridge or something. Put your child's things in the fridge, as it is called. Label it. Glucagon, you can keep for a year in the fridge. Mine stays in the kitchen fridge for a year. The next year I discard it and get a new one, but at least keep Glucagon if your child is diabetic.

RESEARCHER: Did you pick up the symptoms or did he pick it up?

PARENT 1: Today he didn't pick it up and he is just telling me, "Mommy I am hungry, dish up for me," and I dished up his food and then I told him check his sugar … The checking of the sugar and taking insulin … like you know they get very lax. I am always on his case "[Child Y], check your sugar, check your sugar," "[Child Y], take your insulin, [Child Y], take

your insulin". So today now … with all the excitement and I think there was a big lapse between his lunch and by the time he finished gym on Friday, and then by the time I dropped them home, I had to wait for all of them. He didn't make it out. I didn't even know that his sugar was so low today. I mean [Child Y] is 13; he will be 14 in three months' time.

RESEARCHER: If this had to happen in school?

PARENT 1: You know, if it happens at school his friends are very well informed and he's got a group of very supportive friends. I can say, if anything has to happen to my kid in school his friends are going to stand with him, nobody else. The teachers are not going to be there for him.

RESEARCHER: You say he is fortunate enough ...

PARENT 1: He is fortunate enough and you know there is one clique of friends ... they are like a clique they all ... You know, they are all boys, so then they are just one clique. So they all understand [Child Y's] problem, and if he does feel a little low then all of them, somebody is taking out something. It's like, "[Child Y] I've got a sweet," "[Child Y] I've got a chocolate." You know it's like something ... That is where it has given me some peace of mind now. Him being like in Grade 8 now, he can manage it.

RESEARCHER: What about excursions or organised trips, did you ever send him?

PARENT 1: No, I never sent him on an organised trip.

RESEARCHER: And excursions?

PARENT 1: On an excursion for the day, but I always packed him a nice, like and extra, not even a healthy, lunch box. Like more extra carbs. I will give him a samoosa, he likes chocolate biscuits. I give him ordinary juice instead of full sugar cool drink. I give him a juice. The juice has a little of natural sugar.

RESEARCHER: And excursions?

PARENT 1: Recently, like the last four years, I have allowed him day excursions, but when he was a little younger, I used to actually go with him. Yes, I used to go with him. I went to the zoo with him, to animal farms and things.

RESEARCHER: Just so you could be with him.

PARENT 1: Yes, just so I could be with him. I can't leave him. He would go out and he is excited and when you are excited then your sugars play different. Then running around, and then, if something has to happen if he gets hurt or something ...

RESEARCHER: So you prevented any emergency just by being there, by going with them. That is really amazing. Fortunately, like you said, you were not working so you can do that. Now I want to know from you, is a guideline for teachers or putting together a booklet or DVD for the teachers … What sort of information do you think, as a parent now having sent your child with diabetes to school? What kind of information do you think will be good to have in a booklet like that?

PARENT 1: The first thing is you should tell each and every teacher of your child's diabetes and that he is on insulin. I think they should at least be able to help them to check their sugars, especially the little ones. To check their sugars and help them out, they can't read so well. Help them to dial out their insulin. Like at snack time. They need to have six snacks a day. Three meals a day. Broken up to six meals a day for a diabetic child. It is breakfast, then your ten o'clock, then your lunch, then teatime, then your supper, and then before you go to bed.

RESEARCHER: In terms of teachers?

PARENT 1: In terms of teachers. Allow them to give the child an opportunity to have that snack, even if it is class. Let them have it in class. Let them be informed that they have to go to the loo quite often. They should also be kept hydrated, they need lots of water. And I think they should be informed about the lows, what to look for. They feel tired, they feel lethargic or they might just fall asleep on the desk. You know the signs of being low and also the signs of being high. The highs also. Extra-mural activity. Sometimes the child is not very well, keep an eye on them. Also make sure they are checking their sugars.

RESEARCHER: You said your child wasn't discriminated against and you didn't have to go through that. Would it have made you feel more at ease if the teachers knew all these things?

PARENT 1: Definitely, definitely.

RESEARCHER: Do you think that you would have had to go into school all the time and go with on excursions?

PARENT 1: No, definitely. I feel they need to be more informed, you know, how to cope with a diabetic kid. Like you know, if they had known, most probably I would have been more relaxed, yet I was like, I took it in my stride, my child being diabetic. I didn't let it get me down. It would have given me more peace of mind if the teachers were more informed. If they kept on checking on [Child Y], but I knew for a fact they didn't. At certain times when he did have a problem, then when I asked him if his teacher knew about it, he said no, the teacher didn't know about it.

RESEARCHER: So the teacher was not even aware of it?

PARENT 1: The teacher didn't know about it. And you know what? Every year, if I didn't make it my duty to tell the teacher that [Child Y] was diabetic, some of them – half the year went past and they didn't know [Child Y] was a diabetic.

RESEARCHER: Wasn't it on his school file?

PARENT 1: I am sure it was, but I don't think they must have taken notice. Some of them didn't know [Child Y] was diabetic. You know what? Especially when you go up to higher grades, like Grade 3 or 4, 5 they don't pay attention. I think it is because of his friends that the teachers came to know that he is a diabetic.

RESEARCHER: He doesn't have a problem with the teachers knowing that he has diabetes?
PARENT 1: No, no, he doesn't mind.
RESEARCHER: Thank you very much ...

Summary from observation form: Very talkative and open. I do however get the feeling that she does not remember the age her child could inject and test himself, but he may be bright, so it is possible. I did however think it was too young to allow a child to test and inject by himself

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Parent Interview 2

RESEARCHER: You told me that your child has got diabetes. How old was she when she was diagnosed?
PARENT 2: Eight.
RESEARCHER: She was already in school at that time.
PARENT 2: Yes, it was over December/January when the school opened again.
RESEARCHER: How does the diagnosis affect your day-to-day life?
PARENT 2: We can't just go out to eat. We had to get a little booklet and there it says every needle that she has, has so many carbs. The doctor says her sensitivity is say, 19 grams of carbs per unit of insulin, then you relax before you can inject her. You get to restaurants and people give you funny looks because your daughter is sitting there with a needle in her leg. You get used to it. She changed her whole diet. I don't use fatty stuff anymore. We don't eat a lot of bread or a lot of carbs. The kids are healthy.
RESEARCHER: Now because my study is specifically about school and diabetes, when she had to go back to school she was already eight years old. How did you feel about leaving her in the care of the teacher at school time?
PARENT 2: We were very fortunate when we first thought she was diabetic her T cell count was sort of going down, but it wasn't at the level where she kept on going up and down; she was still in the honeymoon phase. When they did a final diagnosis she went back a week after school opened and I found out that her teacher's son was Type 1. So we were very fortunate. The whole year the teacher monitored her and did what she had to do.
RESEARCHER: And then when she went to the next teacher?
PARENT 2: I had to go and explain everything, and this woman was one of those, that had known Type 2 diabetics, and they have this preconceived idea that Type 1s are exactly the same as Type 2s. So I had to try and explain to her that nothing she knows of a Type 2 is relevant to a Type 1. That was a bit more difficult. She didn't take matters seriously when she said she had to go to the loo. When she is high she has to go. When she is low she gets very anxious and she wants to test now, she wants to eat now. They need to be open-minded, and they are not always.
RESEARCHER: So you did inform the school and the teacher?
PARENT 2: Yes, and then because our school, or normal schools, don't have nurses I had to leave all the things with one of the receptionists. I had to leave all her medicine there, spares; she has to have extra batteries and she has to have extra strips. Then there is the injection called the Glucagon injection and that thing is quite potent. I don't like using it. And I had to trust this woman and entrust her not to just inject and go crazy with it.

RESEARCHER: You said the first teacher fortunately knew about diabetes. She was eight years old. How old is she now?

PARENT 2: She is 12.

RESEARCHER: So subsequently she went to different teachers. Now I want to know from you, the teachers that she went to, the majority of them, did they know anything about diabetes? Did they know what to do? What was their reaction? Were they willing to help? Like you said, the one didn't take her seriously. What was your experience?

PARENT 2: They mostly, because they knew Type 2, the headmaster had Type 2. They mostly thought that whatever is going on with her is not so bad. The headmaster tests maybe three times a day. So if I tell them she can be 1.8 now, but in two hours she can be 31, she is out of control. That is how they classify it. They say this diabetes is under control. That is how they are … She doesn't even read on the meter. They mostly had this attitude it is not that bad, she just needs to eat a sandwich. They ... really, they got irritated when she had to test. They said she was testing at an inconvenient time. When she had to eat they chased her out of the class, she had to stand outside. Some of them didn't even want to know anything about it. So if something went wrong with her, they chased her down to her initial teacher – the one who had a diabetic son.

RESEARCHER: So it was difficult.

PARENT 2: I think she did not tell me a lot.

RESEARCHER: She was now already eight years old, so fortunately she could read perhaps and do most of her own stuff. At any stage, did a teacher have to help her inject or do anything, and were they willing to help in that way?

PARENT 2: No she didn't have to inject her … No I don't think they were too willing to help ... The first teacher would play around and tell Child Z: "I can't manage this because this is too high or this is too low." Her son is sort of like he rebels against his sickness. He doesn't want to test and his sugars are all over the show. She was quite patient, but the rest, they didn't want to touch her because she might give them something. There is blood.

RESEARCHER: And then how did it make you feel knowing that this is how they felt?

PARENT 2: I mustn't get upset with them or angry at them, because it is more ignorance than anything else. I think, without blaming it on AIDS kids, it does have a lot to do with that. Because it is blood and injections, and that it is kind of creepy or gross, and you might give me something. I read somebody's status on Facebook the one day, he met this girl and greeted her and shook her hand, and after they started talking she told him she was a Type 1, and he said, "Now I have to be tested because she has given me a disease."

So I think, people, even though their minds tell them it is just diabetes, some silly people think they can get it.

RESEARCHER: Did teachers ever ask you appropriate questions? Or did the teacher not realise, like you said, they took it too lightly, they didn't realise the implications of diabetes on the child? Do you think they asked appropriate questions or were they just clueless?

PARENT 2: They were clueless ... The classes were not that small but [Child Z] was the only diabetic in the school and people … the headmaster ... there were quite a few Type 2s, and I think he was telling them it is not that bad, don't take it too seriously. Maybe we didn't fight enough because … Eventually you just give up. I told the guy when she is high she can't see, one of the teachers, the last one that I had a fight with before I took her out of school. He said to me that the reason this one test result [scholastic test] was bad, was because she wasn't at school enough, because every time she has to see a doctor she would miss school. They didn't even know what an insulin pump was when she finally got one. So then he said she wasn't at school enough and she tested [her blood sugar levels] at inconvenient times. They didn't know and they didn't bother asking; it was almost like they didn't want to know.

RESEARCHER: And did you have to explain symptoms or to be aware of what happens to her when she has a high or a low? Did you have to explain it to them?

PARENT 2: I did. When the class starts I write them a little note and then at the first chance I get to have a meeting with them and we go through what I wrote. But always in the front of her school diary … these are the symptoms and this is what you have to look out for. By the second year when she went to Grade 3, she went to [Teacher Z's] class, and then the next year the lady there was another teacher, the year after that they had gotten used to sending her to the other teacher, so I said if all else fails just send her down.

RESEARCHER: My next question is about the lunches and the snacks. How did they handle it, the in betweens and in class?

PARENT 2: At first she was on injections. Because once she injects, she has to eat. As she went low they chased her out of class and when she was still on the injections, and of course she knew all the carbs and how they related to everything. I had to stick it in her lunch box so even though she is low and she has to eat, she still has to inject the insulin, because not injecting for that something she eats now can make her go to high again. They couldn't get past that one. So they kept on saying silly things like you don't have to eat now if you have just injected. They just didn't realise just how very volatile Type 1 can be. It goes from anything. She can be 23 now and just now she says she is 3,2 ... When she injected at lunch time they wouldn't give her 5 minutes before lunch just to test. So as soon as the bell went she had to go out of class and then test, then inject, so by the time the bell went, she was half way through her sandwich. So eventually I had to go and fight and she got permission to finish whatever she was eating. Then they started saying she was taking chances and

prefects started saying she has to stop eating. Then she had to go to the hall … They don't understand why she has to keep on eating.

RESEARCHER: The next question was the blood sugar testing. She used to do that all by herself?

PARENT 2: Yes.

RESEARCHER: Like you said the medication. That was my next question. During school hours you said you had to leave it with the secretary. Did she keep anything with her, like the testing stuff and her insulin?

PARENT 2: Yes, she used to get one of these cooler boxes. Every term I would stock it up and as [Child Z] uses stuff then I would stock it up.

RESEARCHER: Where did the cooler bag stay?

PARENT 2: It was kept at the front, in reception, in a fridge. I had to give her spare insulin batteries, needles in case the insulin pump failed, test strips and all those things. Eventually they just started getting … [Child Z] ran out of something, they said okay, you can phone your mom but she has to pay for the call. Then [Child Z] phones and when I drop it off, then I have to give her R2 because they had to call me, it was a medical call.

RESEARCHER: It doesn't sound like it was easy.

PARENT 2: We had never asked for special treatment. I just said if she needs to go to the loo she needs to be able to go. If she needs to eat you can't stop her legally from eating. They just decided they have to let her do these things, we are just not going to let her do this in class. The only thing that they would allow was testing. The one day she tested without asking and at the next meeting the teacher said she to me, "I expect her to ask before testing, because she is disruptive". The only noise you hear is the click pen. She could do it on her lap. She had this friend who would walk with her. But the kids were very funny, even the kids, because they pick up on the adult's attitude.

RESEARCHER: Discriminating against her or what?

PARENT 2: They were very impatient with her; they didn't know how to deal with her.

RESEARCHER: You spoke about the first time. Luckily for you she had a good teacher. Did she ever have any emergencies in school where she went really low or really high? If so, how was it handled?

PARENT 2: Her first teacher would phone me. She took my number and sms'ed the whole day. There have been a few times that [Child Z] was high. She is one of those unfortunate ones that would rather go high than low. They couldn't get her down and she gets nauseous and has swollen arms, and her vision just blurs, and she can't breathe. When she got very high in the other classes they would send her down to the first teacher and she would decide whether she could manage it or then send her home. Sometimes they would let her lie down in the sick room. That doesn't do much for diabetes.

RESEARCHER: If you didn't have that teacher there, what do you think would have happened?

PARENT 2: I don't know. I think they would have insisted that I come in more often. Actually I have no idea how they would have handled it. She was their little scapegoat. I think she would have had a very hard time. I would have had to go in a lot more. My husband went in a few times. That was quite nice. So yes, she made a huge difference. We think that [Child Z] has been quite fortunate. I have heard of schools that tell the kids that they have to go and test and inject in the bathroom. That is the one place they tell you to please stay away from, because of the germs. They thought they were being cute so they tested my son the one day after playing outside, and just from him not washing his hands he tested at 21 and then, he washed his hands, and he tested 5. So hygiene is a huge issue.

RESEARCHER: You said you used to leave Glucagon for an emergency with the secretary. And like little snacks like juices – did you have to leave it there? With whom was it? In the classroom, or with the secretary?

PARENT 2: She had one teacher where I could leave a 500 ml Coke, but as she went up in classes they didn't want to know, they said she can go down to reception or to the other teacher. I had to leave things like Super Cs and those sorts of things. Most of those things also stayed in that little box in reception.

RESEARCHER: So every time she felt maybe she was going low, she had to go down to the secretary and get stuff?

PARENT 2: Yes, because she was not allowed to have sweets in the class.

RESEARCHER: Not even an exception for her condition?

PARENT 2: No, if she felt low then she had to eat a sandwich. They couldn't justify giving a child sweets in the class in front of other kids.

RESEARCHER: Not even after you explained to them.

PARENT 2: No. She is distracting the other kids. So they wouldn't say, are you okay? They would say, "Low, go eat outside." That is what they will do.

RESEARCHER: And excursions. How did you handle those?

PARENT 2: The first one she went for two days. She went with her initial teacher. They are not allowed any cellphones or anything like that. She was allowed to sneak one in. She obviously caused a lot of fighting amongst the other kids, because now [Child Z] gets special treatment. [Teacher Z] was very nice; she would sms me during the day, told [Child Z] to keep her phone off. Then at night I would phone [Child Z] … let her put the phone on, then at one o'clock … I had to phone her to test. While [Child Z] was testing, [Teacher Z] would come in and she would tell me if [Child Z] was groggy. [Child Z] is prone to wetting the bed. She always had to go to the loo in the middle of the night. [Teacher Z] would be very discreet and wake her up twice a night and tell her to go quickly. Then she would sms me to say that

everything is fine. Then the next year they went on another trip and the lady that went with her brother had died of diabetes. So she went overkill. But I think her brother had Type 2. She would say no, [Child Z] is not allowed this and [Child Z] is not allowed that. She tried putting the Type 2 diet restrictions on a Type 1. Since we are on the insulin pump, she has quite a lot of freedom. I don't like a lot of the stuff she wants to eat, but she has a lot more freedom, and to try and explain that to the woman. So they got to Spur and she says to [Child Z], "I don't think you should eat this" ... Then the other one, she went just outside of town for two nights. I had to charge through with the cooler box because they freaked out when they heard she was a diabetic. So I had to go with the cooler box and say, alright she is allowed to eat this. Because she can eat most things, juices are the big thing. We try and keep her on … Finally, I found this guy and he said they would try and incorporate everything, but every time she had to eat she would sms me and I would give her a carb reading. Her cellphone was vital.

RESEARCHER: I didn't even think about a cellphone, you know, that a child may need one in a school because they don't allow it. What about sports? Tell me about sports and physical activities.

PARENT 2: The problem with them is if they get anxious and stressed, they go up. So with practice she nosedives, so halfway, even if we take the insulin pump off. She takes it off as soon as school ends because she is set to inject the basal every hour now because of all the pre-teen hormones. So she would take it off after school and practice would be round about forty five minutes later. I would go and sit and then halfway through practice she would run and come eat and quickly run back. Sometimes she could get it up and she could carry on and focus, and other times she would have to sit out.

RESEARCHER: And you would have to go in for this?

PARENT 2: Yes, every sport practice I would go in.

RESEARCHER: You are not working?

PARENT 2: No I'm not working. I stopped working just before she was diagnosed. My youngest daughter was born about six months before she was diagnosed … I still went to every game. I would take like raisins and sweeties or whatever, and go and sit there. Especially when you go to athletics they take them in, in the morning and do all this normal first period, and then they would go down. I would go just before the athletics started. I would always have to get her attention and say I am here, and then track her the whole time. I wouldn't take the other two children with because then I can't watch her. You can't see immediately; say she is going low, I would have to monitor her till the end, then she would say, okay, and then I had to run.

RESEARCHER: I am not sure that I understand you correctly but just tell me again. In the sports field and during school, is that when you used to go in as well?

PARENT 2: No, with that I had to depend on this one guy to watch over her. There is one male teacher who is very ignorant, who believes you can fix all and heal all with rugby and exercise. I didn't have to go in for that. They would allow her to take her food down and tester. The only thing they didn't realise was that the sun affects the test. She had a little pink bag that she had to leave on the pavilion in the shade, and then go and do her exercise and then run up. Luckily the headmaster's son, they were like best friends, he would sort of "mommy" her. He would say, "[Child Z], do this," and he would come up for her, which was very funny because of his dad's attitude towards [Child Z], but he was very good with her. He started watching over her the whole time she was diagnosed, even after her insulin pump.

RESEARCHER: Wonderful. If in preparing a guide for teachers, you as a parent, what do you think should be in this guide?

PARENT 2: Definitely allowing someone from Diabetic SA to come and talk to them, because they are not really open to that. Definitely saying that she is allowed to eat and test. I am not saying that she has to disrupt the whole class. But she should be allowed to do the testing and a snack. And that it shouldn't go into her break, like five minutes before break she should be allowed to test so that she could have a bit of a break time to eat. Education is ... if they could just be a bit more patient and lenient. Just small things … Another … First aid training … I think it has to be a requirement.

RESEARCHER: So somebody trained, you feel?

PARENT 2: Even if it is just a sister. In the UK, they get a sister, but then again they get Government assistance. We are very behind in those things. Some teachers, you can't force them not to be scared or ignorant or something.

RESEARCHER: So they need more knowledge.

PARENT 2: Education is necessary. That is where Diabetes SA comes in. Say if a school had a diabetic child they could send someone to come and do training. But Diabetes SA they … this body there, they don't have people to send out. We have now offered to become spokespeople, but they don't bother to come back to you on that. So you can't fight with the schools until you get the main thing right, and that's training teachers.

RESEARCHER: What would you have liked? Say for example, if the teacher didn't have a child with diabetes as in your case. And if she didn't know? What would you have liked the teacher to know before your child started school? What would you like them to know?

PARENT 2: I think a little bit of compassion would go a lot further than that irritability when she says, "I don't feel well." Sometimes she tests and she is fine. She just feels yucky. She doesn't understand that there are other illnesses. If she is nauseous it has to be diabetes, if she is hungry it has to be diabetes. It would be nice if they would be a little less irritable if something happens to her.

RESEARCHER: You said the teachers and the children were a little impatient with her. Was there any other kind of discrimination or bullying because of the diabetes?

PARENT 2: They did think that she got special treatment. Obviously, the teachers never bothered to explain to them. They would tell the kids that she is a diabetic. The kids had no idea. When she got her insulin pump they thought it was a cellphone. So she would walk and put in her carb reading, and the prefects would come and say that, "You are not allowed to have a cellphone at school." It would take about ten minutes of her break just to explain to them. There was one specific girl who targeted [Child Z] from the get go, when she thought [Child Z] was getting special treatment. She would go out of her way, she would say, "You are not that special that you can come and sit here," or "Why are you up here?" And she has to go to the loo and there is nothing there where they have to play and she said, "You are not that special, you can keep it in till the rest of us come up." She had this one bully and I phoned the headmaster and he eventually had to phone the mom and explain to the mom how it affected her. Mostly she was sort of labelled as the broken one, the diabetic child. I suppose it made them aware that there was something wrong with her, but they didn't know how to treat her. The prefects had no idea. That is the funny thing, the kids her age were mostly fine. The ones that were supposed to understand, they would be the ones saying she gets special treatment. Her class was fine. Her friends helped her.

RESEARCHER: Is there anything else at all that you would like to add? Something that would help me to help the teachers.

PARENT 2: I think definitely they need to … If they hear about Type 1, then to forget everything about Type 2. If I hear one more person ask me if she ate too much sugar, or say, "But she is not fat how can she have diabetes," I think I might … Or they tell you she will grow out of it. That would be nice. She would love to one day say, "Remember that time my daughter had diabetes," it is like last year's thing. It would be nice if a diabetic child comes into the school, or I suppose with any illness, that they just get a crash course. Not like in big companies, they have to go for sensitivity training. It would be nice.

RESEARCHER: Sensitivity training – that is actually a nice idea.

PARENT 2: Teachers are funny creatures.

RESEARCHER: Creatures you call them.

PARENT 2: They are like nurses, you either do it or you don't. If you do it for the money, you are in the wrong business. I mean we had a teacher there, he didn't go to college or that, he became a teacher in another way. I didn't know you could do it another way. He used to do old-fashioned physical training and he was a rugby coach. Then they started life orientation and he was that teacher. He had no life skills, if they didn't write everything as it was written in the book, he would fail them. He was the reason I took [Child Z] out of the school.

RESEARCHER: You removed her from the school?

PARENT 2: Eventually I did.

RESEARCHER: And now?

PARENT 2: She is in primary school. But she misses her friends because she had six years of school and with Grade R it was eight years of normal school, and now she is at home.

RESEARCHER: Did this have anything to do with the diabetes?

PARENT 2: Yes, because after she was diagnosed she had to go for eye tests to check the back of her eye. They found two or three spots in her retina. They tried to figure out if this was going to be a long-term thing. She battled to see at some stage. The test results came back from this teacher and it was horrible. I went through the exam paper and the questions were so vague, so I wrote to him and said if you are going to ask vague things, you have to be open to interpretation. He flipped, because, one, I wrote on his paper, which my mother says it is quite legal. Then he said to me, "You don't know what is going on with your child, the reason she is doing so badly is because she is never at school and she tests at inconvenient times. Then I went to the headmaster and he said, "It is like she never grows up, she is using her diabetes as a crutch." She did exactly the same as half the class kids that were there every day; her marks were exactly the same. She has always been in the top 20 in her class. She never went down after the diagnosis, even with not being at school. If we know she is not going to be there we get work to do. That is one thing they got very irritable about later. If I said when she is absent for her work for a week, they would say but that is extra work for us. We don't want to give you extra work and then we have to look at just this one child, and then I have 24 others to worry about, and eventually said she must just catch up when she gets back. Then I went to the headmaster and I said I am taking my child out. So now she is doing home schooling. It is just easier and less stressful. I could not handle it anymore.

RESEARCHER: Is there anything else you would like to add?

PARENT 2: No, I think I have said everything.

RESEARCHER: Thank you.

Summary from observation forms: Very nervous in the beginning but opened up and gave pertinent information.

Parent Interview 3

RESEARCHER: You understand that I am taping this on a dictaphone, but your name will never come up, everything is totally confidential. I have given you the consent form and you have signed this for me, thank you. Thank you beforehand for helping me.

RESEARCHER: I know that you have a child with diabetes. I want you to tell me when was your child diagnosed?

PARENT 3: She was diagnosed on the 15th of August 2007.

RESEARCHER: How old was she at the time?

PARENT 3: At that time she was three and a half.

RESEARCHER: How old is she now?

PARENT 3: Now, she is turning 9 this year.

RESEARCHER: Before we go on to the school I just want to ask you. How did the diagnosis affect your day-to-day life?

PARENT 3: Initially, it was very a difficult adjustment at the time she was diagnosed. Starting school was even harder for me, because I was extremely afraid of what might happen every day. I have been suffering with paranoia ever since she started school, and every day is a new challenge because the conditions differ every day and the emotions differ as well. It is more a fear every day of what is going to happen. That is my biggest worry.

RESEARCHER: And that is with regard to school, you feel that way?

PARENT 3: With regard to school, initially when you start off and they are not able to read or understand what they are doing, it is a bigger worry, because you are not sure if the teacher is going to check on them all the time, or if they understand themselves what the reading on the screen looks like. That actually is a big concern for me as a mother. It does affect you every single day.

RESEARCHER: That was actually my next question. When she started school, how did you feel about leaving her in the care of a teacher?

PARENT 3: Initially the first two years of school were very difficult for me … I think I would actually get to work and start crying. That is how I would feel, and if I left her at school in the morning till the time she came out of school, I would stress about how is the child, what were her readings, did the teacher see anything, and she was very emotional about it, she would cry every single day for the first two years because she was unaware of what was going to happen … So it affected me a lot in that regard, especially because she was so small.

RESEARCHER: When she started school, did you inform the teacher that she had diabetes?

PARENT 3: I made an appointment with the HOD to ask her, which class she put her in. After the class had been sorted out, I would arrange a session every year with each teacher

to explain to them fully on how to use her insulin pump, because she is using the pump. Then I would also explain to them how to use the emergency kit and whatever else was included to control her diabetes at school. I would always draw up my own notes and have a session to explain to each teacher.

RESEARCHER: And when you informed the teachers? I mean, now she already went from Grade R and now she is in Grade 3. How did the teachers react?

PARENT 3: Initially all of them looked fearful from what I could see on their faces. I myself as a mother am scared of the condition. If the teachers had to swop roles with them, I don't know what they would be feeling, but from all of them that I have seen, they all looked fearful, but every one of them were willing to assist. That was the good thing in this school.

RESEARCHER: The first time you told them that your child had diabetes ... Did they themselves know anything about diabetes? If not, how did it make you feel?

PARENT 3: When I spoke to them and explained to them the condition, they all seemed a bit confused, because I don't think anyone is fully aware of it until you are in the situation and you have to treat the child. All of them seemed a bit confused and asked, "What is diabetes?" Many people have a perception that diabetes is, that perhaps this child eats too much sweets, or the mother is negligent. That is the first thought you get. I don't know, about teachers mostly, but also from a lot of other parents. With regard to the teachers, I saw fear and confusion … but by the time we … I saw much more clarity … There is a lot for teachers to still learn in this regard.

RESEARCHER: When you approached the teacher and you told the teacher that your child had diabetes, in your opinion, do you think they asked appropriate questions? Did they fully realise the implications of diabetes?

PARENT 3: I don't think so, because the questions would be just like, if we want to know anything we will call you, or if we are not sure, we will ask you. Not really in depth where they would say, "How would this affect her in school?" "What do we do to make sure this doesn't happen, or that doesn't happen?" I think if there was more guidance at schools where there would be diabetes education, it would really help much more than if the parents just coming … I feel they lack the knowledge in that regard.

RESEARCHER: You already said. My next question was going to be, were the teachers afraid, and you told me that that was the first reaction they had. My next question I have, did you explain to them the symptoms? Were they aware of what to do if there was a high or a low? Did they have any understanding of what is a high and a low? Did you have to explain to them?

PARENT 3: In fact, that was even more confusing, because if you just tell them that the child is diabetic was one thing, because then you have to explain to them okay this is a normal reading, this is a high and this is a low. If it is high they need extra insulin, if it is low they

need extra glucose. At times it is still confusing for the teachers, because they are probably wondering now why did the child go high, or did the mother not do something right in the morning that the child went so high, or the child goes through a low, did the mother not give the child food? You know, so there is still a lot to learn because the conditions differ every day. There is a lot that can affect the reading, for example the heat wave we are experiencing could make them go low, so the teacher must be more wary in these conditions. If they are high there could be stress in the class, just from a … which the teacher may not understand, but the lesson may be stressful. If they are low they won't register what happened in the class. There still has to be a lot of clarity on that.

RESEARCHER: And then, I know that if a child has diabetes, then normally they have extra snacks in between also. How did you handle the snacks when she started school? How is it different now?

PARENT 3: Initially…every half an hour then she would – Preschool, because they had only one break and they would still come out at 12, I always wanted an additional snack just before home time, just to prevent a low. I would have to tell the teacher at this time, pick this Tupperware and give her snack … I don't know how the teacher would feel, because that means that all the other kids are excluded from eating, and at the same time your child is eating in front of everyone. At the same time, the child also feels out of place, and you also feel bad because you are disrupting the class. Afterwards when it came to two breaks, it was easier, because at second break she could just have the second snack and that would eliminate the snack in the class. The snack I would give because there was only one break, was only to eliminate a low sugar. The insulin pump works a bit different from injecting, because if you would be injecting you would have to eat at that point. I think on that note I think there has to be education about the insulin injection, compared to the insulin pump.

RESEARCHER: And then have you had stress … or the teachers are busy in the class. Do you ever worry that the teacher might mind her having a snack? How did you handle that?

PARENT 3: That was of big concern for me. I would hear an alarm clock go on, then I would actually at times be so paranoid that once or twice I actually phoned the school and ask them to please tell the teacher, it is her snack time. Or I would say I am sorry to disturb you but could you please tell the teacher to put an alarm clock on every day. I don't know how this disrupts the teacher's personal life, because the whole time there is an alarm clock going off. As long as I know my child is fine I would do anything to make sure that the teacher knows that that is the time for a snack.

RESEARCHER: The next question I was going to ask was about treatment, and testing during school hours. How did you bring it to the teacher's notice initially, as you said, that they would need to help your child?

PARENT 3: Firstly I explained to them the utmost importance of testing during school hours because once you get to Grade 1 the times change, to come out at 2 o'clock. So if you think of a day at school from 7 to 2, it is a long stretch of hours. In that time, anything can happen, so the test is absolutely crucial to the child's health and condition, because if the test was eliminated … the child could collapse without the teacher knowing. I would have to show them in detail how to test and that was also a big worry for the teacher, because to prick a child was also a worry. There is a phobia about needles with some people. If the teacher tests her and looks at the reading, she has to do something about it, it is not just looking at the reading and putting the tester back. If it is a high ... to allow the child to inject themselves with insulin to bring it up, or use the insulin pump to bring it down. If it is a low, I will exaggerate on, because a low is actually extremely dangerous compared to a high. If it is low they must know I have to act immediately, the juice must be given now. Not okay, if it is low I am coming back just now. No! it has to be done at that time.

RESEARCHER: So it is a big, big responsibility for the teacher as well.

PARENT 3: Actually it is, that is why I think that the teacher that is put in charge of that child … It is probably also in her own emotional stress from a new class, and then she has the added responsibility of this child who is a diabetic. I think, if the teacher and the mother, if the mother can completely give the teacher guidance, you probably find it easier. You see, some mothers, I am not talking for everyone, but when a child is diabetic we must physically teach the teacher. I think that will also eliminate a lot of the teacher's concerns.

RESEARCHER: Do you think that, like you said, do you think if they knew more it would have made a difference to you?

PARENT 3: Oh, one hundred per cent. If you were to take the teachers as a group, as a whole, and you were to sit down … and educate them … This is what you do in a diabetic condition; this is what you do in an emergency. Here is the fridge where all the emergency supplies are kept. I think not only the class teacher should know. I think all the teachers should know what to do with this child. It would make a big difference, because the class teacher is not always there, she may be absent at certain times.

RESEARCHER: That is so true. At what point was she able to take over?

PARENT 3: In Grade 1, I greatly needed the assistance of her teacher because if she was to see a reading of let's say for example, 13,1 on her insulin … she would probably read it as 1,3 because at that time she was still learning numbers. That was a bit of a challenge, but from Grade 2, I noticed that as soon as she could understand numbers completely, she was able to do the tests herself. Even though that could happen, I would still like the teachers to overlook what was happening because they are still children. If the sugar was 2,1 they would not register that they are low, looking for themselves. They are completely confused about

what is happening because already they are so shaky that ... collapse … It is always important for the teacher just to stand there and look at what the reading is.

RESEARCHER: Tell me did your child have an emergency in school? Did she have an emergency? Did you notice when she came home, that it could have developed into an emergency?

PARENT 3: There was not an emergency as such that ever happened. There was one occasion where she came back from an excursion, and I think on that day I was rather disturbed because the notes were given early in the year and the excursion was already in the first term. Then I told the teacher if there was a low you just give juice and then you give a snack, but insulin was given with the juice as well, so she had a second low. That day could have been an emergency. So, sometimes I think you have to be more cautious of the teachers in that regard. With an excursion everyone seems more, they like to be free, more relaxed. But a diabetic emergency ... so far, nothing has happened.

RESEARCHER: Like you said, you explained to the teacher, you explained to them everything, you told them to give snacks and so do you educate a teacher so that no emergency occurs.

PARENT 3: Look, an emergency could happen at any point. We would not blame anybody in that regard, but if a teacher would look carefully at the note and say it is low now, she should give half a glass of juice and then give a snack, not give insulin with the juice and the snack. Sometimes it needs a little more understanding that could save a life.

RESEARCHER: Okay so that was the excursion. What about sport? How did you handle sport and the medication that had to be adjusted for sports or PE in school?

PARENT 3: I am glad you asked that question, because of every activity that happens at school, with sports it is my biggest problem. I am completely paranoid that she is going to collapse on the field … his child has got low blood sugar. So sport, perhaps it is my fear as a parent, but especially on sports day I prefer the teachers to put her in the races that I am picking so she doesn't have to be such a strain Then I would have had to adjust the insulin pump to ensure that she doesn't go low. It is a good thing to have because with an insulin pump, you can control better so that she would not drop so low on the sports field. But it is just out of paranoia that a sport is related to lows, so you have to give extra of sugary things to prevent low, so if they were to run on the grass when they come back they have to be tested and if they were dropping too low, first give a drink with sugar in, then send them back on the grass. Don't let them have a full … to just run in the sun because a diabetic child could just collapse on the field.

RESEARCHER: And have you made the teachers aware of this?

PARENT 3: I have made all the teachers aware of it. The good thing is they accommodated me in terms of the sport … allow her to just run every two or three races then get her off the

field to have a snack and go back on the ground, but a diabetic child shouldn't be eliminated from sports – they should be allowed to fully participate. My fear as a mother is that the child would come back with too low a sugar.

RESEARCHER: Have you seen this with other parents as well?

PARENT 3: I have seen it with a few. They will say the child is not feeling so good today, she is not coming to sport. But it is your fear watching from a distance them running in that heat. Is she going to collapse now, or she is going to fall, like, must I go to the tent? Like, personally I would prefer to sit with her, you would see all the other mothers watching me like I am crazy. You just deal with the emergency supplies, because at the time when they are in the tent, other teachers are very busy getting them in line with the sports day. So, sports for me, is my biggest fear factor at school.

RESEARCHER: You said about the emergency; I want to know what an emergency kit with the Glucagon and all that is. How do you explain to the teacher what to do with it? How to use it, where do you keep it, do you leave it at school? … What is your idea … What have you been doing and what do you think?

PARENT 3: With regard to the Glucagon emergency kit, firstly I think even though, let us say there is no diabetic kid in the school; I think every school should keep an emergency kit in the fridge. It should be stored with the Glucagon, the Lucozade and some jelly beans, just anything that can bring up sugars … because … The higher grade could be needing this and there would be someone in the school who would be in charge of it. But what I do is I make sure because … the emergency kit is kept in the school and should be labelled with the child's name where all the teachers in the Foundation Phase should know that this is her food, but this can be used for another diabetic child. You must always know what it is for. The Glucagon emergency injection, a sugary drink as well, yes and sweets or whatever.

RESEARCHER: In your school there never …

PARENT 3: Never ever.

RESEARCHER: Did the teachers know what the Glucagon is?

PARENT 3: This is a thing that most mothers would relate to, is the Glucagon emergency injection, because that injection is used when a child could not respond to drinking something and is completely … I myself as a mother shake so I can imagine how the teachers must feel, but usually … or someone who is in the medical field or anyone who has knowledge can save a child's life. That alone is …

RESEARCHER: Do you practise with the teacher how to give the medication or how to … the pump? How to check the pump and all of that? Do you have to do that? Have you been doing that?

PARENT 3: I make sure I have typed out notes, I have detailed notes … starting from the start to the end, press this button, press that button so … I make sure that before I start

work, cause I work … that I know that the teacher knows and is fully equipped to understand what is happening with the child. I would make them practise like, okay, you do it now. It is initially ... it is very confusing, because this is a new device for teachers, it is not a cellphone, it is a medical device. If they were to make a mistake they would also get scared. So in terms of … have to physically inject her. Basically, it is just a machine so you just enter a number. That number you enter is crucial, because you could enter a 13 when the sugar is 3, and you could be giving her a double dose of insulin. So yes, it is important to actually practise.

RESEARCHER: How do you teach the teacher how much to give, and with the lunches you give her and that? What do you do? How do the teachers know I must only press 13 or I must press 3? How does the teacher know that?

PARENT 3: Well, you see with the notes I give, that if the sugar is high … But every time it is different you can have a different amount each time. I would say, for example if it is 13,5, then round it off then the teacher won't forget … and I give notes on low sugar as well. And the snacks … because she is on an insulin pump. And what I would like, if the teachers were more educated on how to read carb levels, because that would really help if they were on an excursion. The kids are eating ice cream; all the kids are eating ice cream, you must allow them to actually fit in … Even if her sugar is a bit high, let her have it, because an excursion is a special treat. As her doctor always says, "Don't eliminate her, include her." If they could read on the wrapper and say one ice cream, here is the carbohydrate amount. It could really help ... wow, I can do that without the mother stressing about it ... something like that.

RESEARCHER: How do you handle birthday parties at school? Like say you want her to have it, what do you do? What do you expect the teacher to do if there is a party at school?

PARENT 3: If there is a party at school, then I actually drop a party list. I say okay, if it is a birthday party, here is a list and here are the carbs for a cupcake or a slice of plain cake or chocolate cake, but if there is anything that is not on the list, if it is something she can have then, I say by all means, and I give them the carbohydrates. What I don't do is say, if there is a cool drink and a packet of chips and there is a cake, then my daughter already knows that, you know, what if I am going to have the cake, then I will have a sugar-free drink, and then maybe I can still have a piece of chocolate, but she won't have all three because all three will raise her sugar too much. So she already knows. She already knows. I think from a small age they become so used to their diet … that at a party, automatically she works out her snacks already.

RESEARCHER: Initially when she started, when you had to start limiting sugars, how did she feel about that?

PARENT 3: The great thing on my side was, which was probably an added advantage: at a young age she developed a food problem that was probably already some kind of diabetes.

She had to have an extensive procedure in theatre, she had teeth worked on … When she came out of there … at the age of three and half, when she was diagnosed, she didn't even need sweets, she was already used to it. For other mothers, it was more difficult, because then you would hide sweets.

RESEARCHER: I want to know. In developing a guide for teachers on diabetes, what kind of information do think would be informative and helpful and absolutely necessary for teachers to know? What would you include in a guide? You said you wrote your own notes; I don't know if you would be willing to share it with me. Maybe I could use it as well when I draw up my guide. What would you include and what do you think teachers should know?

PARENT 3: Firstly, all teachers should be informed that this child in this particular grade is diabetic. It is not to rule her out but just that all the teachers can know …

RESEARCHER: You don't have a problem with anybody knowing the status of the child?

PARENT 3: I actually prefer it. I know that some people hide it because of the fact that children are teased, but in my situation I prefer that they all know, because this child could be helped by all of them. Secondly, there should be that emergency kit in the fridge so that it is accessible to everyone. I would say that in the guidelines there should be a trained diabetes educator … this is how you can inject Glucagon. Everyone should get experience on how to inject, even if they are not … leaders. Then the third thing would be to emphasise the fact that in the class, if you were to be low, they need to know that the child may not even have registered the lesson, so don't use it against the child's mother to say the child hasn't registered the lesson, because you want an extra favour, because you want the lesson repeated. You have to believe the mother because in the situation … because of the low sugar.

RESEARCHER: That was something I was actually going to come to, but first carry on with your guide and then I am going to come back to that again.

PARENT 3: The first thing with the guide is that perhaps everyone should have a copy of the diabetes booklet as such. Obviously with low blood sugar this is the steps to take, then the steps to take for an emergency. What to look out for with high blood sugar, because usually high blood sugars they are dangerous, I do agree, but if it is just one high, it could be based on stress, and then everyone is freaking out at school that the child is not controlled, which is not true. The case of Type 1 diabetes … could result in a reading of 20. Then you have to … so you need to just learn about that as well, and the fact that also, when a high becomes dangerous, because a high can be just as dangerous as a low. That is when you have to look for signs like if the child is vomiting, the child has got severe nausea or stomach pain, don't ignore, don't say, go lie in the sick bed, because with a diabetic child that almost could become an emergency where a child could die because of high blood sugar. Things like that, where they have to differentiate between high and low blood sugar, and just like more

information about insulin pumps as well as injecting insulin, injection Glucagon. Perhaps also emotions of children, how they feel, it matters.

RESEARCHER: This is what I want to come back to. Was your child ever discriminated against at school or teased? How did the school handle it, how did the teacher handle it? Were you satisfied with that?

PARENT 3: You know, because my child is so quiet and she has been so … perhaps the diabetes has also affected her in that regard, because she would always feel a bit emotional and cry a lot, and when you ask her what is wrong, talk to me, she just cries. As she has grown up and become a little bit more independent and able to talk to me without being afraid, she still … Initially the children would laugh and say what are you doing with needles in your bag? A certain child told her when she took out her pump … she was on the grounds and she took out her pump … to give herself carbs, and the child said, I am taking you right now to the HOD, because you are using your Blackberry in school. She had a shock and she started crying, because she knows she is not doing that, but immediately I think, that if they hear they are being taken to the HOD, they think they are doing something wrong. So she would try and hide things … it can affect them a lot ... Some children laughed, and it affected her a lot.

RESEARCHER: And on the part of the teachers, they did an adequate job? How do you think it should be handled?

PARENT 3: That part for me is still a big question mark. I wonder every year, does the teacher tell the class, okay this child is a diabetic, because you want other colleagues to know and perhaps they can support her. Perhaps some teachers hide it because they know the child will be teased and then she will be labelled in the class. My personal opinion as a mother is that the child should be asked, “Would you like your friends all to know what your condition is like? Or would you like the whole class to be taught … on diabetes?” Or maybe a visual … It may not look so bad on a visual … which is the guide to diabetic children and teachers, and explain to them … or tomorrow one of the colleagues in the class could recognise, call the teacher, this child is looking like what the movie said, not good, so then call the teacher … but if the child feels the children will laugh … then it should be up to the child

RESEARCHER: You talked about her giving herself medication and that. What do you think? Where should she be taking her to be injected, should it be in the class? Was there accommodation made to do it privately in school, what was the situation, what was your opinion of it?

PARENT 3: In that regard, there were some teachers who would take her discreetly, perhaps in another room, where it was only the teacher and the child. It made her feel more comfortable. There were certain teachers who would use her pump in front of the whole

class, and initially it disturbed her, because everyone would gather around the teacher and say, “What are you doing to her?” There was so much laughing, and some would say, can I use your machine, or can I play with it. She knows that it is not allowed. The good thing about … the child is not labelled in front of everyone. The bad thing, it could also make her feel a bit out … Initially she wanted to hide what she was doing; now she feels it is safe to test in front of them. No, I feel special, they are all watching me. Like if she takes out the tester she explains to them I am a diabetic … this today … in my machine today. I think with growth and with the understanding of the … it becomes much easier.

Now she is confident. Initially she used to cry. You won’t believe the crux of the whole situation. They had to do show and tell on one of the days last year, and she wanted to speak on diabetes. The poem she read was I am diabetic but I feel great about it. She is proud to be diabetic now.

RESEARCHER: So it has actually been a positive …

PARENT 3: Now it has become a total positive … for me, because she tells me … they all think I am superb in the class, and I feel so special. She is proud of her condition. It is also … it has been an icebreaker for me because we don’t have to hide anymore …

RESEARCHER: What you are trying to say, that when everybody knows and there is more knowledge around, it becomes easier for the child because she doesn’t have to hide. She actually now feels special.

PARENT 3: It is like putting a sign out ... who I am ... I am special ...

RESEARCHER: We spoke about what you would like the teacher to know, and then we spoke about bullying and … Is there anything else that you would like to add? Anything else you would like the teacher to have known before your child got to the class? Anything else on the topic of diabetes in schools?

PARENT 3: I would actually have liked to see that there was a group of educated teachers walking into the school, and everyone having this knowledge so that it eliminated 50% of what I used to do as a mother. It eliminated my stress as such at home, as well because it is a continuous paranoia if you are worried about your child the whole day. There are some mothers who actually go in both the breaks to test, they are completely paranoid. I feel I don’t want that, I want the child to lead a normal life, but if there is more education involved, yes that would be great, and also the fact that everyone was more informed and willing to learn. Okay, never mind, I just give you a note that is one thing, but maybe after one week ... Do you have a book I would like to read more, I am interested now. Or you know what, call me again, and say, “Don’t you have more info for me? Or a DVD for me?” – because then I know you care.

RESEARCHER: If I feel there is anything else I that I would like to know, you have really given me so much insight from this interview. If I need anything else, would you be willing to speak to me again like this, just to go over a few things.
PARENT 3: That is not a problem.
RESEARCHER: Thank you so much.

Summary from observation form: Genuinely wanted to help to make it easier for other mothers.

ADDENDUM 10 – COMPLETED QUESTIONNAIRES

Feedback on the guideline

1. What is your impression of the guideline? It is well thought out and formated but needs some colour.
2. Do you understand diabetes better after having read the guideline? If not why? Yes. It is very informative and clear
3. Is it easy to understand? Yes
4. Was there anything that you did not understand or that is not clear? No
5. Is the font legible and appropriate? Font is legible but should be bigger.
6. Is the guideline length appropriate? Or is it too long or short? In my opinion the length of the guideline is appropriate.
7. Is there anything you would like changed and why? More written information on how pump works. Change of battery etc.
8. Do you think it will help teachers? Yes
9. Do you think it is sufficient to assist a teacher that has a child with diabetes in the classroom? If not what else is required? Yes, it is sufficient to assist a teacher who has a child with Diabetes in the class.
10. Is there anything you are not clear about or would like included in the guideline? All pertinent information is included in the guideline and it will be very helpful to anyone dealing with a child who has diabetes.

Feedback on the guideline

1. What is your impression of the guideline? Very informative
2. Do you understand diabetes better after having read the guideline?If not why? Most definately
3. Is it easy to understand? Yes
4. Was there anything that you did not understand or that is not clear? None. The guideline was easy to understand
5. Is the font legible and appropriate? The font could be bigger
6. Is the guideline length appropriate? Or is it too long or short? It is appropriate It gives all the most relevant information
7. Is there anything you would like changed and why? No, nothing that I would change
8. Do you think it will help teachers? Definately. It helped me!
9. Do you think it is sufficient to assist a teacher that has a child with diabetes in the classroom? If not what else is required? Yes. It is given me a very clear insight into diabetes which I never knew before
10. Is there anything you are not clear about or would like included in the guideline? No! The guideline has covered all that one needs to know.

Feedback on the guideline

1. What is your impression of the guideline? My 1st impression, is that was the booklet is excellently laid out.
2. Do you understand diabetes better after having read the guideline?If not why? Yes, the guideline clears what the parents share with teachers.
3. Is it easy to understand? Yes - quite user friendly
4. Was there anything that you did not understand or that is not clear? Yes, teachers should know clearly how the insulin pump work. More information and pictures needed.
5. Is the font legible and appropriate? A little bigger, but 'comic sense' is otherwise a very clear font to use.
6. Is the guideline length appropriate? Or is it too long or short? A more detailed section covering the usage of pump.
7. Is there anything you would like changed and why? Just a detailed section on 'usage of pump'.
8. Do you think it will help teachers? Yes - the guidline will help teachers and caretakers.
9. Do you think it is sufficient to assist a teacher that has a child with diabetes in the classroom? If not what else is required? Yes, the guidline and parent support will be sufficient. Parental support initially when the child is placed with you-thereafter the guidline will be sufficient
10. Is there anything you are not clear about or would like included in the guideline? Every-thing seems clear, a point to also make - when testing the child is that the strip must be fully covered with blood otherwise testing kit will show : error. Strips are expensively purchased.

Feedback on the guideline

1. What is your impression of the guideline? It is a good guideline
2. Do you understand diabetes better after having read the guideline?If not why? Yes
3. Is it easy to understand? Yes
4. Was there anything that you did not understand or that is not clear? No
5. Is the font legible and appropriate? Yes
6. Is the guideline length appropriate? Or is it too long or short? It is a good lenght
7. Is there anything you would like changed and why? I would explain a little on the causes of diabetes.
8. Do you think it will help teachers? Yes
9. Do you think it is sufficient to assist a teacher that has a child with diabetes in the classroom? If not what else is required? Yes
10. Is there anything you are not clear about or would like included in the guideline? I would put in examples of snacks for the different types of diabetes.

Feedback on the guideline

1. What is your impression of the guideline? It is excellent.
2. Do you understand diabetes better after having read the guideline? If not why? Most definitely
3. Is it easy to understand? Yes
4. Was there anything that you did not understand or that is not clear? Everything was clear and in simple terms.
5. Is the font legible and appropriate? Yes
6. Is the guideline length appropriate? Or is it too long or short? It is long, but there is alot of information to convey
7. Is there anything you would like changed and why? No
8. Do you think it will help teachers? Definitely
9. Do you think it is sufficient to assist a teacher that has a child with diabetes in the classroom? If not what else is required? It is sufficient as long as parents assist too
10. Is there anything you are not clear about or would like included in the guideline? No

Feedback on the guideline

1. What is your impression of the guideline? Good. Acceptable
2. Do you understand diabetes better after having read the guideline? If not why? Yes
3. Is it easy to understand? Yes.
4. Was there anything that you did not understand or that is not clear? No Everything was clear.
5. Is the font legible and appropriate? Yes. The font is clear.
6. Is the guideline length appropriate? Or is it too long or short? Appropriate
7. Is there anything you would like changed and why? No.
8. Do you think it will help teachers? Yes
9. Do you think it is sufficient to assist a teacher that has a child with diabetes in the classroom? If not what else is required? Very sufficient
10. Is there anything you are not clear about or would like included in the guideline? Only two syntoms that are not included in Hypoglycaemia - Nause
    - Skin cool and pale

(~~Introduction to Early Childhood EDUCATION~~)

Health Safety and Nutrition for the Young Child: p. 264
(Lynn R. Marrotz)

Diabetes Guide for Teachers

Diabetes guide for teachers

What is diabetes?

Diabetes mellitus is a complex medical condition that affects the blood sugar levels in the body. Sugar/glucose is absorbed with the help of a hormone called insulin. Insulin is produced by the pancreas. When there is a **lack or absence of insulin**, glucose cannot enter body cells. This causes the glucose level in the bloodstream to increase. The excess glucose is then excreted via the kidneys. Glucose is important because it supplies energy to cells in the body. Energy is necessary for normal development and functioning of the body. Energy is required for normal growth in children (Makrilakis 2006:43-45).

Types of diabetes relevant to teachers

Type 1 diabetes

Type 1 diabetes is also called **juvenile diabetes**, because it is commonly diagnosed in children. It is also referred to as insulin dependent diabetes mellitus (**IDDM**), because insulin is required for survival. The pancreas produces inadequate amounts of insulin, resulting in the need for insulin injections to control the blood glucose. It is characterised by a sudden onset, and usually occurs in childhood and adolescence (Ioannidis 2006:23).

A child will not outgrow Type 1 diabetes. The cause is environmental, genetic, or autoimmune problems. Autoimmunity is when an organism fails to recognise its own constituent parts, which allows an immune response against its own cells and tissues (Ioannidis 2006:23).

Type 2 diabetes

This is also called **non-insulin dependent diabetes**, because insulin is not always required for treatment. Insulin resistance is the main characteristic of Type 2 diabetes. It results due to a decrease in cell sensitivity to insulin and a decrease in the amount of insulin produced.

The exact cause of Type 2 diabetes is not known. There is a strong link to family genes and there are factors that place one at risk for developing the illness. The risk factors include obesity, family history, high blood pressure, cholesterol, a high fat diet and sedentary lifestyle (Munden 2007:13).

Misconceptions about Diabetes

Teachers have to bear in mind that **diabetes is not contagious**. It is also not caused by parental neglect nor by having eaten too many sugary foods.

Treatment

Type 1 diabetes is **treated with insulin**. Type 2 diabetes can be managed by a change in diet, but in most cases insulin is used. Insulin is most commonly injected by using injections, insulin pens, an insulin infuser or insulin pumps.

As a teacher you will need to familiarise yourself with the basic operation of the device used to give a child insulin, if it is required to be given in school. There are two types of insulin treatment: **rapid acting insulin**, which is taken before or after meals, and **long acting insulin,** which is taken only once a day. Parents will inform you of the type of medication and will instruct you on how and when to use it if necessary.

Pictures of the devices used for treating diabetes

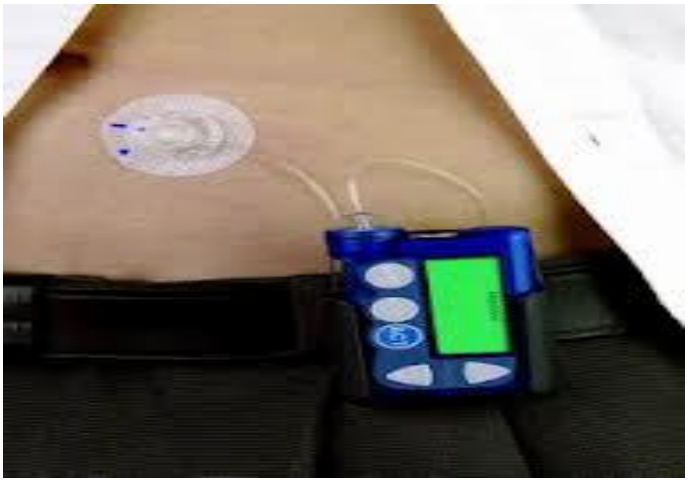
Insulin pen

(Munden 2007:120)

Insulin injector

(Munden 2007:115)

Insulin pumps



(Munden 2007:121)

Hypoglycaemia (hypo/low blood sugar)

Hypoglycaemia is the term used when blood sugar is low. The most common symptoms in case of a hypo are:

Sweating	Confusion/disorientation/speaking indistinctly
Irritable or nervous	Tired/weak/lethargic
Changes in behaviour	Hunger

Inability to concentrate	Headache
Seizures (convulsion)	Shakiness/trembling
Unconsciousness	Dizziness
Uncoordinated	Becoming pale

(Marotz 2012:232; Helping students with diabetes succeed 2010:38)

Hyperglycaemia (hyper/high sugar levels)

Hyperglycaemia is the term used when the blood sugar level is too high. Symptoms include:

Increased thirst	Drowsiness
Skin flushed and dry	Nausea, vomiting
Confusion/altering mental status	Excessive urination
Staggering, appears drunk	

Physical state of shock (the organs and tissues of the body do not receive enough flow of blood). Characterised by low blood pressure, fast pulse, weak, faint, cold and clammy. (Marotz 2012:232)

In the classroom, **before deciding whether a child is having a 'low' or a 'high', test the blood sugar.**

How do I test the blood sugar?

Testing glucose levels requires a drop of blood to be obtained by pricking the finger.

The picture below demonstrates the process, but ensure that if you are required to do this for a child, that you wear gloves and practice the procedure in the presence of the parent to ensure that you are doing it correctly. Also, let the child know that you are accepted as part of the team in keeping the child healthy. **Daily glucose monitoring is important** for anyone with diabetes. Family members and caregivers of a child with diabetes should be trained in carrying it out. The data is used to adjust diet, exercise and medication.

The following steps should be taken before performing capillary blood glucose monitoring. A capillary is an extremely small blood vessel.

- Wash hands with soap and warm water.
- Let hands hang down if inadequate blood is obtained.
- Puncture the side of the finger pad as it has fewer nerves than the centre.
- Avoid deep punctures that cause pain.
- The glucose monitor has a strip that is inserted into the machine before blood is applied. The strip is put into position and then the finger punctured.
- Hold the finger downwards to allow the droplet of blood to a drop of blood is applied to the strip. The meter automatically displays the results.
- Normal fasting glucose levels are 3,9–6,0 mmole/L (Munden 2007:195).
- Many meters use "error codes" when there is a problem with the meter, the test strip, or the blood sample on the strip. You will need the manual to interpret these error codes and fix the problem.
- Several features of glucose meters differ from meter to meter. Read instruction manuals before using the meter.

Testing kit

Source: Islets of Hope. What is a blood glucose (sugar) test meter?

What does the reading mean?

A reading between **4 and 10 mmole/L is fine**. No treatment is necessary.

Hypo/'Low'

Less than 4 mmole/L is a hypo. If hypoglycaemia is not treated it can lead to convulsions that mimic epilepsy, and can lead to a coma and eventually death. This calls for immediate action. Give the child something with glucose like a soft drink or glucose tablets, and a snack after. Parents will inform you of this and supply you with the drink or sweets. If not, keep a soft drink and some sweets in a place you can easily access in the event of a 'low'. Remember, the glucose level needs to be restored immediately to avoid the child becoming unconscious. If the child loses consciousness, **glucagon** must be administered. Without permission from the parents, you may not administer this. The parents must be called immediately and if they are too far another relative or the teacher will have to take the child to a medical practitioner.

Hyper/'high'

Between 10 and 15 mmole/L is a hyper. Exercise will expend energy and bring sugar levels down. Without making the child feel different, take the class out for some physical activity if possible.

With a reading of **over 16 mmole/L** the parents must be informed and the child must be collected from school. Do not attempt to make the child do any exercise. The higher the level, the sicker the child will feel (De Jong 2009:13).

This can be due to illness, infection, emotional stress, poor dietary control, fever, or a dose of insulin that is too small or has been forgotten to be administered. It most commonly occurs with Type 1 diabetes. A blood glucose above 13,9 mmole/L is dangerous, because it could lead to diabetic **ketoacidosis (DKA)** which requires immediate medical attention by a medical practitioner (Munden 2007:17). DKA combines three major features: hyperglycaemia, meaning excessively high blood sugar levels; hyperketonemia, meaning an overproduction of ketones by the body; and acidosis,

meaning that the blood has become too acidic. Ketoacidosis occurs when hyperglycaemia is not treated promptly (Munden 2007:153-154).

What do I do when I know a child has diabetes in my class?

It is vital that you **speak to the parents** when the child is admitted to your class.

Ask the following questions:

- What routine must be followed regarding testing and administering medication?
- Will you be required to test, administer insulin and oversee the treatment regimen in school? In the case of preschoolers and grade 1 children you will most likely have to test and administer insulin. Obtain written permission from parents if they require you to assist in administering medication. Practise the testing and medication administration a few times with parents. If the child takes insulin it usually needs to be kept in a cool place. Ensure that there is a place to store the medication or the parents can send it in a cooler bag.
- What symptoms does the child usually present with when he/she is having a diabetic emergency?
- Ask parents to provide you with snacks that can be used to increase the sugar levels in the event of low blood glucose levels. Keep it in a safe place so that it is available when required.
- Ask parents about the emergency glucagon kit. They may request to leave one at school. It needs to be refrigerated. Learn how to administer it, with a written permission slip from parents allowing you to use it in the event of an emergency.
- Enquire what the child can eat during a birthday party and whether medication must be adjusted if the child eats any party food.
- Ask about what physical activities the child is allowed to participate in. Enquire if you are required to test blood glucose and adjust medication before and after physical activity.
- Enquire about what school excursions the child will be attending and, if there are overnight visits, what is required from the personnel in charge. Obtain

permission to test and administer medication if you yourself are not on the trips.

- Take down all the contact details of the parents, close relatives and the child's doctor and keep it in your classroom in a place that is easily visible and accessible to you or other school personnel.
- Ensure that at least one other person on the teaching staff is familiar with the treatment regimen, medication and precautions in the event of your absence from school. Keep a written copy with this person and permission from parents to share the child's health status with the person.

Snacks

Children with diabetes require a snack halfway through the morning and halfway through the afternoon. You should understand that **delaying the snack or missing it completely can cause a diabetic emergency** during school or on the child's way home from school. A low blood glucose/hypo may be the consequence which can cause unconsciousness. The child can also lose concentration when experiencing fluctuating blood sugars and this will negatively impact on its performance in school.

The diet of a child with diabetes includes three meals and snacks in between. The diet can include the following (Delport 2002:35):

- Carbohydrates like brown bread, maize meal, cereals and potatoes, because these add bulk to the diet
- Food rich in fibre, e.g. legumes, oats, soya products, vegetables and some fruits
- A low-fat diet
- Vegetables can be eaten raw or boiled without the addition of sugar, salt or butter
- Spices, herbs and salt recommended for people with hypertension should be substituted instead of regular salt
- Snacks like fruits and provita between meals
- A glass of low fat milk or yoghurt per day may be ingested

Parents differ in giving their children treats like sweets. This you will have to enquire from the parent and ensure that they inform you of what treats are allowed. If treats are allowed, ensure that you enquire whether medication must be adjusted to accommodate the extra sugar content of sugary treats.

Exercise

Children with diabetes **can participate in sport** activities. Physical activity lowers blood glucose levels. A reminder: you should ask the parents about exercise and whether sugar levels should be tested before and after to ensure they do not drop too low. If the child experiences low blood glucose during sports, inform the parents. They will get advice from the child's doctor about adjusting medication.

Blood glucose levels of 7 mmole/L is the ideal before doing sporting activities. If it is between 7 mmole/L and 4 mmole/L, give the child a snack before sports.
If the blood glucose level is low (4 mmole/L or lower) it is becoming dangerous, so give the child a drink containing glucose.

If blood glucose is too high (over 18 mmole/L), do not allow the child to participate in sports and inform the child's parents (De Jong 2009: 20).

Excursions

Children with diabetes **should be included in outings**. Discuss with parents the activities that will be taking place and adjustments that need to be made. Carry parents' contact details as well as emergency details. **Emergency first aid kit** should also include **snacks** in the event of a hypo and **glucagon** if a child with diabetes is on the school trip. If injectable insulin is being used, it needs to be stored in a cooler bag.

A delay during travelling on trips caused by a breakdown or traffic can be catastrophic if the necessary supplies and snacks are not available. It is important for the teacher to be accustomed to the treatment regimen and the snack time of the child to make the necessary arrangements that will ensure their safety. If the child feels more

secure keeping a cellular phone to call their parents in the event that they are uncertain about something regarding their treatment, make an exception to ensure the safety and peace of mind of the child and parents.

Stress or Excitement

Stress as well activities that are exciting **can have an effect on the glucose levels** in a child with diabetes. If you are aware you need to be on alert in potentially stressful situations like tests or even if the child is feeling ill with a common cold (De Jong 2009:19).

Parties

Children with diabetes should not be excluded from parties that take place at school. A child with diabetes **can have a treat on special occasions**, provided that the treatment is altered to accommodate it. Enquire from parents what treats are allowed. It is a good idea to keep snacks that the child with diabetes can be given as an alternative to the usual sweets that may be too sugary. Inform parents that bring party packs to school if they will accommodate the child with diabetes by providing diabetic sweets if possible.

How does diabetes affect a child?

Emotional effects

Teachers must keep in mind that due to overprotection of children by their parents, children with diabetes may be **less independent** than their peers (Anderson & Brackett 2005:4). Parents are very often stressed due to the condition of their children and the huge responsibility of ensuring that the treatment regimen is followed. This can have negative effects in the parent-child relationship as well as cause other behaviour problems in the child. Separating from parents when starting school also causes fear in a child regarding their safety (Guthrie, Bartsocas, Jarosz-Chabot & Konstantinova 2003:8). This is one reason why **anxiety disorders** are also more common in children and adolescents with diabetes than in the general population. Anxiety symptoms may be

similar to those of hypoglycaemia (e.g. tremulousness, palpitations, fearfulness) (Fritsch & Olshan 2011:4).

Children with diabetes will perceive themselves as being '**different**' from others (Guthrie et al 2003:8). They will see the difference in their eating, checking of glucose levels, and also in wearing an identification bracelet. The result is often that they may see their diabetes as a punishment. They may think that due to bad behaviour they have to endure painful treatment. This can cause the child to internalise the illness and develop behaviour problems like anxiety disorders "People with diabetes are two to three times more likely to be depressed, than people without diabetes" (Barnard, Lloyd & Holt 2012:12). **Low self-esteem** is linked more to children that have poorly controlled diabetes. Children with diabetes are also more susceptible to feelings of inadequacy due to their treatment regimen and the restrictions that their illness poses.

It must also be noted that in young children it is often difficult to distinguish between diabetes-related mood swings and normal toddler behaviour. During the 'terrible twos' temper tantrums are common in children; however, for a toddler with diabetes a **temper tantrum can be a signal of hypoglycaemia** (Snoek & Skinner 2005:6). Sugars that are running very high can also cause aggressive behaviour (Fritsch & Olshan 2011:2).

Another psychological disorder that is seen in people with diabetes is **eating disorders**. People with Type 1 diabetes often engage in insulin purging, deliberately taking less insulin in order to control weight (Hasken, Kresl, Nydegger & Temme 2010:466). The term for this condition is **diabulemia**, which has been acknowledged by the American Diabetes Association. Teachers of teenagers in particular should look out for this. It is very dangerous and can lead to irreversible damage to body organs and cause death. Binge eating is also common in people with Type 2 diabetes, and parents and teachers should look out for it in children.

Social effects

The diet of a person can **affect their quality of life** because of the many changes that have to be made (Fritsch & Olshan 2011:4). They have to omit the things that they enjoy, like having pizza with friends, cakes and ice-cream at birthday parties. These **social limitations** often make it difficult for young children to cope. Children experience a sense of loss because of having to give up foods they enjoy. They also experience embarrassment due to the treatment.

As stated above, when children start school they perceive that they are different to their peers because of their diet and frequent glucose testing. This makes it difficult for them to feel accepted and creates **feelings of inadequacy**. These feelings are often increased because of **teasing**. Twenty five per cent of children with diabetes are teased (Anderson & Brackett 2005:10). Children in school report frustration and social stigma due to their dietary restrictions. These factors have a negative effect on the social development of the child in school.

In a study conducted by Wagner, Heapy, James and Abbot (2006), parents reported that their children's diabetes affected decisions they made regarding field trips, extracurricular activities as well as their future plans after school. Parents are also anxious and may in some cases delay plans for preschool education, which causes negative implications to the cognitive as well as social development of their child (Anderson & Brackett 2005:6).

Effect on learning

"There is growing evidence that there are **negative consequences** and mild, cognitive deficits, resulting from attempts to normalize metabolism in young children" (Anderson & Brackett 2005:7). Children with diabetes have been found to score lower on a national achievement test than children with other chronic illnesses (McCarthy, Lindgren, Mengeling, Tsalikian and Engvall (2002:2). They have also found that reading difficulties and reading comprehension may be affected.

A number of studies associate **poor metabolic control** as a factor in lowering cognitive ability and performance (McCarthy et al 2002; Fritsch & Olshan 2011:2; Ohmann, Popow, Rami, König, Blaas, Fliri & Schober 2010). In a study by Brands and associates (2005) it was found that sufferers of Type 1 diabetes show a slowing of mental speed, and a diminished mental flexibility, whereas their learning and memory are not affected. Cognitive deficits are however mild to moderate; the cognitive dysfunction may create problems if a situation is more demanding.

It seems that when a person has chronic episodes of high or low blood glucose levels, it directly affects the insulin level and damages cells in the brain, which can lead to cognitive impairments. Due to lows the brain may not get large amounts of glucose it needs for memory and therefore memory can be affected (Society of Neuroscience).

How can I accommodate the child with diabetes in the class?

- **Knowledge** about the condition and a positive attitude towards the child with diabetes is the first step.
- Show **warmth** without showing the child pity. They need to learn how to cope and become independent individuals. Treat them with respect and make no exceptions if they behave inappropriately. Diabetes is not an excuse for bad behaviour.
- When parents show concern and are anxious, it is because they are concerned and not because they do not trust you. **Help them to feel comfortable** to leave their child with diabetes in your care, by showing confidence and having knowledge. **Ask appropriate questions** and reassure them that you will monitor their child.
- If it will be necessary for you to administer insulin, ask parents to demonstrate the use of the device being used to administer insulin to the child. Do not be afraid to ask them to repeat it if you are not sure of anything. **Make notes** if necessary to assist you in the beginning.

- Do not hesitate to **call parents** when you are unsure of what to do. They will be grateful that you are not taking chances with their child's condition.
- Enquire from the child whether they want their friends to know about their illness, before informing the class. They are entitled to **confidentiality** if they so choose.
- **Educate the other children** in the class in order to prevent discrimination or bullying, and also to create empathy towards children that have health problems.
- Have all **contact numbers of the child in a visible spot** on your classroom wall as well as with the school secretary, in the event of an emergency or your absence from school.
- Designate a **private room or space** for the child to test and administer their medication. Bathrooms are not suitable for testing.
- **Extra toilet visits** should be expected and allowed.
- Allow some extra time before or after lunch time for a child that needs to take insulin injections before or after meals.
- **Monitor the child** to determine when a low (hypo) is being experienced. The child will not learn much at such a time, so assist the child by revising work that may have been missed when a hypo was experienced.
- Show **understanding for absences** caused due to having to visit doctors or when a child is unwell due to their diabetic condition, and assist them in catching up with work.
- Try to emphasise to parents that they **should allow their child to participate in as many extramural activities as possible**, to avoid their child feeling isolated and excluded.
- When children bring party snacks, keep something that the child can eat or ask about how medication can be adjusted to **allow a small share in the party food**.

To give you a glimpse of the impact that diabetes has in the life of a child I would like you to ponder on this statement made by a child with diabetes, "At least once every 15 minutes, I have to deal with my diabetes. I have to stop what I'm doing, think about

how I'm feeling, try to remember when and what I last ate, think about what I'll be doing next, and decide whether to test my blood. Then depending on the results of the test (or my guess as to my sugar level), I'll plan when to eat or take my next insulin bolus" (Rubin 2000:21).

Teachers are in the fortunate position to make a difference in the life of a child – including the child with diabetes. I leave you with the words of Robert F. Kennedy, "The purpose of life is to contribute in some way to making things better."

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