CHAPTER TWO

JUVENILE DIABETES MELLITUS

2.1 INTRODUCTION

Insulin-dependent Diabetes Mellitus (IDDM) also known as type 1 or juvenile diabetes is a chronic life-long disorder, which involves consistent teaching and support from the relevant professionals (Hillson, 1996:29). The preceding opinion by Hillson clearly emphasises that juvenile diabetes is an illness that requires a multi-disciplinary team approach. Yousef (1993:29) supports the above opinion, stating that, in addition to its impact upon physical development this condition may have various effects on psychological and behavioural development.

In this chapter the researcher will proceed to discuss the definitions of medical concepts, the different causes of juvenile diabetes, symptoms associated with juvenile diabetes, treatment of the disease and the psycho-social issues related to juvenile diabetes.

2.2 DEFINITION OF MEDICAL CONCEPTS

Yousef (1993:29) defines relevant medical concepts in the following manner: -

2.2.1 GLUCOSE

Glucose is produced by the breakdown of carbohydrates in the body, through metabolism.

2.2.2 KETOACIDOSIS

Ketoacidosis is when the body starts to breakdown muscle tissue to produce energy for the body. This results in ketones being present in the blood.

2.2.3 HYPOGLYCAEMIA

Hypoglycaemia is a rapid fall in blood glucose due to an overdose of soluble insulin in the blood. The symptoms are sweating, anxiety, restlessness, tremors, hunger, paraesthesia and palpitations. Decerebration or death can ensue if the hypoglycaemic state is allowed to persist.

2.2.4 HYPERGLYCAEMIA

Hyperglycaemia is an increase of blood glucose. There are many different factors that can influence blood glucose levels. They could be hereditary, environmental or hormonal.

2.2.5 BETA-CELLS

Beta-cells make up 80% of the cells in the pancreas. They produce insulin, which is vital in glucose breakdown. They are also called (B) cells. They are located in the islets of Langerhans.

2.2.6 GLYCOSURIA

Glycosuria is the presence of glucose in the urine.

2.2.7 POLYURIA

Polyuria is the production of large amounts of urine.

2.2.8 POLYDIPSIA

Polydipsia is the consumption of large amounts of liquids.

2.2.9 POLYPHAGIA

Polyphagia is the consumption of large amounts of food.

2.2.10 ISLETS OF LANGERHANS

Islets of Langerhans house the beta cells (insulin producing). These are found in the pancreas (Bloom, 1980: 26-70).

2.3 THE DIAGNOSIS OFJUVENILE DIABETES MELLITUS

Comprehensive multi–disciplinary care is essential for diabetic children. No professional is solely able to administer good care, so that nurses, social workers and dieticians should also be involved with the care of the patient (De Villiers, 1995:21). Juvenile diabetes mellitus (type 1), also termed insulin dependent diabetes (IDDM) is a life–long error of carbohydrate metabolism, resulting from a relative or absolute deficiency of insulin caused by the destruction of the beta–cells in the islets of Langerhans (Yousef, 1993:29). Type II or maturity onset type diabetes and the much rarer types of diabetes are usually associated with other hereditary disorders. The cause of some forms of diabetes is known and they are therefore known as secondary diabetes (Bloom, 1980:11).

2.3.1 JUVENILE–ONSET (TYPE I) DIABETES

Bloom (1980:11-12) states that the following characteristics are usually exhibited by individuals diagnosed with juvenile type I diabetes. This type of diabetes starts most commonly in children or young adults, but it may occur at any age, often in the very elderly. It is characterised by the rapid onset of symptoms especially thirst, polyuria and lassitude. There is usually considerable loss of weight and most diabetics of this type are underweight at diagnosis. According to Fajans (1996:252), who also supports this view, the affected patient experiences an abrupt symptomatic onset of disease secondary to severe insulin insufficiency (polyuria, polyphagia, weight loss and fatigue), is prone to ketosis and is thin. Insulin dependency implies that the administration of insulin is essential to prevent spontaneous ketosis, coma and death.

Occasionally however, type I diabetes can occur in the overweight. Other common symptoms include blurring of vision, paraesthesia, cramps in the muscles, pruritus vulvae, balanitis and a proneness to infection. The urine at diagnosis contains sugar and significant amounts of acetone, while

blood examination reveals evidence of dehydration (a raised urea and haematocrit), a tendency to ketoacidosis and a blood glucose exceeding 12 mmol /L. (Bloom, 1980:11).

2.3.2 PROCESS OF JUVENILE DIABETES TYPE– I

Yousef (1993:29), in his article explains the process of juvenile diabetes as the following. In this condition, the body cannot use sugar (glucose) normally. Consequently, the sugar level in the blood is elevated (hyperglycemia) and sugar appears in the urine (glycosuria). In an attempt to maintain normal concentration of blood, the kidneys excrete sugar and with it large quantities of urine (polyuria). Polyuria in turn, leads to dehydration and consequently to great thirst and drinking large amount of liquids (polydipsia). Since sugar is not utilised by the body cells due to lack of insulin, the child feels hungry and starts to eat excessive amounts of food (polyphagia), loses weight, gets tired and weak.

These clinical manifestations develop suddenly, usually between the ages of eight and twelve.

2.4 THE DIFFERENT CAUSES OF JUVENILE DIABETES

2.4.1 INHERITANCE

About 10% of children who develop diabetes have a sibling or parent with the disorder, whereas only 1% of non–diabetic children have a relative who is diabetic. Two conclusions therefore emerged from research carried out by Bloom (1980:12), namely, that there is undoubtedly a hereditary component in the transmission of diabetes, however since 90% of children developing diabetes have nobody in the immediate family with the disorder, the hereditary factor cannot be the only factor and is probably not the most important. His research further indicates that it is unlikely that the hereditary disposition to diabetes is due to a single recessive gene but rather that varying combinations of alleles are responsible. According to Eisenbarth (1996:288), who supports the allele theory, the natural history of diabetes mellitus begins with genetic susceptibility. Essentially everyone who develops type I diabetes mellitus has inherited susceptibility alleles, except for individuals with the autoimmune polyendocrine syndrome type I where a major portion of this susceptibility is mapped to the human leukocyte (*HLA)* region of chromosome 6.

2.4.2 ENVIRONMENTAL FACTORS

Bloom (1980:72) has also investigated environmental factors and their effects on the frequency of episodes of glycosuria. Evidence accumulated from this research points to viral infection, which when super imposed on genetic factors may lead to cell-mediated autoimmune destruction of Beta-cells and most likely to precipitate diabetes. This view is also shared by Fajans (1996:251) who states that acquired factors namely, certain viral infections, nutritional and chemical agents when combined with a pre-disposition towards having the disease can cause juvenile diabetes. Diabetes in children occurs more frequently in the summer months, than it

would in the winter months when virus infections are epidemic. However substantive proof is yet to be found.

2.5 PRIMARY DIABETES - AETIOLOGY UNKNOWN

Table 1: Primary Diabetes

(Bloom, 1980:11)

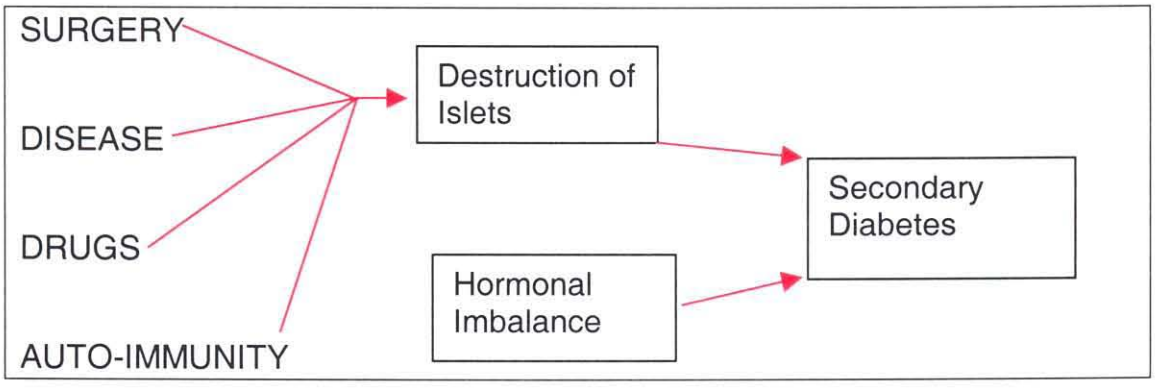
TYPE I:	JUVENILE – ONSET
TYPE II:	MATURITY – ONSET
TYPE III:	ASSOCIATED WITH OTHER GENETIC DISORDERS

The above table indicates that diabetes can develop in juveniles where the cause is unknown and it is commonly referred to as type I diabetes. The illness can also develop in adult life where it is referred to as type II diabetes and the cause is also unknown. One can also develop diabetes when one has inherited other disorders, which can subsequently cause the individual to be susceptible to developing the illness. The common trait in the above three types is that the onset and cause is unknown.

2.6 SECONDARY DIABETES - AETIOLOGY KNOWN

Figure 1: Causes of Secondary Diabetes

(Bloom, 1980:11)



The above figure indicates that the causes of secondary diabetes are known. The following are explanations of how secondary diabetes can be introduced into the body: -

2.6.1 SURGERY

The first cause of secondary diabetes is surgery, where a section of the pancreas is removed by disease. However, at least three quarters of the pancreas can be removed without diabetes resulting, providing that the remnant is healthy and not under stress by obesity, drugs or cortisone therapy. Since the pancreas is the sole source of insulin, diabetes inevitably follows total pancreatectomy.

2.6.2 DISEASE

Disease is the second cause of diabetes. This can occur in two ways, namely in alcoholics where pancreatitis occurs and in haemochromatosis, which is an inherited disorder in which excess iron is absorbed and deposited in various organs including the liver, heart, pancreas and testis.

2.6.3 DRUGS

The third cause of diabetes is from drugs which can exert a diabetogenic effect, probably by suppressing islet cell release of insulin.

2.6.4 AUTO-IMMUNITY

The fourth cause of diabetes is auto-immunity where there is a failure of the immune system. Here we find that diabetes can co-exist with illnesses such as Addison's disease, hypogonadism and thyroid disorders.

2.6.5 HORMONAL IMBALANCE

The fifth cause is hormonal imbalance. This occurs when hormones are introduced into the body by medication or produced in excess by the body. Here the action of insulin is submerged and secondary diabetes occurs usually when the hormonal stress is removed (Bloom, 1980:11).

2.7 SIGNS AND SYMPTOMS ASSOCIATED WITH JUVENILE DIABETES

The researcher's simple understanding of diabetes is that the endocrine system of the body has an imbalance. For some reason there is not sufficient insulin to cope and so excess sugar accumulates in the blood. This excess sugar blocks the whole energy system, and the body realising the shock to the system, attempts to create balance by excreting it through the kidneys. The extra sugar is thus passed out in the urine, frequently. This increase in loss of water causes the individual to become thirsty, and copious amount of water is consumed. The two main symptoms of diabetes are passing increased amounts of urine and feeling thirsty all the time.

2.8 TREATMENT OF THE DISEASE

It usually comes as a shock to parents when they find their child has developed diabetes. They may feel guilty about it and think that perhaps the fault may be theirs. Of course this is an emotional response and has no foundation in fact. According to Bloom (1986:30), there are four aspects of diabetes which are imperative in the treatment of the disease and which should be taught to children: -

- How to draw up and inject insulin – most children over the age of six or seven should be able to inject themselves,
- What the diet is and especially which foods are carbohydrate and how much can be taken at each meal,
- When and how to test the urine or blood for sugar,

- To recognise hypoglycaemic reactions, to know what is likely to bring them on and to take sugar in good time.

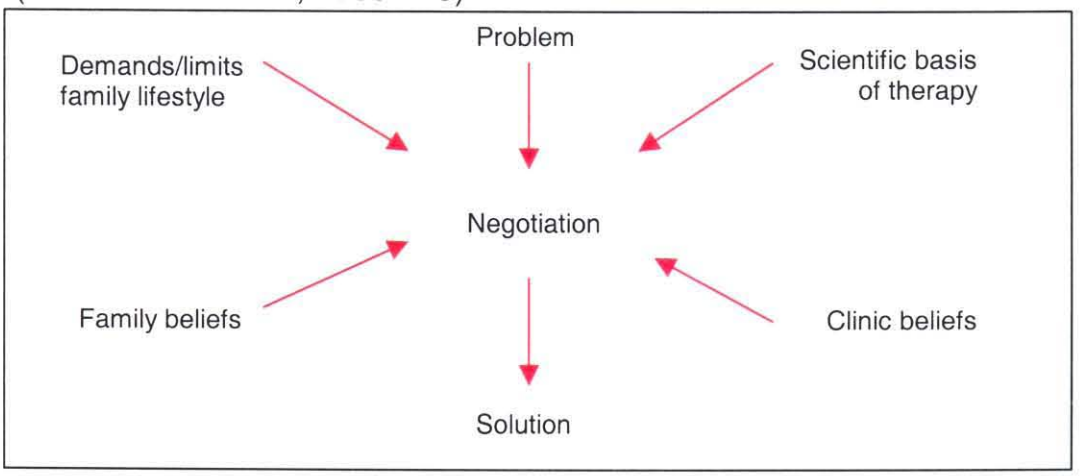
The above four factors is the foundation that should be built into every diabetic child's life. This will allow the child to lead a full and active life.

- *Dietary management*

The main rule to observe when one is diagnosed with diabetes is that if one is overweight, then one needs to lose weight. The diet according to Hillson (1996:48) is divided into three types of food categories, namely carbohydrates, fat, protein. In diabetes, however, the most important component is carbohydrates. This carbohydrate as well, has to be less refined, more natural and needs to contain a good deal of roughage and fibre. Carbohydrates like wholemeal bread, vegetables, peas, beans and lentils are good not only for the diabetes, but for the bowels as well. Hillson (1996:25) supports the above opinion, saying they take a longer time to eat and digest and do not increase the sugar in the blood. Jones (1998:115) also emphasises the distribution of meals within the day in amounts to balance the effects of injected insulin.

Figure 2: Dietary Management of Diabetes

(Baum & Kinmonth, 1985:113)



The above figure demonstrates that the dietary management of diabetes is not solely dependent on maintaining a proper diet. The diabetic diet is contingent on how the family perceives the diet and how it fits within the family's present diet, lifestyle and belief system. The dietician should be involved closely with the family in planning meals from the time of diagnosis. The dietician will also be most effective if she understands the current medical management of the child, and should also join the doctor on occasions during the clinic consultation before seeing the family herself to clarify the details of a dietary problem.

- *Exercise*

Before the discovery of insulin, diet and exercise were the principal therapies used in the treatment of diabetes mellitus. Horton (1996:395) states that insulin-dependent diabetic patients were severely limited

because of the associated metabolic abnormalities, including muscle wasting, dehydration and ketosis.

**Benefits of Exercise For Patients With Insulin-Dependent Diabetes Mellitus (Horton, 1996:395).*

- Lower blood glucose concentration during and after exercise.
- Improved insulin sensitivity and decreased insulin requirement.
- Improved lipid profile.
- Increased energy expenditure.
- Improvement in mild to moderate hypertension.
- Cardiovascular conditioning.
- Increased strength and flexibility.
- Improved sense of well-being and enhanced quality of life.

**Risks of Exercise For Patients With Insulin-Dependent Diabetes Mellitus (Horton, 1996:396).*

- Hypoglycemia.
- Hyperglycemia after very strenuous exercise.
- Hyperglycemia and ketosis in insulin-deficient patients.
- Precipitation or exacerbation of cardiovascular disease.
- Worsening of long term complications of diabetes.

**Checklist Before Starting Exercise*

Horton (1996:395-402) advocates the following checklist for insulin-dependent diabetics before exercise can be initiated.

- **The Exercise Plan**
  - Will the exercise be habitual or unusual?
  - What is the anticipated intensity of exercise?
  - How does it relate to the level of physical training?
  - How long will it last?
  - Will it be continuous or intermittent?
  - How many calories will be expended?

- **The Plan For Meals And Supplemental Feedings**
  - When was the last meal eaten?
  - Should a high carbohydrate snack be eaten before starting?

- Should supplement carbohydrate feedings be taken during exercise? If so, how much and how often?
- Will extra food be required after exercise to avoid post exercise hypoglycemia?

- **The Insulin Regimen**
  - What is the usual insulin mixture and dosage?
  - Should it be decreased before or after exercise?
  - When was the last insulin injection?
  - Should the injection site be changed to avoid exercising areas?

- **The Pre-Exercise Blood Glucose Concentration**
  - Is the blood glucose concentration in a safe range to exercise (100-250 mg/dL)?
  - If the blood glucose concentration is less than 100 mg/dL, a prerequisite carbohydrate snack should be taken to decrease the risk of exercise-induced hypoglycemia.

2.8.1 MONITORING OF GLUCOSE LEVELS

Seedat (1998:15-20) recommends the following procedure when home blood glucose levels are done, when a patient begins insulin therapy and when insulin is being administered to a patient.

2.8.2 PROCEDURE

- Patient to wash hands thoroughly with soap and water and dry them.
- Patient to hang arms for 30 seconds at side to increase blood flow to the fingers.
- Test strip to be placed on flat surface.
- Select the site on the side of any fingertip.
- Puncture site using the monojector machine and a lancet.
- Gently squeeze the finger in downward motion to obtain a large enough drop of blood to cover the reagent pad on the test strip.
- Leave drop on the strip for 60 seconds before wiping off the blood, wait for another 60 seconds before reading.
- Read and record the results accurately.

2.8.3 EQUIPMENT NEEDED FOR HOME MONITORING

- Reagent strips
- Blood letting devices
- Cotton wool swab
- Watch with a second hand
- Record chart or diary

2.8.4 ADVANTAGES OF HOME BLOOD GLUCOSE MONITORING

- Patients are more secure and better able to control hypoglycaemia.
- Patients are able to vary their insulin dose.
- Patients are better able to handle emergencies.

2.8.5 INSULIN TREATMENT

According to Seedat (1998:15-20), insulin treatment should only be introduced when patients have been on a diabetic diet and tablets for many years and do not respond to either. The blood glucose is usually above 12/*mmol /l.*

However, even before insulin therapy is initiated, the researcher is of the opinion that the patient should be re-assured and anxiety dispelled. This is supported by Seedat (1998:17) where he states that interest relieves anxiety and encourages motivation of the patient to better self-care.

2.8.5.1 Insulin treatment begins

The importance of three big meals and three snacks is explained. The duration of insulin action is shown simply over 24hours by illustrating it or using an insulin action duration chart. Signs of hypoglycaemia are explained simply and the patient is instructed that sugar/glucose sweets should be at hand at all times. The nursing sister discusses sites of injection, uses of insulin, the proper injection technique and the patient is also taught how to utilise the home blood glucose monitoring with "sticks". Seedat (1998:15-20) suggests the following requirements for patients who are insulin dependent.

2.8.5.2 Requirements for insulin regime

- Must provide flexibility and adaptability.
- Must suit or fit the needs of an individual, example pregnant, old or young.
- Must suit the patient's situation.

2.8.5.3 Types of insulin

- Rapid acting
- Intermediate acting

- Intermediate long acting

2.8.5.4 Care and Storage of insulin

- Keep insulin in the refrigerator, but not to be frozen.
- If a refrigerator is not available, store in a cool place away from direct sunlight.
- Extra bottles of insulin to be kept in the refrigerator.

2.8.5.5 Duration and Peak Action of Different Insulins

Hillson (1996:77-78) describes the different types of insulin as the following:

❖ *Short-acting insulin*

Short-acting insulin is made by the normal human pancreas. This is a clear, colourless fluid which, when released into the blood stream via the portal vein, produces an effect upon the blood glucose within minutes. All short-acting insulins are clear and colourless. The main difference between insulin in a non-diabetic and the insulin in the diabetic person is its route of delivery into the bloodstream and the lack of control. Even continuous insulin infusion cannot mimic the finely tuned response of the normal pancreas, and its role in insulin production.

❖ *Intermediate-acting And Long-acting Insulins*

Intermediate-acting and long-acting insulin suspensions are modified to reduce their solubility and hence to prolong their absorption from the insulin injection site. There are several methods of modifying insulins. Isophane (NPH) insulin is produced by adding protamine and a small amount of zinc at body pH. This produces insulin which last for about 12 hours. Short-acting insulin can be mixed with isophane insulins and the mixture will remain stable. This is the basis of the fixed proportion mixtures, or of mixtures made by the patients themselves.

❖ *Combination or Pre-mixed insulins*

Combination or pre-mixed insulins are stable mixtures containing proportions of short-acting insulin and isophane (NPH) insulin. There are mixtures containing as little as 10% or as much as 50% short-acting insulin. These mixtures are inflexible and if the dose is increased both the short-acting and the iosphane insulin dose is increased. However they have gained popularity because of their simplicity and their avoidance of drawing-up errors.

2.9 RELATED DISEASES OF JUVENILE DIABETES

2.9.1 VASCULAR DISEASE

Jones (1998:49) states that diabetics are liable to develop changes both in the large and small vessels. The term arteriosclerosis includes both atherosclerosis (formation of fatty plaques, which may ulcerate and calcify providing a surface suitable for thrombus formation) and medical calcification (Monckeberg's sclerosis; this is liable to occur in longstanding diabetes irrespective of age, but it does not necessary impair circulation or function). The thrombus formation heralds the onset of acute myocardial infarcation (Brunzell & Chait, 1996:772-780).

2.9.2 THE FEET

Especially in the diabetic, care of the feet plays a crucial role in the prevention of disability. The diabetic often becomes divorced from his/her feet: poor vision prevents his/her seeing them and loss of sensation precludes his/her feeling them. Consequently only a conscious programme of regular inspection and care can avoid the vascular damage by trauma or heat. Occlusion of the vascular supply causes ulceration of the skin or gangrene of the area can occur (Jones, 1998:40).

Photograph 1: Superficial Ischaemic Necrosis

(Jones, 1998:42)

Superficial Ischaemic Necrosis of big toe caused by the diabetic patient wearing an ill fitting shoe.

The above photograph depicts the big toe of a diabetic patient who has developed gangrene due to the patient wearing a tight fitting shoe. The ulcers are usually shallow and indolent.

Photograph 2: Ulceration of Metatarsal

(Jones, 1998:38)

Ulceration of metatarsal
due to pressure of footwear.

The above photograph depicts the ulceration of a diabetic patient's metatarsal due to the pressure exerted on this area of the body.

2.9.3 THE SKIN

Examination of the skin may reveal important information regarding diabetes. Infection of the skin is common in the untreated patient and insulin may cause changes in the skin and subcutaneous tissues at the site of infection. According to Bloom (1980:42) *Candida Albicans* is a yeast infection that thrives in moist areas of the skin and particularly in uncontrolled diabetes with raised glucose levels in the tissues. Another common condition is *Epidermophytosis, which* is commonly called athletes foot. The infection here occurs between the toes and leads to sogginess and maceration of the skin in the toe clefts. It may also be present in the groins as reddened, moist and irritating areas (*tinea crusis).*

Photograph 3: Septic Pulp

(Bloom , 1980:57)

Septic Pulp in young diabetic girl who has been using the finger to test her own blood sugars.

The above photograph depicts a soft, moist mass (septic pulp) at the point of blood glucose testing, in a teenage female.

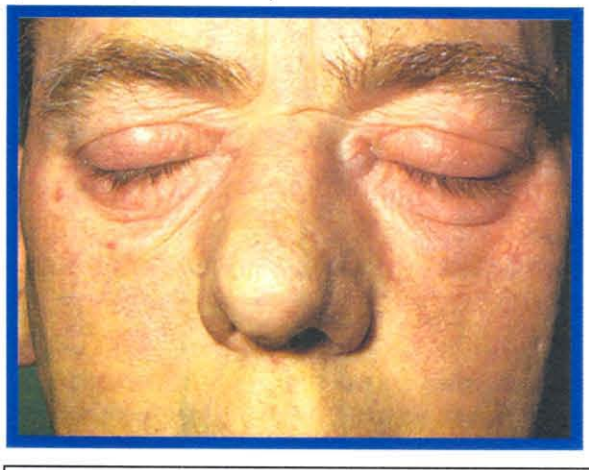
2.9.4 THE NERVOUS SYSTEM

Diabetes can be responsible for disorders of the nervous system because of treatment. Some of the systems that diabetes can affect are the cardiovascular system, renal system, gastro–intestinal tract and also the reproductive organs of male suffers although this is most common after 20 years of diabetes (Bloom, 1980:71).

2.9.5 THE EYE

Photograph 4: Blepharitus

(Bloom , 1980:86)

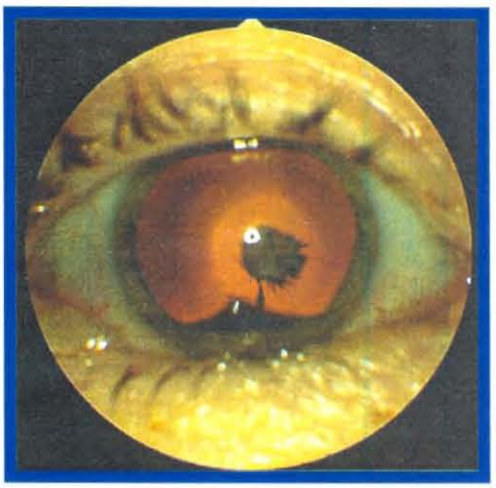


Blepharitis: Inflammation and swelling of both upper and lower lids with encrusted eyelashes. 56 year old patient with history of recurrent styes, found to have glycosuria and hyperglycaemia at eye clinic.

The above photograph depicts an adult diabetic. The patient presented at the diabetic clinic with a history of recurrent inflamed swellings on the eyelid (styes). Subsequently he was found to have glucose in his urine and elevated sugar levels in his blood.

Photograph 5: Cataract in Diabetes Mellitus

(Jones, 1998:22)



The above photograph shows a central cataract or lens opacity obscuring full view of the fundus and interfering with the normal "red reflex."

Some young people with Type 1 diabetes may develop an acute form of rapidly developing lens opacity known as "snowflake cataract." This typically, though not invariably follows a period of particularly poor blood sugar control and the cataract may appear and mature in the space of a few weeks (Jones, 1998:23).

2.10 PSYCHO-SOCIAL ISSUES RELATED TO JUVENILE DIABETES

2.10.1 INTRODUCTION

In the researcher's opinion, there are multiple assessment issues relevant to the treatment of children with diabetes. Ollendick (1998:421) states that youngsters with diabetes usually function adequately in the classroom with IQ scores in the normal range, however hypoglycemia is clearly associated with cognitive and motor impairments, even when the child is not hypoglycaemic. He suggests further that there is subtle evidence of neuropsychological effects that may interfere with some children's cognitive functioning. Ryan (1990:58-84) extends this idea by stating that frequent school absences related to the illness may also contribute to the problem.

Chronic illnesses, like diabetes, require the patient to manage the disease on a daily basis. According to Ollendick (1998:422) and Lorenz (1985:875-

876) the most consistent findings are the inadequacy of patient knowledge, whether the patients are children or adults. In the researcher's opinion, it is therefore not surprising that diabetic children exhibit behaviour problems, arising from lack of understanding and knowledge about the illness.

Diabetic children have been found to have a higher rate of psychiatric disorders than children without diabetes (Blanz, 1993:5). A longitudinal study by Kovacs (1996:32) found that half of the children with juvenile diabetes followed for average of nine years, met the criteria for one or more psychiatric disorders, the most common being depression, anxiety and disruptive behaviour. Capra (1998:536–541) noted that the large number of anxiety disorders, especially simple phobia, social phobia and separation anxiety disorder, is especially important to note because of their possible mutually influencing relationship with episodes of repeated illness and subsequent hospitalisations. In the researcher's opinion it is common knowledge that children with chronic illnesses have a complex array of medical, educational, emotional and social needs. Self–awareness and realisation of illness present a major source of stress for diabetic children (Yousef, 1993:30). A study done by Cleaver (1994:263) on the effects of diabetes mellitus as a chronic illness on the emotional state of children, found that the presence of chronic illness may produce an at risk state which results in some children losing confidence in themselves because they are unable to accept being "different" by others.

The researcher is of the opinion that it thus follows that the occurrence of stressful events may influence adaptation to the diabetic regimen. This idea is supported by Lorenz (1985: 872–876) who states that adolescent patients appear to be particularly vulnerable to adherence difficulties in stressful events.

Tattersall and Louwe (1981:872–876) eloquently describe how diabetes often interferes with most of the goals of normal adolescence:-

- During this developmental period when it seems so important to conform to peer standard, youngsters with diabetes may feel "different" because of disease associated delayed sexual maturation as well as numerous unusual behaviours (example injections, glucose testing), associated with their daily management regimen;
- Dietary demands require frequent meals and snacks and the avoidance of food high in fat and concentrated sweets;
- The adolescent with diabetes is faced with the paradox of needing to eat foods when no one else is eating and needing to avoid foods everyone else consumes.

De Villiers (1995:24) states the importance of emotional nurturance of the diabetic child. She advocates group therapy and individual therapy for diabetic children and emphasises the importance for diabetic children to meet with other diabetic children so they can see that they are not alone and that other people also experience similar problems. To follow will be a

discussion of the different social systems that affect the diabetic child's life and how they influence the life system of the child.

2.10.2 THE DIABETIC CHILD WITHIN THE FAMILY

Cleaver (1994:272), in her study states that over-protectiveness from families does not promote independence resulting in the children withdrawing, their boundaries shrinking and horizons narrowing. She extends this thought by saying that the families who do not foster independence and are over-protective are those who contain members who are anxious, afraid and worried. However, the researcher feels that this response will be dependent on how the family perceives the history of diabetes.

Feelings that the family, associated with a relative who had diabetes and died as a result, may be displaced onto the child in the present. This type of pathologic displacement is evident when a family member dies from diabetes. It is this unspoken fear among family members that might get the family thinking erroneously that the child might die early as well, causing over-protection and smothering (Cleaver, 1994:272).

2.10.3 THE PARENTS OF THE DIABETIC CHILD

The researcher is of the opinion that children are their parents' immortality. The child's health is of utmost concern to the parents. The onset of any chronic illness is therefore a loss and a disappointment.

Diagnosis of chronic illness triggers the bereavement process in a parent, especially if a parent has the disease, there may be much self-blame. Hillson (1996:162) extends this thought. He says that feelings of grief, sadness, anger and regret will surface intermittently, especially during the first year and at special occasions. Parents shopping for Christmas for instance, may have to change their initial shopping patterns and may feel resurgence of their initial sadness or regret.

Anger may be directed towards the child for being diagnosed with the illness, although the parents know it is illogical. The anger could also be displaced onto a spouse, another child or any other detail that allows ventilation of this anger.

Another dynamic present within this dyad is that of independence. In the researcher's opinion the purpose of proper parenting is to enable the child to take on the job of future parenting. Independence from the parents is therefore the ultimate aim. Baum & Kinmonth (1985:49) states that the presence of diabetes makes this independence difficult to achieve. The primary reason being that the child is dependent on the parent for routine injection check-ups, diet and related responsibilities of diabetes care.

However, a critique of this by Hillson (1996:158) advocates that children and parents need to explore with diabetes and its limits so that flexibility can be introduced into the diabetic regime thus eliminating the dependency. One should also take note that financial aspects of management might also represent major sources of stress for parents,

which could occur through frequent admissions, mandatory check-ups and purchasing of insulin.

2.10.4 THE DIABETIC CHILD

One needs to bear in mind that without a chronic illness, the psyche of a child is impressionable and fragile, so it follows that extra care should be taken when managing the psyche of a diabetic child.

Children with diabetes often feel damaged. Cleaver's (1994:270) study on diabetes mellitus and its chronic effects on children, found that the pronouncement of the diagnosis of diabetes posed an even greater threat to the existence of the subjects. Her study further revealed that feelings of fear, uncertainty, vulnerability and hopelessness were reinforced amongst her subjects.

Although children have been told at the time of their diagnosis that they are not going to be cured of the illness, they still harbour a dream that they will (Baum & Kinmonth, 1985:52). Some become depressed, angry and anxious. This idea is taken up by Cleaver (1994:269) where she reports that her subjects lived their lives as if their symptoms did not exist, however as the symptoms took a greater hold of each subject and caused increasing physical and emotional distress, it gradually dawned on them that something was seriously amiss and that they could not avoid facing the bodily changes that had occurred.

The researcher is of the opinion that diabetes is an added stressor for an already overburdened family. Not only will the physical care be poor but the emotional care may be erratic and unreliable and thus relationships within the family may be distorted. It is therefore of utmost importance that a social worker be involved in the team that is responsible for the diabetic child. Problems mentioned above, need to be brought to the attention of the social worker, so that solutions can be reached.

The researcher provides the following reasons as to why diabetic children exhibit behaviour problems: children do not fully understand the illness and each child will have his/her own perception of diabetes. There may be times however when these perceptions interfere with the understanding of diabetes, or make the child feel frightened and unhappy. It is then that the child should be encouraged to talk about them to obtain a better understanding.

Another important factor that the researcher feels is a major source of distress and worry for children and their parents, is monitoring. Whatever decisions are made about monitoring should be discussed with parent and child to ensure that what is decided, is the best for that particular family.

2.10.5 THE JUNIOR SCHOOL CHILD AND DIABETES

The junior school child and diabetes is an issue the researcher felt that required discussion, as the subjects for the research occupied this category. The start of school coincides with the child's need to distance himself/herself from the family. Du Toit and Kruger (1996:116-119) state

that the affective development of the primary school child is specific, diverse and sophisticated. One of the characteristics of affective development is fear. This stage of the child's life is pre-occupied with supernatural powers, contemporary issues, that is, HIV/AIDS and it follows that diabetes would be approached with the same mind frame. In this stage the child is also prone to bedwetting, anxiety, psychosomatic problems, noisy behaviours and suppressed fear.

According to Du Toit and Kruger (1996:116-119) the child has to experience the following stages: mastery of the physical skills necessary for play; the forming of a positive attitude towards their body; the mastery of the basic skills (scholastic); formation of conscience and morality; stabilisation of personal independence in order to achieve normal developmental milestones. The researcher is of the opinion that the rebellion, non-compliance to regimes, cheating on results, depression, anxiety, withdrawal and anger will be dominant as the primary school diabetic child battles to create his/her independence, while simultaneously being instructed to by parents, clinicians and the like, regarding adherence and treatment of the illness. This constant battle produces a child of low self-esteem.

Parents should express concern and affection for the child, but at the same time autonomous decisions regarding the child's illness should be allowed, thus enhancing self-esteem.

2.11 SUMMARY

One can thus surmise that in treating the child with diabetes, a network of factors contributes to their healthy development. One has to acknowledge the school, family, diet, exercise and developmental stage of the child in order to implement an effective treatment plan.

The information presented in this chapter highlights the importance of consultation, an adequate knowledge base, functional familial relationships and most importantly the validation of the diabetic child.

The importance of the team cannot be over emphasised. Knowledge that the parents and child acquire regarding the illness, arms the family with tools for the control of blood glucose, but it is motivation that puts these tools to work.

The team has the unique opportunity to help the parents to look after their children with diabetes and the children to look after themselves. The contact that the family have with the clinic may enrich their lives because of the understanding they gain about themselves through help that they get on all aspects of diabetes. The information in this chapter highlights a need for greater collaboration between the different health teams so that holistic and effective management of the juvenile diabetic can be achieved.