بسم الله الرحمن الرحيم

Shendi University

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Factor Affecting Diabetes Control Amongst Diabetic Children In Shendi City

Thesis:

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بسم الله الرحمن الرحيم

قال تعالي:

(ويـ سألونك عن ا لروح قل ا لروح من أ مر ر بي و ما أوتيتم من العلم إلا قليلاً) .

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Dedication

This thesis is dedicated

To

Soul of my parent & my brother Bakri

To

My family all my brothers & sisters.

To

My dear husband

To

My son

To

My daughters

To

Vulnerable families who are striving to save the lives of their diabetic children.

JJJ

List of abbreviation

Subject	
EMR	Eastern Mediterranean region
Mg\dl	Milligram per decibel
DM	Diabetes mellitus
DKA	diabetic keloacidosis
IM	Intramuscular
IV	intravenous
CSLL	continous subcutaneous insulin inflations
SMBG	self monitoring of blood glucose
HbALc	glycosylated haemoglobin
IDDM	insulin dependent diabetes mellitus.

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Abstract

The present study is descriptive study that aiming to identify factor that affect diabetes control of children with type 1diabetes millets ,It was conducted in Shendi teaching hospital and Elmak Nemir university hospital on 40 diabetics children ,Data were collected through an interview with diabetics children with present of their mothers ,result Regard to socio- demographic characteristics of diabetes children's mother, the study finding that the majority of mothers were illiteracy , All of them were did not work, The result of the study revealed that the majority of diabetics children had diabetes with duration more than three years. It was found that income per month is insufficient, the result revealed that tow third of present study had poor level of knowledge about diabetes and its control and It was also found that tow third of study children eat family food, in concern to exercise the result shows that majority of present study were practice exercise, . Moreover less than half of present study perform blood and urine test at home and majority of these test done by the mothers 1t was found that more than tow third of diabetic children were admitted to the hospital by diabetes milieus.

The result of present study revealed that the overall diabetes mellitus among attended children were uncontrolled.

ملخص البحث

مرض السكري هو مرض مزمن يؤثر في حياة الطفل باستمرار ,لذا يحب المحافظة على الطفل المصاب بالسكر. ويتحقق دلك عن طريق دمج العديد من العوامل مثل العمر مدة الاصابة و المعرفة عن مرض السكري ، الانسولين ، والنظام الغذائي وممارسة الرياضة ودعم الأسرة.

الهدف من الدراسة الحالية هو تحديد العوامل التي تؤثر على السيطرة على مرض السكري عند الأطفال الذين يعانون من مرض السكري النوع الأول. وقد أجري الاستطلاع على الأطفال مرضى السكري الذين يحضرون إلى العيادة الخارجية وقسمى الاطفال فى كل من مستشفى شندي التعليمي و مستشفى الملك نمر الجامعى, وقد تم اختيارعينة الدراسة عشوائيا.

وقدمت البيانات التي تم جمعها باستخدام الجداول المناسبة وتحليلها باستخدام اختبار الإحصائية المناسبة.

فيما يتعلق بالحصائص الاجتماعية والديمغرافية لامهات الاطفال ، وجدت الدراسة أن الغالبية (72.5 ٪) من الأمهات غير متعلمات ، و كل منهم لا يعمل. وكشفت نتائج الدراسة أن مدة الاصابةة لغالبية الاطفال((80 ٪) أكثر من ثلاث سنوات ، ونتيجة الدخل الشهرى كان غيركافى (70 ٪). وفيما يتعلق، بمعرفة الأطفال بداء السكري. النتيجة التي توصلت إليها الدراسة كشفت عن أن ثلثى مجتمع الدراسة (62 ٪) ضعيفى المعرفة حول مرض السكري وتنظيمه. وعلاوة على ذلك كشفت الدراسة أيضا أن جميع الأطفال مرضى السكري يمتثلون بالنظام العلاجي , من جانب النظام الغذائي والرياضة: في هذه الدراسة تبين ان ثلثى (62 ٪) أطفال الدراسة يتناولون طعام الأسرة ، وكما أظهرت أيضا أن نحو ثلثى العينة يمارسونالتمارين الرياضية.

كَشفتْ نتيجةَ الدراسةِ الحاليةِ بأنّ داء السكّري عموما بين الأطفالِ الزين حضروا. كَان غير مسيطر عليه

Introduction

Children are the most precious part of the nation's life and the biggest promise for the future. Their survival development and protection are basic responsibility of the family, the community and the government **(ADA 2004)**.

Type 1 diabetes in children is a condition in which child's pancreas no longer produces the insulin the child needs to survive, and the need to replace the missing insulin using shots or an insulin pump. This type of diabetes used to be known as juvenile diabetes or insulin-dependent diabetes mellitus (IDDM) .Diabetes presents unique issues for children and teens with the disease. Simple things - like going to a birthday party, playing sports, or staying overnight with friends - need careful planning. Every day, children with diabetes may need to take insulin or oral medication. They also need to check their blood glucose several times during the day and remember to make correct food choices. For school-age children, these tasks can make them feel "different" from their classmates. These tasks can be particularly bothersome for teens, **(Escobar and Becker, , 2004).**

Diagnosis of type 1 diabetes can be overwhelming at first. Suddenly, families and the child — depending on his or her age — must learn how to give injections, count carbohydrates and monitor blood sugar. Although type 1 diabetes requires consistent care, advances in blood sugar monitoring and insulin delivery have improved the daily management of type 1 diabetes in children. With proper treatment, children with type 1 diabetes can expect to live long, healthy lives. caring for children with diabetes, professionals need to understand the importance of involving adults in the child's diabetes management. Young children, including school-aged children, are unable to provide their own diabetes care, and middle school and high school students should not be expected to independently provide all of their own diabetes management care. Thus, the education about how to care for a child and adolescent with diabetes must be provided to the entire family unit, emphasizing age- and developmentally appropriate self-care and integrating this into the child's diabetes management The goal should be a gradual transition toward independence in management through middle school and high school. Adult supervision remains important . **(Milter,2006).**

Knowledge of the diabetes epidemic in Sudan is limited. Patients with diabetes make up around 10% of all hospital admissions in Sudan. The principal cause for admission is diabetes ketoacidosis – inadequate insulin resulting in high blood glucose levels and accumulation of organic acids and ketones in the blood. The lack of access to affordable insulin and other diabetes supplies in Sudan exacerbates the severe shortcomings in diabetes care. Diabetes provokes more deaths each year than any other non-communicable disease – 10% of hospital mortality. Ketoacidosis is the principal killer; other causes of death include diabetic foot-related septicemia and end-stage renal disease **(Elbagir M., 1998) .**

There are deferent factor that may influence diabetes control as insulin regimen, physical exercise, dietary adjustment and utilization of health care services that provided for diabetic children and their satisfaction with it, as well as life style and educational level **(La-Greca and Bearman2002).**

Pediatric nurse play a vital role in collaboration with other health team members for assisting diabetic children and their families to manage diabetes and achieve good glycemic control The nurse should provide clear information about diabetes management

and factor that affect diabetes control, witch encompass all aspect of child's and family's life **(Liahana et al, 2001)** .

Objectives

General objective:-

To assess Factors affecting Diabetes control among diabetic Children.

Specific Objective:-:

1 .To determine mother and child knowledge about factors affecting diabetes control.

2 . To identify their practices used to control diabetes.

3 . To determine diabetes control level for these children

Justification

Type 1Diabetes mellitus in children is a lifelong condition that can be controlled with lifestyle adjustments and medical treatments. Keeping blood sugar levels under control can prevent or minimize complications.. There is many deferent factor that interfer with glycemic control in children SO the aim of this study is to identify these factor that affect control of diabetes melitus among children.

Literature Review

Diabetes mellitus:-

Definition:-

Diabetes mellitus (DM) is a disorder of glucose intolerance caused by deficiency in insulin production and action, resulting in hyperglycemia and abnormal carbohydrate, protein, and fat metabolism**..** American Diabetes Association defined diabetes mellitus as a cluster of endocrine diseases characterized by ; body ,s compelled or partial inability to absorb glucose ,that the principles source of energy from digested foods in to cell **(ADA,2004,& Kishta,2004)**.

Type 1 diabetes, previously called insulin dependent diabetes mellitus {IDDM}, or juvenile onset diabetes, is an autoimmune diseases that destroys the beta cell of pancreas witch result in insulin deficiency .Recent diabetes mellitus is defined as a disease of metabolism characterized by; a total or partial deficiency of insulin hormone resulting in metabolic disturbance or physiological change in almost all areas of the body **(Yogev et al ;2003, hegy;2001,)**

Incidence & prevalence of insulin dependent diabetes mellitus (IDDM) Diabetes, the most common non-communicable disease in

the Sudan, is having an increasing impact on rates of morbidity and mortality ,The spread of sedentary lifestyles and adoption of western dietary habits – high in refined carbohydrates and fat – are driving an increase in the number of people with obesity-related type 1 diabetes**(Ahmed AM. 2006)**.

Knowledge of the diabetes epidemic in Sudan is limited. The most recent data come from a small-scale study that was carried out in 1996. The results of the study indicated a prevalence of 3.4%. But recent estimates place the diabetes population at around one million –95% of most facts about children and diabetes highlight the importance of understanding this disease and finding ways to manage and control it **effectively:-**

One in every 300-450 children in the world has diabetes.

Approximately 175,000 children in the United States under the age of 18 have diabetes. 13,000 children are diagnosed with type 1 diabetes every year. These children are at a greater risk for heart attack, stroke, kidney disease and immune complications throughout their lives (**Elbagir M., 1998) .**

Types of diabetes:-

There are two main types of diabetes. Type 1 and type 2 diabetes. A third type-gestational diabetes-occurs only during pregnancy..

Other types of diabetes include those caused by:-

- Genetic defects of the beta cell—the part of the pancreas that makes insulin—such as maturity-onset diabetes of the young (MODY) or neonatal diabetes mellitus (NDM)
- Genetic defects in insulin action, resulting in the body's inability to control blood glucose levels
- Diseases of the pancreas or conditions that damage the pancreas, such as pancreatitis and cystic fibrosis .
- Excess amounts of certain hormones resulting from some medical conditions—such as cortisol in Cushing's syndrome—that work against the action of insulin
- Medications that reduce insulin action, such as glucocorticoids, or chemicals that destroy beta cells
- Infections, such as congenital rubella and cytomegalovirus
- Rare immune-mediated disorders, such as stiff-man syndrome, an autoimmune disease of the central nervous system

- Genetic syndromes associated with diabetes, such as Down syndrome and Prader-Willi syndrome **(Tierney, et,al 2002).**

Causes:-

- The causes of diabetes mellitus in children are unclear; however, there seem to be both hereditary (genetic factors passed on families) and environmental factors involved. Research has shown that some children who develop diabetes have common genetic markers. In Type I : diabetes, the immune system, the body's defense system against infection, is believed to be triggered by a virus or another microorganism that destroys cells in the pancreas that produce insulin. (**Tierney, et, al 2002).**

Diagnosis;-

The diagnosis of diabetes in children is usually straightforward and requires little or no specialized testing. Most children and adolescents with type 1 diabetes present with a several-week history of polyuria, polydipsia, polyphagia, and weight loss, with hyperglycemia, glycosuria, ketonemia, and ketonuria (**Fure1**)Anymsymptomatic child **require tow criteria :-**

1 -FastinBSL>7,8mmol/l +2hours postprandial BSL above 11mmol/l 2-

GTT 1,75 gram sugar Glycosylated haemoglobin {HbA1}:-

Useful indicator of metabolic control over the preceding 6 weeks to 3 months; Normal HbA1c 4—6% , Excellent control 6—7% , Good control 8—9% , Fair control 9—10% , Bad control >10% **(Kowa H, Winter WE.,2006).**

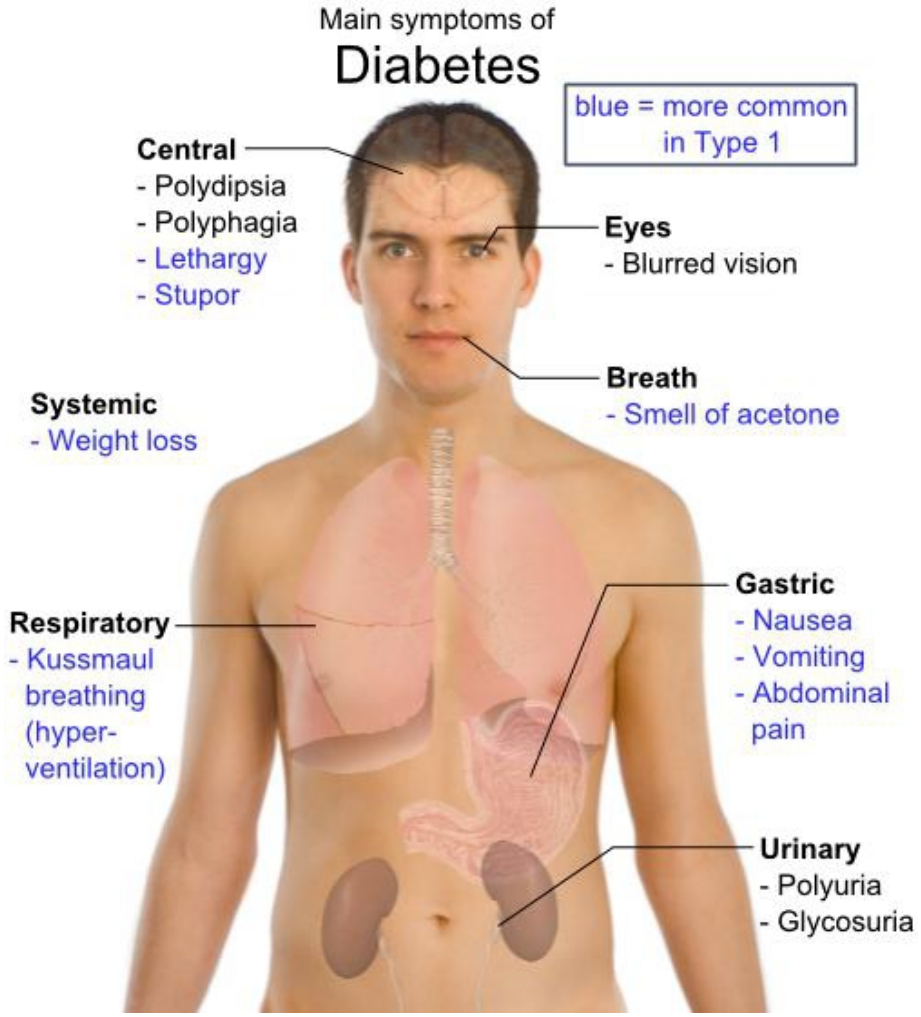

Figure 1.

Assessment of Child and Family Risk Factors at Diagnosis:-

It is well-documented that over the first few years after thediagnosis of type 1 diabetes in childhood, child adherence to the

diabetes regimen, family diabetes-related behavior patterns, as well as Glycemic control tend to become established or "track" and are difficult to change Therefore, it is important to assess both the risk factors and the strengths of the child and family at the time of diagnosis, with the hope of intervening before child and family behavior patterns become firmly established. (**Weissberg-Benchell J,2004).**

Initial Care:-

Whether the initial care and education is given as an inpatient or an outpatient and whether this care is provided by a pediatric endocrinologist/diabetes team, an internist endocrinologist, or the child's primary care provider will depend on the age of the child, the ability to provide outpatient education, the clinical severity of the child at presentation, and the geographic proximity of the patient to a tertiary care center. Ideally, every child newly diagnosed with type 1 diabetes should be evaluated by a diabetes team consisting of a pediatric endocrinologist, a nurse educator, a dietitian, and a mental health professional qualified to provide up-to-date pediatric-specific education and support. Such systems of care, unfortunately, are not always available. In the future, greater use of telemedicine may allow the expertise of established pediatric

centers to improve the care of children in remote areas. Regardless of the source of care, all providers caring for children with diabetes should understand the normal stages of childhood and adolescent development and how they affect diabetes management. They should also understand the different management approaches to type 1 and type 2 diabetes. Approximately 30% of children who present with newly diagnosed type 1 diabetes are ill with DKA Many require treatment in an intensive care unit. Most of the other 70% are not acutely ill and do not require hospitalization for medical management unless facilities for prolonged outpatient care and self-management education are not available. .Although outpatient initial care and education costs are substantially lower than those associated with inpatient care hospitalization of patients, regardless of severity, is required in certain circumstances.,(Kostraba JN, Gay EC, **Rewers M, 1992)**.

Identification :-

The person with diabetes should always wear identification (ID) that identifies him or her as having diabetes. This is particularly important during adolescence, when patients are often away from parent and teacher supervision and may be driving. The child who is active in sports is a case in point, and coaches need to

be aware of the child's diabetes and the signs and treatment of hypoglycemia. Necklaces and bracelets are readily available in pharmacies or from organizations like Medic Alert.. More fashionable ID items are available. These items may be more acceptable to adolescents and may be purchased in jewelry stores or via mail. Inquiry about the use of ID should occur periodically **(Toljamo M ., and Hentinen M , 2002).**

Appropriate Self-Management by Age:-

Children and adolescents are growing and developing, their ability to participate in self-management of diabetes varies with their changing motor development, cognitive abilities, and emotional maturation.. Nonetheless, there are few hard rules on what self-management capabilities children and adolescents and their families should have at various points along the developmental continuum.The management priorities and issues in self-management are summarized in **.(Banion CR, Miles MS, 2000).**

Infants (1 Year):-

When diabetes is diagnosed in infancy, the parents must adapt to the diagnosis and learn the myriad skills of daily management The tremendous responsibility of care and fear of hypoglycemia are

extremely stressful for families Infants do not exhibit the classic catecholamine response to hypoglycemia and are unable to communicate sensations associated with hypoglycemia; thus, the risk of severe hypoglycemia, with seizures coma, is highest in this age-group. Moreover, because the brain is still developing in infants, the adverse consequences of severe hypoglycemia may be greater than in older children Parents struggle with the balance between the risk of long-term complications versus their fear of severe hypoglycemia and the risk of neuropsychological**.(Banion CR, Miles MS, 2000).**

Toddlers (1-3 Years):-

The toddler years, ages 1-3, present unique challenges for the treatment of type 1 diabetes. As with infants, parents carry the burden of management of toddlers. Parents report that hypoglycemia is a constant fear, especially when the child refuses to eat. Important issues at this age are discipline and temper tantrums; it may be difficult to distinguish between normal developmental opposition and hypoglycemia, and therefore, parents must be taught to measure blood glucose before ignoring a temper tantrum. Parents may be overly cautious and interfere with the child's ability to try out new things, and they will need the support

of the diabetes team to promote their child's healthy development **(Sullivan-Bolyai.,2002—2003).**

Preschoolers and Early School-Aged Children (3-6Years):-

Children at this stage of development need to gain confidence in their ability to accomplish tasks but often lack the fine motor control, cognitive development, and impulse control necessary to be an active participant in most aspects of diabetes care. It is important to realize, however, that most children in this age-group can participate in their self-management by testing blood glucose, helping to keep records, and in some cases counting carbohydrates. For the most part, parents provide the care for preschoolers and young school-aged children, but others, such as child care providers and school nurses may also be involved in the care. Sharing care of young children with diabetes is often difficult for parents, who may fear that others will not know what to do Undetected hypoglycemia remains a concern because of the variations in activity and food intake characteristic of this age-group, and because of continuing concerns regarding the adverse effects of hypoglycemia on brain development and function. **(Sullivan-Bolyai Ryan 2002—2003).**

School-Aged Children 6-12Years):-

The influence of the new diagnosis of diabetes on children in this age-group has been studied. Immediately following diagnosis,

children report mild depression and anxiety, but these usually resolve by 6 months after diagnosis. After the first 1-2 years anxiety decreases for boys but increases for girls over the first 6 years after diagnosis., School-aged children with diabetes can begin to assume more of the daily diabetes management tasks, such as insulin injections and blood glucose testing with supervision and support from caring and knowledgeable adults. Pump treatment is increasingly being used in this age-group,. Several studies have shown that a child's early and independent participation in the diabetes regimen was significantly associated with poorer control. Children may feel that they are different from their peers because of their diabetes and may be at risk for difficulties with social competence.] It is important to encourage school-aged children to attend school regularly and to participate in school activities and sports to facilitate the development of normal peer relationships. The school can present significant challenges or be a source of support to the child with diabetes. This topic is well covered in the ADA position statement "Diabetes Care in the School and Day Care Setting and the recent publication Helping the Student with Diabetes Succeed: A Guide for School Personnel by the National

Diabetes Education Program (NDEP). Both children and parents fear hypoglycemia and the potential for hypoglycemia to interfere with learning. hypoglycemia in children, and the experience of severe hypoglycemia may lead patients and parents to over treat initial symptoms and institute behavioral changes to maintain higher blood glucose levels, which result in a deterioration of metabolic controlFurthermore, fear of hypoglycemia may be associated with worse psychological status and adaptation in adult patients**.(Nassau, Drotar,2002).**

Adolescents:-

Adolescence is a period of rapid biological change accompanied by increasing physical, cognitive, and emotional maturity.Adolescents are struggling to find their own identity separate from their families. Many of the diabetes-related tasks can interfere with the adolescent's drive for independence and peer acceptance. Peer pressure may generate strong conflicts. In this age-group, there is a struggle for independence from parents and other adults that is often manifested as suboptimal adherence to the diabetes regimen. Because adolescents have the fine motor control to competently perform most self-management activities, it is

tempting for parents to turn over total diabetes management to the teenager.

While adolescents can perform the tasks of diabetes management, they still need help with decision-making about insulin adjustments. Adolescents whose parents maintain some guidance and supervision in the management of diabetes have better metabolic control. Thus, continuing to involve parents appropriately, with shared management, is associated with improved control. The challenge is to find the degree of parental involvement that is comfortable for all involved, without risking deterioration in Glycemic control from over- or under involvement. Such involvement in diabetes management in this developmental stage can affect parent-adolescent relationships.Parent-child conflict has been associated with poorer diabetes outcomes in several studies During the later adolescent years, the parents and the diabetes care team need to assist the youth to transition to more independent self-management and to adult diabetes care providers**(Martin R, Kupsis B.,200**).

Management :-

There are five components of diabetes management among children (Figure 2):-

1. Nutritional management

2. Exercise.

3. Monitoring.

4. Pharmacologic therapy.

5. Education

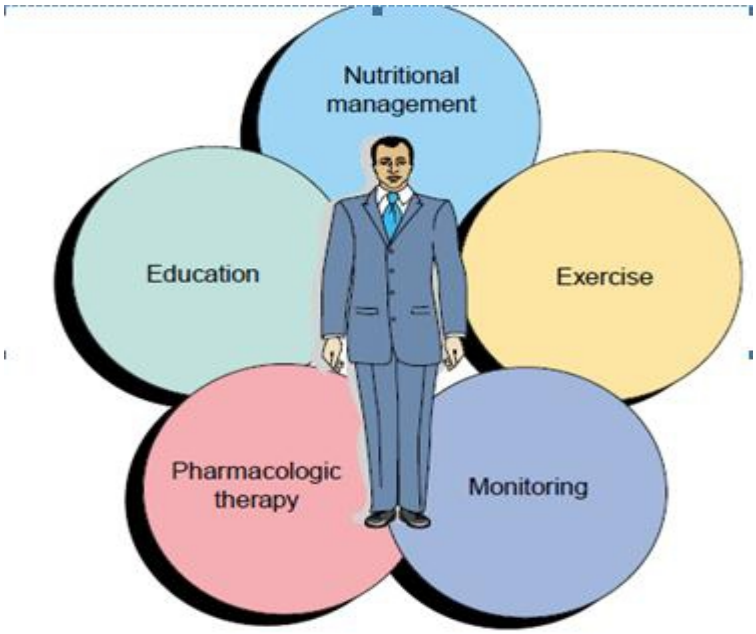

Figure 2.

Gool of managing diabetes; Good metabolic control ;maintaining blood glucose level as normal as possible .A good understanding of the condition by the family such that they can compeletly manage the child's diabetes and adjust insulin requirement ,diet and exercise .Minimize complication, normal growth and development with full participation in school and social activities .Work towards the child taking maximal responsibility for his or\her diabetes as appropriate for the child's age and intelligence .Practical

management; children usuallyrequire 0,5-1,0units\kg ,given tow third of the dose in the morning and one third at night .insulin is usually given before meal to match the rise in insulin with the rise in postprandial glucose (Milter,200). .

Diabetes control:-

The word control, is used in the context of diabetes management, seems to have more than one meaning. not only the patient but also to the nurse . it means regulation or direction of diabetic state .ideal control for diabetes is not at this time achievable for the vast majority of the children with type one diabetes mellitus .time and experience have shown that what is practical is ever changing .using the optimal {that is the best or most favorable } is better to indicate the balanced program .Generally, the management of IDDM In children is govermented by increasing evidence that normal growth and development . both physical and emotional. Can be achieved and that the risk of long term micro vascular complication can be minimized by maintaining metabolic control . usually equated with good metabolic control .Macro or micro vascular complication rarely become manifest in children .Also it has been found that instituting that strict metabolic control can restore normal retinal, neural and renal function of

those diabetic children with early functional impairment but cannot reverse anatomic changes .The biochemical basis of certain complication are related directly to hyperglycemia and poor metabolic control (Karvonen et al **,2000,and Milter,200)** .

There are two common ways that assess how well diabetes is controlled: Frequent measurements of blood glucose, and measurement of glycohemoglobin (A1c).

Each method has its good and bad points, but combined they give a fairly accurate picture of the state of glucose control in a diabetic. . Measurement of Blood Glucose (Blood Sugar). However diabetes mellitus is a chronic disease requiring life – long medical treatment and life style adjustment by the patient – compliance has the largest effect on metabolic control ,yet poor Glycemic control and non – compliance prevent the realization of potential benefit of therapy produce inestimable cost in both human and economic terms **(chan&Molssiots,2007).**

Impact of diabetes control;

Children growth and development:-

It is well known that children have changing need associated with development processes and many of the problem of illness and adjustment are related to the age of the child at the time of

diagnosis as the attitude and support provide by the family . Moreover, it was found that satisfactory adjustment is reflected in good control of diabetes .healthy activity and relationship in addition to ability of the child to talk about his disease comfortably as stated by A child developmental stage is an important determinant of his\her attitude toward the disease treatment and control **(Barasi.,2002).** So growth is an important clinical indication overall general health and wellbeing in children and adolescent with DM. The change in the weight and height reflect the net metabolic balance of total body homeostasis; energy intake, utilization and expenditure. If insulin deficiency is corrected sufficiently the youngster with insulin dependent diabetes should grow in fashion comparable to non diabetic peers(**Dworkin, 2001, and Neu et al 1997**).

Infant; month –one year:-

When child is diagnosed as IDDM, during the first year of life the parent or caregiver become real patient this because diagnosis of diabetes and day –to –day management of this disease create an overwhelming stress for parent of the infant where parent easily become exhausted Thus the parent of diabetic infant may find it extremely difficult , both psychologically and physically ,to inject

insulin or take a drop of blood from their infant s thinly body as ,diabetes diagnosed during first years of life has profound effect on the parent – infant relationship and glycemic control but parent must recognize that diabetic infant with good control grows normally ,and diabetic infant with poor control grows very poorly (**Anderson et al 2002).**

Toddler (2-4) years:-

Parent of diabetic toddler also has additional stress of having a child who may actively resist and refuse insulin injection, or blood monitoring, or needed meals or snacks. Parent often struggle to maintain the child s blood sugar within a safe or acceptable range due to physiologic interference from the toddler s physical growth spurt ,the child inability to understand the important of regimen or consistently cooperate with diabetes treatment ,and the toddler inability to verbalize symptoms of high or low blood glucose level Moreover behavioral and temperamental characteristics of toddler , their wariness of stranger, reliance upon routine and ritual, poor impulse control and limited ability to verbally communicate thoughts and feeling , all together make it particularly difficult for this age group to cope with stresses of diabetes and even poor blood Glycemic control . Thus if diabetes

mellitus impairs the child development competence s resulting in regression in qualitative change in behavior ,the parent must adjust their expectation and alter their care given level **(Anderson et al 2002).**

Pre-school 4-6 years:-

The pre- school youngster normally has intense concern about body strength instance fears their being damaged the parent of diabetic child should be sensitive to these concern and offer reassurance and support to their diabetic children For pre school aged children with diabetes entering school may be their first awareness that they deferent aged mates .in terms of eating at snacks or lunch time checking blood glucose level or warring medical identification jewelry, moreover the pre-school child must learntrust adult as parent to manage diabetes and improve diabetes control **(Banion 200)** .

School age 6—12 years :-

Children in this age often become inquisitive about diabetes regimen and even choose to take an active part in it .permitting youngest to help in test of blood and urine ,draw up and occasionally give insulin and play apart of planning the diet will promote a sense of mastery .Self confidence will be enhanced and satisfaction achieved as the child gain approval for the successful

execution of these tasks .However ,it is hazardous for parent to relinquish their close supervision of each aspect of diabetes regimen Many parent strongly encourage school and teenage to perform diabetes tasks independently thinking that it good to their children to be ‘independent ‘’ as he l she will need to take care of himself as in adult, On the other hand it was found that children and teenager who has the soul of responsibility for the task of daily diabetes care such as continuing carbohydrates measuring ;insulin injection ,testing and recording blood glucose level have worse glycemic control and more adverse event . **(Kilnar, 2006).**

In contrast children and teenager who share responsibility for daily diabetes care with parent performing tasks interpreting data ,and troubleshooting deception have better glycemic control and fewer adverse events Pre – adolescent , who assumed greater responsibility for glucose testing and measuring insulin were in poorer control than those whose families were more involved , moreover ,among pre adolescent parent knowledge of diabetes was related to metabolic control ,but children knowledge was not in contrast ,it was found that youngster who assumed more responsibility for charting glucose and eating on time were in

poorer diabetic control , these finding test wisdom of encouraging youngster responsibility for self—care without ensuring that diabetes management skills are implemented effectively as reported **by(ADA,2003).**

Adolescent 12—18 years :-

During this period the most important development process is the building of an inward sense of a new adult image discovering sexual identity and becoming independent , moreover adolescent want to distance themselves from their parent and become free of limitation that prevent them from attaining their aims and developing in to independency of a young diabetic in a certain limited thus , healthy development of adolescent having diabetes mellitus is encouraged by a process of mutual ,positive engagement between adolescent and various adult and peers .This process should occur through the family and significant others takes place in the schools, health institution and community. The psychological change accompanying adolescent may make this a time of rebellion where adherence to insulin and dietary regimen is minimal. The diabetic adolescent know that they will not become ill immediately if they cheat with their diet or miss an injection .Some will inevitably decrease their degree to which the rule can be

broken. Choosing to ignore the uncomfortable fact of diabetes provided they ‘’feel ok’’ this usually result on the avoidance of blood testing and tendency to work on the falls assumption that feeling well equates with good glycemic control .many gairl some time experiment with crush diet at witch are likely to cause majar problems in diabetes control ,they also learn that glucose urea can be used in aid to lose weight ,so they tent to lose weight by this methods The control 0f IDDM is difficult task at any age ,but it is particularly during adolescents because this is developmental period in which series of complex an interrelated developmental task or measured .adolescent are also in the process of taking a multitude of new social and emotional roles and these normal developmental process complicate diabetes management and diabetes control still future **(Bryden 2001) .**

1- Effect of diabetes control on diabetic complication:-

Diabetes is seven leading cause of death in the united state ,the life expectancy of a child with diabetes at the age of 10 is 44 years ,where his peer can be expected to live 62 years ,for the most part ,this only mortality result of long term complication of the illness **(ADA,2004).**

Moreover complication of type 1 diabetes Miletus can be defied to immediate complication which include hypoglycemia and diabetic ketoacidoses that is a majar source of morbidity and mortality in children adolescent .one of the most serious complication of diabetic ketoacidosis is cerebral edema ,which occur in as many as 3% of children with diabetic keto acidosis {DKA} ,and account for 30% of DKA deaths and 20% of overall childhood diabetes mortality (late complication which associated with uncontrolled diabetes include stunted growth ,hepatomegally , fail to develop secondary sexual characteristics and amenorrhea ,vascular complication that may involve almost every tissues in the body . generally vascular diseases caused by diabetes lead to increased incidence of cardiac complication ,cerebrovascular diseases ,retinopathy and kidney problems Although the diabetes control and complication trial {DCCT} ,showed that improved in metabolic control to near normal level delays the onset or progression of complication reported that the diabetic complication usually appear after 10 -20 years of diabetes, but infrequently may be seen before puberty. Hence diabetes in children may be viewed as deceptively begin. The possible relationship between diabetes

control and complication forthe basic of attempt to intensity metabolic control and mimic normal metabolism as closely as possible **(Ali A. 2003)**.

2- Impact of diabetes control in family:-

When a child develop diabetes the impact is felt not just by him or her but also by the family as whole .where a change in one family member create a change in the other members, Also the family of diabetic children in particular is worry about future, job prospect ,forming relationship , having families of their own and prospect of lifelong infection plus possible complication ,Thus they must be recognized that better care and control is commenced at an early age and maintained throughout life for high quality of lifeFor all families who have diabetic child, daily compliance with numerous procedures and structured living schedules is difficult but maintaining blood glucose control requires ongoing motivation and lifestyle adjustment **(Couper 2007).**

3- Community:-

Diabetes Miletus is a very costly disease, since direct and indirect health care costs for diabetes are known to be high in many developed and developing countries .there are evidences that diabetes care costs in developed country are between 20 -25 million

dollars per million people yearly and that between 1000—7000 lives are lost annually per million people due to the disease.The total direct cost of DM are strongly affected by the type of health care services that provided to diabetic children as hospitalization ,out patient care , perception drug , physician encounters, and laboratory tests .The amount of health care costs might be reduced if DM is controlled **(James,2000).**

Factor Affecting control of Diabetes

Insulin :-

Diabetes mellitus is a lifelong condition that can be controlled with lifestyle adjustments and medical treatments. Keeping blood sugar levels under control can prevent or minimize complications. Insulin treatment is one component of a diabetes treatment plan for child with type 1 diabetes**(Chase 2003).**

Goals of insulin treatment:-

The goal of insulin treatment is to keep blood glucose levels at normal or near-normal levels. Careful control of blood sugar levels can help prevent Insulin replaces or supplements the body's own insulin, restoring normal or near-normal blood sugar control. Many different types of insulin treatment can successfully control blood sugar levels.

Types of insulin treatment:-

Rapid-acting (eg, insulin lisper (Homolog), insulin as part (Novo log), and insulin glulisine (Apidra)

Short-acting (eg, insulin regular)

Intermediate-acting (eg, insulin NPH)

Long-acting (eg, insulin glargine [Lanus], insulin deemed (Levemir).

Insulin regimens :-

There are two general types of insulin treatment plans: standard (conventional) insulin treatment and intensive insulin treatment. In general, intensive insulin therapy is recommended for type 1 diabetes. Standard insulin treatment is an older regimen, although it may still be recommended for selected patients .Although there is no one established formula for determining a child's insulin requirement, insulin requirements are usually based on body weight, age, and pubertal status. Children with newly diagnosed diabetes usually require an initial total daily dose of ~0.5-1.0 units/kg. In general, younger (and prepubertal) children require lower doses while the presence of ketoacidosis, use of steroids, and the hormonal changes of puberty all dictate higher doses. The small insulin needs of infants and toddlers may require diluted insulin to

allow for more precise dosing and measurement of insulin in <1-unit increments. Diluents are available for specific types of insulins from the insulin manufacturers. Insulin can be diluted either at a pharmacy or at home once parent training has been completed. Insulin pens that deliver insulin in 0.5-unit increments also are available**. (ADA,2003).**

. Children may require only minimal amounts of intermediate- or long-acting insulin, possibly combined with small amounts of rapid- or short-acting insulin. Children with diabetes often require multiple daily injections of insulin, using combinations of rapid-, short-, intermediate-, or long-acting insulin before meals and at bedtime to maintain optimal blood glucose control. If a large snack is consumed between meals, as often occurs in adolescents in the late afternoon, an extra injection of a rapid-acting insulin may be necessary. However, many patients require more frequent insulin administration in order to achieve and maintain good glycemic control,. However, greater flexibility provided by multiple daily insulin injections (MDIs) per day, combined with carbohydrate counting and dose determined using an insulin-to-carbohydrate ratio, makes this an attractive therapeutic regimen for most middle school and high school students. The basal/bolus insulin regimen

uses a long-acting insulin analog (glargine) combined with a rapid-acting insulin analog given before meals and snacks and has been documented to result in stable glycemic control and less hypoglycemia compared with regimens using intermediate and short insulin regimens. Adjusting insulin based on the carbohydrate content of meals has been shown to improve glycemic control in. The principles of using carbohydrate counting and an insulin-to-carbohydrate ratio tailored to each individual is a principle that is applied to both insulin injection therapy and insulin pump therapy.

(Plotnick., et al., 2003).

Injection insulin:-

Insulin is usually injected into the layer of fat under the skin (called subcutaneous injection). child and parents or partner should learn to draw up and inject insulin Theneedle must be injected at the correct angle ,njecting too deeply could deliver insulin to the muscle, where it is absorbed quickly. Injecting too shallowly deposits insulin in the skin, which is painful and prevents the body from absorbing the insulin.

Injection technique — Choose the site to inject ,It is not necessary to clean the skin with alcohol unless the skin is dirty. insert the

needle at a 90º angle. Hold the syringe and needle in place for 5 seconds. Release the skin fold. ,Remove the needle from the skin.

Injecting through clothing :— Some people wonder about the safety of injecting insulin through their clothing. One small study examined the risks and benefits of this technique, and found that blood sugar control did not differ between the group that injected insulin through a single layer of clothing and those that injected directly into the skin Insulin pen injectors — Insulin pen injectors may be more convenient to carry and use when away from home. Most are approximately the size of a large writing pen, and contain a disposable insulin cartridge and needle. Some types of insulin and some insulin mixtures are not available in cartridges, meaning that pens may not be an option for everyone. Inhaled insulin — An inhaled form of rapid-acting insulin was available for a short time but was discontinued in 2007. Other inhaled insulin preparations are in clinical trials but are not currently available Insulin pump (Figure 3)— Insulin can be continuously administered by insulin pump, a process called continuous subcutaneous insulin infusion. An insulin pump may be recommended if you are willing to closely monitor your blood sugar levels, amount and type of food eaten, and other factors **(BLUM.,2002) .**

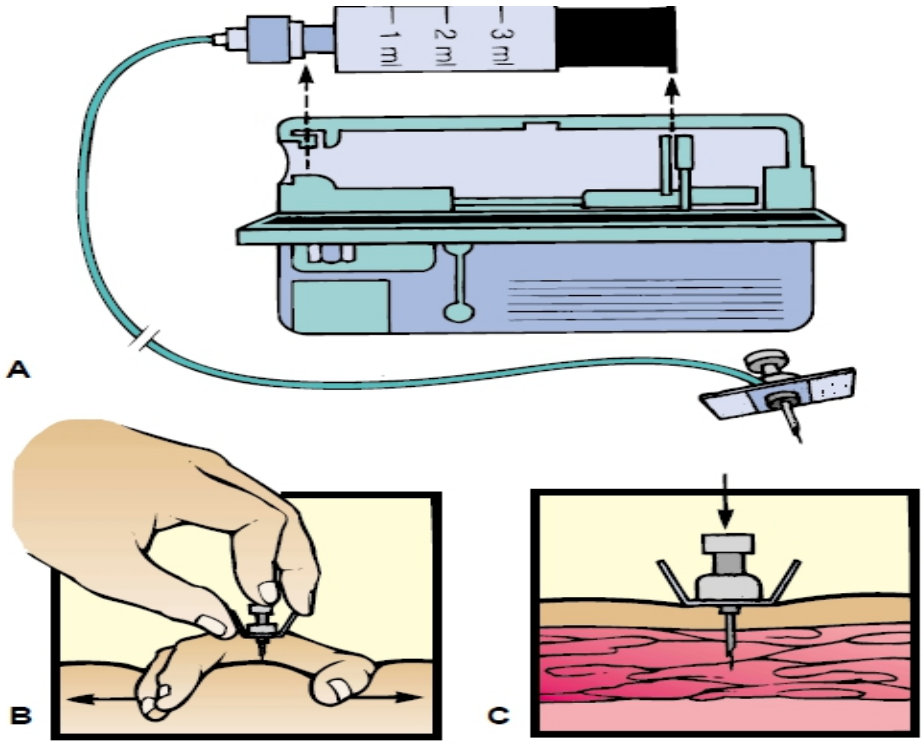

Figure 3.

The pump is worn externally **Figure 5.** in a pocket or on the belt) and is attached to the body with long, thin, flexible plastic tubing that has a needle or soft cannula (thin plastic tube). The cannula or needle is inserted and then left in place beneath the skin. You change the needle or cannula and tubing every 48 to 72 hours. The pump stores rapid acting insulin in a cartridge. (**Ahern JA, Boland EA,.2008)** .

Figure 4 .

Several factors can affect how insulin is absorbed:-

Dose of insulin injected :-

The dose of insulin injected affects the rate at which the body absorbs it.

Injection technique :-

The angle and depth of an insulin injection are important .

Site of injection — rotating injection sites minimize tissue irritation (Figure 5) However, it is important to keep in mind that insulin is absorbed at different rates in different areas of the body. Insulin is absorbed fastest from the abdominal area, slowest from the leg and buttock, and at an intermediate rate from the arm. This may vary with the amount of fat under the skin; the more fat, the more slowly insulin is absorbed because of variations in absorption, it is reasonable to use the same general area for injections at a particular time of the day. Pre-meal insulin injections are absorbed fastest from the abdominal area, allowing for optimal coverage of

carbohydrates consumed in a meal. Injection into the thigh or buttock may be best for the evening dose because the insulin will be absorbed more slowly during the night (**Martin & Kupsis,2008)**.

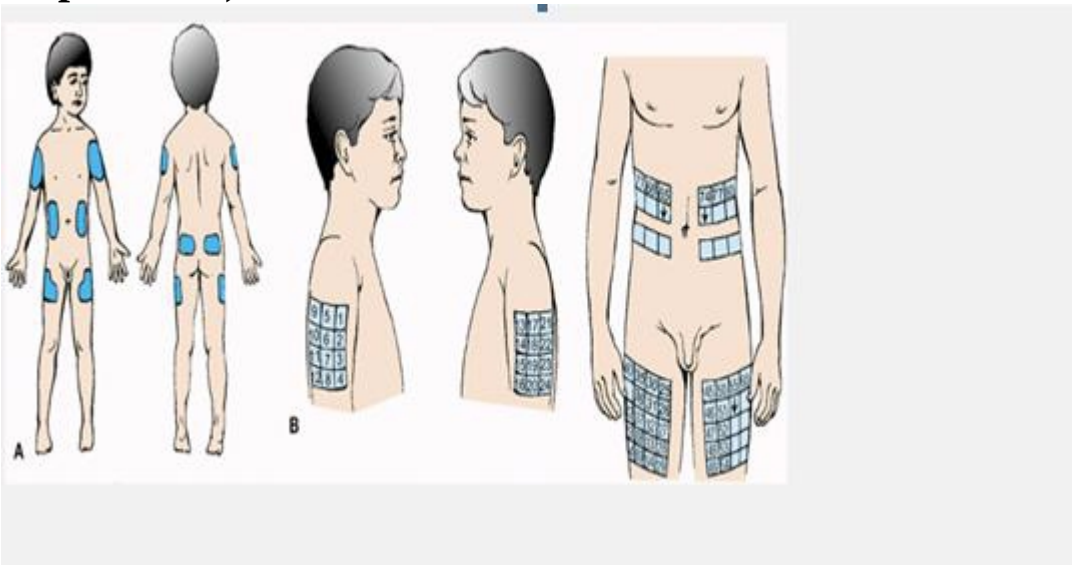

Figure 5

Subcutaneous blood flow :-

Any factors that alter the rate of blood flow to the body's tissues will alter insulin absorption..

Time since opening the bottle — most insulin remains potent and effective for up to a month after the bottle has been opened (if kept in the refrigerator between injections) the potency for intermediate or long acting insulin begins to decrease after 30 days.. It is advisable to open a new bottle at least every 30 days, even if there is insulin left in the old bottle.

For rapid acting insulin used in pen injectors, it is acceptable to keep the pen injector unrefrigerated (in a bag or jacket pocket) for up to 14 days, provided that the pen is not exposed to very warm or cold conditions..

Individual factors — The same dose of the same type of insulin may have different effects in different child with diabetes. Some trial and error is usually necessary to find the ideal type(s) and dose of insulin and schedule for each person **(Maniatis AK,,et,al., 2004)**.

Diet:-

children, especially those who take long-acting insulin (eg, NPH). If a meal is skipped or delayed, are at risk for developing low blood glucose.

Nutrition recommendations for children and adolescents with type 1 diabetes should focus on achieving blood glucose goals without excessive hypoglycemia, and normal growth and development. This can be accomplished through individualized meal planning, and flexible insulin regimens, Nutrient recommendations are based on requirements for all healthy children and adolescents because there is no nutrient requirements for children and adolescents with diabetes. Children and adolescents should adopt healthful eating

habits to ensure adequate intake of essential vitamins , minerals andvegetables, although children with diabetes may be doing somewhat better than the general population .However, many children consumed levels of saturated fat well above the National Cholesterol Education Program (NCEP) recommendations **(A.A.P.,2004)**.

Medical Nutrition Therapy:-

Medical nutrition therapy plays a major role in the management of type 1 diabetes in children. Consultation with a registered dietitian with experience in pediatric nutrition and diabetes is recommended. Meal plans must be individualized to accommodate food preferences, cultural influences, physical activity patterns, and family eating patterns and schedules. The meal planning approach selected must assist families to learn the effect of food on blood glucose levels. There is some evidence that total carbohydrate content of meals and snacks is most important in determining the postprandial glucose response and, thus, in determining the premeal insulin dosage. The Dose Adjustment for Normal Eating (DAFNE) study group documented a decrease in HbA1c and an increase in patient satisfaction after initiating diabetes management using carbohydrate counting for meal and snack ,carbohydrate content

and insulin-to-carbohydrate ratio to determine the insulin dose. Carbohydrate is important for children and adolescents who are on fixed insulin regimens Consideration of a child's appetite must be given when determining energy requirements and the nutrition prescription. Adequacy of energy intake can be evaluated by following growth patterns on the Centers for Disease Control and Prevention (CDC) ,pediatric growth charts .Many children with type 1 diabetes present at diagnosis with weight loss that must be restored with insulin initiation, hydration, and adequate energy intake. As energy requirements change with age, physical activity, and growth rate, an evaluation of height, weight, BMI, and nutrition plan is recommended at least every year. Good metabolic control is essential for normal growth and development.. BMI should be monitored and calories restricted if the child becomes overweight. **(Wolever TM, Hamad S,.1999)**

How Diabetic Diet Works:~

Diet for diabetic is not just a diet that is free from “sugars”. A diabetic meal is a balanced healthy diet with appropriate mixture of carbohydrates, proteins and fats that provide essential nutrients as well as to create an even release of glucose into the blood of a

diabetes patient. The goals are to keep blood glucose as near as possible to that of a normal person. **(A.D.A.,2003).**

Diabetic Diet Plan :-

- Eat a lots of vegetables and fruits.
- Choose whole grain foods over processed grain products.
- Include dried beans (like kidney or pinto beans) and lentils into diabetic diet meal.
- Include fish in your meals 2-3 times a week. Choose whole grain foods over processed grain products.
- Include dried beans (like kidney or pinto beans) and lentils into diabetic diet meal.
- Include fish in meals 2-3 times a week.
- . Choose non-fat dairy such as skim milk, non-fat yogurt and non-fat cheese.
- Choose water and calorie-free "diet" drinks instead of regular sugar-sweetened drinks.
- Choose liquid oils for cooking instead of solid fats that can be high in saturated and trans fats.
- Eating too much of even healthful foods can lead to weight gain. Cut back on high calorie foods like chips, cookies, cakes, and full-fat ice cream in diabetic meal.. .

Rmember Durig Diabetic Diet Plan :-

50% carbohydrate

- 35% fat.
- 15% protein.
- 3 main meals &3 snacks & traffic light division.

Green: meat fish black coffee clear soups

Amber: bread milk cereals pasta

Red : chocolate raw sugar soft drinks cakes .**(A.D.A 2004,)**.

Exercise:-

Exercise offers many health-promoting benefits for people with and without diabetes, and intervention strategies that promote life-long physical activity should be encouraged. Benefits of exercise in type 1 diabetes are detailed in an ADA Technical Reviewed include a greater sense of well-being, help with weight control, improved physical fitness, and improved cardiovascular fitness, with lower pulse and blood pressure and improved lipid profile These advantages apply to children as well as to adults, as indicated by studies demonstrating the beneficial effect of physical fitness on lipid and lipoprotein levels in adolescents. The effects of improved metabolic control on cardiovascular fitness is controversial, with most recent studies showing no relationship between physical

fitness and A1C levels Of hypoglycemic episodes in the pediatric population10-20% are associated with exercise. which is generally of greater than usual intensity, duration, or frequency. Increased hepatic glucose output in association with vigorous exercise secondary to both and adrenergic stimulation may cause hyperglycemia during and immediately after exercise, followed by hypoglycemia within 1-6 h of completion of exercise due to hepatic glycogen depletion The recommended amount of exercise is 30 minutes per day most days of the week . **(Wasserman DH, Zinman 200)** .

Types of sports in which children are involved may require frequent dose adjustments to allow the child to participate in activities, and individual sports. Initially, frequent blood glucose monitoring will be required to determine how to best adjust insulin and food for the sports activity. It is recommended that blood glucose monitoring be done before and at the termination of exercise and at hourly intervals during episodes of prolonged strenuous activity. Fifteen grams of carbohydrate may be administered as a readily absorbed sugar if blood glucose levels are <100 mg/dl during the period of exercise. Parents will need to

ensure that the school personnel and coaches are aware of the risk of hypoglycemia with exercise, the child's symptoms of hypoglycemia, and the use of emergency glucose sources to treat hypoglycemia. The parent is responsible for providing blood glucose monitoring equipment and glucose tablets or juice. The use of a readily absorbable carbohydrate source, such as an electrolyte-containing sports drink, may be very helpful in preventing hypoglycemia both during and after exercise. Decreasing insulin dose for planned exercise, rather than increasing calories, should be considered as part of appropriate weight management for all children with diabetes, although this strategy may be difficult in the very young child whose physical activity is more sporadic than planned. With prior planning, all children with diabetes should be able to enjoy the many benefits of physical activity, and their diabetes should not be a deterrent. With the increased prevalence of overweight and obesity in children and adolescents, children and adolescents with type 1 diabetes may also be overweight or obese. For these children, exercise is particularly encouraged as an important component of a weight management strategy (Austin, Warty, **Janosky,2002).**

Blood Glucose Monitoring:-

Self-management of diabetes is the ultimate goal for all children with diabetes, insulin dosing decisions based on interpretation of blood glucose results. Self-monitoring of blood glucose (SMBG) allows children with diabetes and their families to measure blood glucose levels rapidly and accurately. All basal/bolus diabetes management regimens and all self-management skills rely on frequent SMBG. ".Self-Monitoring of Blood Glucose For children with type 1 diabetes, four or more tests per day are generally necessary. SMBG is necessary for individuals to achieve optimal glycemic control; there is a good correlation between frequency of monitoring and glycemic control multiple blood glucose measurements should be done each day to determine patterns of hypoglycemia and hyperglycemia and insulin dose adjustments. Preprandial and postprandial blood glucose levels are allso important in determining insulin dose adjustments. Special attention should be addressed to the preschool and early school-aged child who may be unable to identify self-report episodes of hypoglycemia, these children requires more frequent blood glucose testing.. Additional testing during periods of increased physical activity is also very important**(Anderson 2003)**.

Most blood glucose meters contain a memory chip, and the manufacturer can provide software to print out monitoring results, Interpretation of blood glucose monitoring results and their use for dose calculations are of major importance for achieving good metabolic control. It is these skills that make intensive diabetes management possible. If results are not reviewed frequently, patterns are easily missed and opportunities for changes in the regimen are also missed. Newer technologies are now allowing near continuous blood glucose monitoring. These devices may hold promise for improved assessment of metabolic control and are approved for use in pediatric patients Further improvements of products are in development . Urine testing by home monitoring remain the classical stander of control , urine test is performed before meal and at bed time , usually performed 2-3 Hr after the main meals Finally optimal glycemic control could only be assessed and maintain by frequent and accurate monitoring**(Chase et al ,.2001).**

Education:-

Studies in children with type 1 diabetes have demonstrated that patient and family education, delivery of intensive diabetes case management, and close telephone contact with the diabetes team

are associated with reduced hospitalizations, emergency room visits, and overall costs to the payer and patient. Regardless of the setting of the educational program, it should be personalized to the needs of the child and family, culturally sensitive, and paced to accommodate individual needs. One should always keep in mind the patient's sibling(s), as they may feel neglected because of the increased attention paid to the patient due to this new diagnosis. Proper diabetes education for a child and family requires educators with a set of skills including good communication, compassion, sensitivity, humor, and in-depth knowledge of childhood diabetes. Both the information provided and the style of delivery must be pediatric-specific. by a team of certified professionals, including a physician, nurse, dietitian, and mental health professional, and dedicated to communicating basic diabetes management skills. Education is best provided with sensitivity to the age and developmental stage of the child, with regard to both the educational approach and the content of the material delivered. For the preschooler, education likely will be directed toward the parents and primary caregivers, whereas for most adolescents (after consideration of their emotional and cognitive development),

education should be directed primarily toward the patient, with parents included., education should be provided to all caregivers simultaneously if possible. **(Couper, Taylor J,2007).**

Continuing Education:-

Education is not a one-time event that occurs at diagnosis.. Families and children need ongoing education and support as the child grows and takes on more elements of self-care. Knowledge and skills should be evaluated regularly by the diabetes educator., educational interventions need to be ongoing, with frequent telephone contact, telephone availability have been demonstrated to improve A1C and to decrease hospitalization rates for acute diabetes complications. The patient and family should receive ongoing education regarding the prevention and screening for the microvascular and macrovascular complications of diabetes. Counseling should include the importance of optimizing blood glucose, and avoidance of smoking **(Heggy 2001 , Mohammed, 1999).**

Travel:-

Obviously, children with unstable diabetes who are prone to insulin reaction without warning should get their health condition into as stable situation as possible before leaving.

It is also best for them to travel with companion who is knowledgeable about diabetes Moreover, the diabetic child should be instructed to carry medical identification of all times which indicate that he is diabetic. An identification card can supply valuable information, such as the name of the health care provider and the type and dose of insulin. A medical alert bracelet or necklace ,should be worn by every child with diabetes. Furthermore, preparation for traveling is very important to maintain glycemic control; therefore a diabetic child requires planning in advance. The diabetic child should have all supplies in carryon luggage and keep them at hand all times. This includes insulin, syringes, quick-acting carbohydrate and glycogen. Extra insulin should be available in case a bottle breaks or gets lost**(Fetner & White , 2001 ; and Shiels & Baum , 1998).**

Family support :-

An important issue of the treatment of diabetes in the mediation of the relationship between family function and the child diabetes control.

Children living with both biologic parents or single parent had significantly better diabetes control than child' living with a step-parent or adoptive parents. Children living in families characterized

by cohesion. emotional expressiveness, lack of conflict and with mothers satisfied with their marriages have better diabetes control than children living in families in opposing characterized The family's psychological functioningis related to a child's diabetes control. Family functioning affects a child's diabetes control directly through its effect on the child's physiological and indirectly through its effect on the behavioral management of the diabetic child There is a link between stress and poor metabolic control, poor compliance was not primary responsible for poor control but instead, the stress that the children with diabetes experienced result in the physiologic disturbance experience **(Davis et al,2001) .**

Health care services:-

It is obviously that, inadequate communication and counseling between the child and health care members can result in lack of child's understanding of the medication regimen and lack of knowledge about his metabolic control will often result Health services are provided through follow up visits. So **(Alwan , 2004**) emphasized the importance of regular follow up. During follow up visits, knowledge should be reinforced. Growth monitored. Blood glucose monitoring results reviewed and measurement of HBA 1 c , urine glucose and Ketone bodies. Following puberty, and more than

five years after diagnosis, annual eye examination with assessment of the retina and testing for microalbuminuria are recommended**.** **(Ahmed.,20001).**

Hygiene: -

All aspects of personal hygiene are emphasized for the child with diabetes. The child should be cautioned against wearing shoes without socks. wearing sandals. or walking barefoot. The correct method or nail and extremity care instituted for each particular child. The diabetic child should take bath every day with mild soap water using a small amount of lotion while the skin is moist because this will keep it soft **(Ali, 2003)**.

Also good daily dental care at home is recommended for the diabetic child. Moreover, it is recommended to wash his feet daily With mild soap and water if the heal is cracked, soaking foot should be avoided to prevent opening of the cracking which will contribute to foot infection. Diabetes is a predisposing factors for Candida albicans vaginitis, so if the diabetic girl have poor personal hygiene and wearing clothing that keeps the vaginal area warm and moist, that increase the risk vaginitis. This infection may spread to urinary tract resulting of poor glycemic control Growth and development of diabetic children:- the child with insulin dependent diabetes

mellitus depends on the efficacy of therapy. Well controlled diabetes mellitus is compatible with normal growth, while poor controlled diabetes often causes slow growth). Also better development at every stage of the diabetic child's life is strongly linked with good metabolic control **(EI-Shimj et aI., 2002 and EI-Falatry & EIGammal,2000).**

Socioeconomic state:-

Diabetes mellitus is very costly disease for the diabetic child and the family not only financially, but also in terms of the quality of life of those who suffer from it. Even the well controlled child with stable diabetes and no complications will be affected by economics. The cost of medications. syringes and self care monitoring equipments alone may be prohi The child with a life long condition such as diabetes has the burden of extra expenses with fewer means of earning enough to cover them. The diabetes children remain under systematic observation in almost all phases of their lives. So the goal of management has been to keep the diabetic children living as healthy as possible. Increasingly, it is being understood that the quality of life is important as the quantity. In this respect socioeconomic factors paly an important part in the diabetes control in children **(Heggy 2000)**.

School achievement:--

Full attendance and performance of the school are expected from the diabetic child. if their diabetes is controlled. If blood glucose levels are poorly controlled, school performance of children often declines. Also recreation activities may be affected as well as class schedule and activities affected by poor glycemic control.. The diabetic children should be encouraged to participate in school and community activities and not to look on their metabolic problem as on excuse for difficult behavior or decline in their school achievement**(Nassau 2001).**

Nurse's role in toward diabetes control in children with type I -diabetes: -

For the diabetic children to continue a normal family life, their diabetes needs to be controlled., cooperating with multidisciplinary team specializing in both pediatric and diabetes **(Bryden et al., 2001).**

The nurse may works in hospital and community, having close contact with the medical and Para medical staff and the primary care team in the community, children with diabetes and their families at home and at school The Nurse may work full time or part of time with the diabetic children and works as an educator,

counselor, manager, researcher, communicator and innovator nurse enable the diabetic children to respond to the care that are provided to them and to be an active participant in the management of diabetes which is essential for good metabolic control .Self management skills are probably the major determinant of how well the diabetes is controlled and the quality of life It was described by **Smeltzer and Bore (2000)** that the following approaches by the nurse as helpful for promoting adherence and metabolic control: -

Deal with any underlying factors (e. g., Knowledge deficit, self care deficit and illness) that Il!1y affect diabetic control.

1. Simplify the treatment regimen if it is too difficult for the child to follow.
2. Adjust the treatment regimen to meet patient requests (e.g. adjust diet or insulin schedule to allow for increased flexibility in meal content timing.
3. Provide positive reinforcement of self care behaviors performed instead of focusing on behaviors that were neglected (e.g. praise a child for blood glucose testing that was performed insteal of focusing on the number of "missed tests")
4. Help the diabetic child to identify personal motivating factors

rather than focusing on wanting to please the doctor or nurse.

5. Encourage pursuit of life goals and interests; discourage under focus or problems. The Nurse plays a prominent role in diagnosis and management of children with insulin dependent diabetes mellitus. That is through physical assessment of the child which includes measurement of height and weight and examination of skin for evidence of dryness or slowly healing sores; signs of hyperglycemia must be noted, vital signs should recorded and a urine specimen collected. A blood glucosc level must be monitored. Assessing and educating the child and family are most exclusively a nursing function **(Villa et al., 2004; and Behrman and Kielgman, 1998).**

Since education is the cornerstone of diabetes management and then diabetes control, it is a major responsibility in diabetes nursing care. So, the nurse should assess the cognitive function of the children and tailoring education according to the child's abilities, knowledge of diabetes and its complications that are important factor in achieving better compliance, and hence diabetes control. The nurse should provide helping the diabetic child to follow his diet, it is important to inform him about food values and how they

affect diabetic's, foods he should eat and those he should avoid, the nurse and other health team member must all participate in the instruction The nurse should be knowledgeable about diabetes dietary principles to answer questions and to help the diabetes child and his family make decision and appropriate selection. Particular attention and teaching efforts should be directed to the mother who will be cooking **(WHO, 2002).** The principles that both the nurse and dietitian should teach and Reinforce include the following:-

1. Eat according to the prescribed meal plan. A dietary prescription is individualized, to reflect the dietary needs related to child's weight, age and physical activities . Individual responses to dietary prescription should be monitored and appropriate adjustment should be made when necessary.
2. Never skip meals. The body requires food at regularly intervals throughout the day. Omission or delay of meals can result in hypoglycemia.
3. Learn to recognize appropriate food portions. Practice can result in accurate portion allotment result in accurate portion allotments. The nurse is responsible for the diabetic children receiving insulin include proper administration, assessment of

life child use and response to insulin therapy , and teaching the child regarding administration , adjustment td, and the side effects of . The diabetic child with newly diagnosed diabetes should be assessed for the ability to understand the purpose of insulin therapy. The interaction of insulin, diet and activity; and side effects may be manifested. The diabetic child and significant other also have to be able to prepare and inject the insulin .Some patients, especially children, find it difficult to inject themselves. This may be due to fear of the needle or anger and lack of acceptance of the disease. So the nurse needs to determine the emotions and attitude of the diabetic child and his family regarding insulin therapy to promote optimal level of blood glucose control .

Moreover, the nurse is responsible for correcting misconceptions related to diabetes and its management as, increasing doses of insulin are needed to control blood glucose, insulin causes blindness, and insulin must be injected directly into the vein. The nurse should inform the children and their families that the insulin dose must be adjusted according to blood glucose result. It is important to instruct children that many different factors may affect

the ability of insulin to lower the glucose, and poor metabolic control occurred as puberty, illness,pregnai1cy and certain medications **(Anderson, 2003).**

Figure 6.

four main areas of injection **(Figure 6)** are the abdomen, arms (posterior surface), thighs (anterior surface), and hips. The nurse must inform the child to rotate the injection sites, The nurse should encourage the diabetic child to use of Medic Alert bracelet or other identification tag. The nurse should instruct the diabetic children to have all supplies which may be needed during traveling as insulin, syringes, quick - acting carbohydrate, and glucagons , for safe

travel , the nurse should teach the diabetic child that the exercise assist in weight loss, , increases muscle tone, improves circulation and contributes to an overall sense of well-being. Exercise also promotes the passage of insulin into the cells to metabolize carbohydrates for energy.. Lower does of insulin are used when exercise should be performed 1.5 hour after meals when the glucose level is the highest. For everyone hour of strenuous exercise, the diabetic child should eat 10-15 g carbohydrates snack (**Reeves et al, 1999 and Bader et al, 1996).**

The nurse should insure that, , walking is a safe and beneficial form of exercise that require no special equipment except for proper shoes and can be performed any where. However, the diabetic children should discuss an exercise program with their physician before undertaking it **(Schoenle et al., 2001 and Mohammed, 1999).**

. Also nurse educator can help the diabetic child to set up a testing schedule that fits child's diabetes and child's life style. Blood glucose levels are usually checked before breakfast, lunch, and supper and at bedtime. This last test is done before the evening snack is eaten to see if child have a good match between diet,

insulin and diabetes control .It is important also for the nurse to inform and teach the diabetic child and his family, about urine and aceton test,. Also HbA I C is a very important test that is performed every 3 to 4 months and it is an indicator of long term Glycemic control**(Miller, 2000).** Moreover, the nurse should include parents and their diabetic children in special sessions to keep them abreast of the children's management, to help them continuing participating in the child's care and to provide them with an opportunity to express their own feeling concerning their own or their child's adjustments to the disease to achieve better metabolic control **(Lewis et al .,2000).**

The nurse has a major responsibility in the school for the on going care of children with diabetes, making the school environment safe and continuing diabetes teaching plan., it is important for the diabetic child to have a regular intake of carbohydrate in order to keep the blood glucose in normo-glycemia, snacks can usually be arranged.. Although teachers or all school personnel need to be aware of the symptoms of hyperglycemia or hypoglycemia, in addition to that, for emergency use, schools should allow necklaces and bracelets and not classify them as

jewelry, The nurse may be in an exclusive position able to offer friendship and support and accessible a device during the transition of adult life **(James et al.,2002).** The nurse should instructs diabetic children. about dental health and hygiene, periodical dental visits. , Also nurse should assess the economic resources available to the diabetic child and his family to assessing life style and cultural factors that influence the plan management and Glycemiccontrol ,The nurse should teach about foot care and protection, , dry, and lubricate, observe his feet daily for redness, blister, and ulcerations; and wear well-fitting closed toes shoes. However he Should take care of wounds and clean with soap and water, apply antibiotic ointment and notify physician if signs of infection occur. This is in addition to all aspects of personal hygiene are emphasized for the child with diabetes **(Haroun ., 2003**).

Subjects and Methods

Setting:--

study was conducted from December 2009 - April 2010 in Shendi teaching hospital and elmak nemer hospital in Shendi city.

Target population:-

Children having type 1 diabetes mellitus , their age between 3 to18 years are the target population .

Sample size:-

40 diabetic children were studied. The sample was taken randomly. Information was collected through performed questionnaire.

Tools for data collection:-

Structured interview questionnaire; each child included in the study and accompanying mother for young children is interviewed individually ,the questionnaire will be designed by the researcher it include data about the ;socio-demographic characteristics of the mother , socio-demographic characteristic of studded child ,factor affecting diabetes control.

Statistical analysis :-

Data entry and analysis were done by using computerize methods .

Results

Table No (1):- the Frequency and distribution of Socio demographic, characteristics of diabetic's children's mothers:-

Item	Frequency	Percentage
Age in years		
15-19	**1**	**2.5%**
20-29	**12**	**30%**
30-39	**18**	**45.5%**
40-49	**9**	**22.5%**
Total	**40**	**100%**
Education level		
Illiterate	**19**	**47%**
primary	**10**	**25.5%**
secondary	**10**	**25.5%**
university	**1**	**2.5%**
Total	**40**	**100%**
Occupation		
Work **Not work**	**0** **40**	 **100%**
Total	**40**	**100%**

This table shows that45% of the mothers their age is between 30-39 years. And 47.5% of the mother were not educated and all mothers were not work.

Table No (2):- frequency and distribution of socio-demographic characteristics of diabetic children.

Items	**Frequency**	**Percent**
Age in years		
3-6	10	25 %
7-9	12	30 %
10-14	18	45%
Total	40	100%
sex		
Male	17	42.5%
Female	23	57.5%
Total	40	100%
Education level		
Under the age	10	25.0%
Not educated	1	2.5%
Continous education	29	72.5%
Total	40	100%
Duration of illness		
less than year	8	20.0%
1-3 years	31	77.5%
more than 3years	1	2.5%
Total	40	100%

This table shows that 45 %, of diabetic children their age in range between 10-14 years and 72.5. % of them are on continuous education (primary & secondary). Regard to duration of the illness 77.5% of children were ranged from 1-3 years.

Table No (3): Frequency and distribution of socio – Economic status of the family:-

Items	Frequency	Percent
Number of family member		
4-5	18	45 %
6-7	14	35 %
8 or more	8	20%
Total	40	100%
Income \month		
satisfactory	12	30%
not satisfactory	28	70%
Total	40	100%
Other person has family history of diabetic.		
Yes	26	65%
No	14	35%
Total	40	100%

In this table 70% of the diabetic children's family has not satisfactory income per month. 65% diabetic children has positive family history of diabetes.

Table No (4):- Frequency and distribution of knowledge of study group about diabetes Mellitus

Items	Frequency	Percent
Definition D.M		
Yes	15	37.5 %
No	25	62.5 %
Total	40	100%
Types of diabetes		
Yes	15	37.5%
No	25	62.5%
Total	40	100%
Normal range of blood sugar		
<80	7	17.5%
80—120	23	57.5%
120-160	9	22.5%
>160	1	2.5%
Total	40	100%

In this table 62% has no knowledge about D.M, and 62,5% has no knowledge about the others types of DM , 57% of .studied group know normal range of blood glucose level .

Table (5):-Shows Frequency and distribution of knowledge about sign & symptom& complication of D.M

Item	Frequency	Percent
Sign& symptom of D.M in children		
Polyuria	17	42.5 %
Polyphagia	15	37.5%
loss of weight	3	7.5%
increase in apilite	1	2.5%
Total	40	100%
Complication of D.M		
Yes	33	82.5%
No	7	17.5%
Total	40	100%
Type OF complication		
Renal problem	10	25.0%
Cardiovascular pro	7	22.5%
Eye problem	9	7.5%
Coma	3	10%
Other	4	10%
Total	33	82,5%
Hypoglycemic		
Yes	25	62.5%
No	15	37.5%
Total	40	100%
Hyperglycemic		
Yes	16	40
No	24	60
Total		

In this table 82.5% has knowledge about complication, thire knowledge of hypoglycemia was 62.5%. and only 40% had Knowledge about hyperglycemia, in regard to clinical sign about 42.5% knows polyuria.

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Table (6):- Shows Frequency and distribution of insulin regimen:-

Item	Frequency	Percent
Uses of insulin		
-increase level of blood glucose	9	22.5 %
-decrease level of blood glucose	25	62.5%
-Idont know	2	5.0%
-other	4	10.0%
Total	40	100%
Type of insulin used by diabetic child		
mixtar	36	90%
Soliable	2	5%
Other	2	5%
Total	40	100%
Duration of Injection per day		
Once	4	10%
Towice	36	90%
Total	40	100%
Relation of insulin inject to meal		
Before meal	36	90.5%
After meal	4	10%
Total	40	100%

In this table 62% of studded group know the use of insulin ,while only 5% not knows, it was found that 90% use mixtard type, it demonstrate that 90% of diabetics children having twice insulin injection per day before meals .10% once and after meals.

Table No (7):- frequency & distribution of Insulin injection determination and prescription:-

Items	**Frequency**	**Percent**
Insulin dose prescription/determination		
Physician o	32	80%
Nurses	3	7.5%
According to result of blood analysis	5	12.5%
Total	40	100%
Person administer insulin		
Child	8	20.0%
Mother	12	30.0%
Child & mother	17	42.5%
Other	3	7.5%
Total	40	100%
Complication of insulin injection		
Yes	14	35.0%
No	26	65.0%
Total	40	100%

This show 80% of the children has determined insulin dose by physician.. 42% mother and child who inject insulin practice , 65%. have knowledge about complication of insulin injection and35% have no knowledge .

Table No (8):- show frequency & distribution of Children level of Glycemic control and diet:-

Item	Frequency	Percent
Special food diabetic patient		
Yes	14	35.0%
No	26	65.0%
Total	40	100%
Type of diet		
Vegetables	28	70.0%
Fruits	3	7.5%
Sugar	9	25.5%
Total	40	100%
Relation between diet and control diabetes		
Eating determinal Amount of foot	19	47.5%
Prevent child from sugar	3	7.5%
Increase meals	17	42.5%
Other	1	2.5%
Total	40	100%

This table shows that 65% of diabetics children eaten family diet - 35% has determined diet.70% select vegetable Types of food, regarding to diet control 47% eating determined amount of food, 42% increase number of meal

Table No(9):- show frequency & distribution of hygienic care practice:-

Items	Frequency	Percent
Relation between hygiene & diabetes control		
Yes	28	70%
No	12	30%
Total	40	100 %
Methods of skin care		
Careful drying	25	62.5 %
Using lubricant	14	35%
Avoid scratch	1	2.5%
Total	40	100 %
Method of mouth & teeth care		
Regular month Wash	30	75%
teeth brush regular	9	22.5 %
Other	1	2,5
Total	40	100 %

This table show hygienic care which is the important factor that affecting control of diabetes, about 70%of studded group knows the relation between hygiene and diabetes control. 75%.was regular month wash.

Method of food care 45% daily check of foot.

Table No (10):- show frequency & distribution of Diabetics children, uses and benefit of Exercise. :-

Items	Frequency	Percent
Important of exercise for diabetic child.		
Increase physical fitness	15	37.5 %
improve blood circulation	1	2.5%
Decrease level of fat	2	5%
Increase insulin activity	14	35%
Other	8	20%
Total	40	100 %
practicing exercise activities		
Yes	25	62.5 %
No	15	37.5 %
Total	40	100 %

This table shows that 62.5% of studied group were practice exercise,

and 37.5% consider that exersice improve fitness of the body. 35%consider that exercise. Increase insulin activity .

Table No(11):- shows frequency & distribution of previous admission of diabetic child to the hospital:-

Items	Frequency	Percent
Previously hospitalization for diabetes reason		
Yes	32	80%
No	8	20%
Total	40	100%
The usual co- patient during admission		
Mother	30	75%
Father	10	25%
Total	40	100%
Source of Information & instruction about diabetics		
Physician	40	100%
Nurses	0	0%
Other	0	0%
Total	40	100%

This Table shows that 80% of studded group has previous admission by diabetic and 75% of mother taking care for her diabetes children during illness ,all of studied group takes instructions and advice from physician

Table No (12):- shows frequency & distribution of practice of analysis for urine and blood glucose level.

Items	Frequency	Percent
Testing of the blood sugar in the urine at home?		
Yes	19	47.5%
No	21	52.5%
Total	40	100%
Knowledge about performing urine and blood test		
Physician	17	42.5%
Nurses	23	57.5%
Other	0	0%
Total	40	100%
Methods of testing		
strips	15	37.5%
gluctometer	16	40%
Pendix	9	22.5%
Total	40	100%

This table shows that 52% done blood & urine test out of home.

. 57% of information about how to practice the test in home provided by nurses, 40% of diabetic children has glucometr, 37% has strips.

Table (13):- shows frequency & distribution of practice of urine & blood test at home:-

Items	Frequency	Percent
Person test urine or blood.		
Mother	30	47%
child	6	15%
Other	4	10%
total	40	100%
Interpretation of the result		
Yes	30	75%
No	10	25%
Total	40	100%
Intervention for abnormal result		
Regulation of insulin	12	30%
Contact with the physician	28	70%
Total	40	100%

This table show that 75%of home test for blood & urine done by the mother and only 15%done by the child.

It was also shows that75%. of the mother have knowledge about interoperate results (And under stand how to interfere when change in reading and 70% contact physician.

Table No (14):- shows frequency & distribution of health service satisfaction:-

Item	**Frequency**	**Percent**
Benefit from available health services.		
Yes	5	125%
No	35	87.5%
Total	40	100%
Difficulties duration transportation from and to health care centers.		
Yes	30	75%
No	10	25%
Total	40	100%

This table show 87% no provided health crevice and75% of the studded group has difficult to contat to health center to have information & insulruction.

Table No(15):- frequency & distribution of glycemic control & self care practice :-

Items	Frequency	Percent
Blood glucose level from lab results.		
less than 100	2	5%
100-200	12	30%
200-300	17	42.5%
more than 300	9	22.5%
Total	40	100%
Uine for sugar		
Nil	6	15%
+	4	10%
++	16	40%
+++	13	32.5%
++++	1	2.5%
total	40	100%
HbA1.C	0	0

This table shows that 95% of studied group has blood glucose more than 100mg, and urine result 75% of group have more than tow crosses .of glucose, only 15% has nil result. HbA1.C:-Not done for all group..

Discussion:-

Multiple factors influence the Glycemic control in children and adolescent with insulin dependent diabetes mellitus [IDDM] these factors are such as careful balance of food intake activity, insulin dosage and monitoring of urine and blood glucose and knowledge about diabetes milieus **(La.Gerca & Bearman 2002)**

The finding of the present study revealed the most (95%) of studied diabetic children were uncontrolled blood glucose level and 75% of studied group shows present of glucoseuria this could be attributed to low education level of the mother 72.5% Who were the main source of care given for their diabetes children and they haven't updated their knowledge about diabetes control, this

finding is agreement with **Boland et-al (19962)**, Who mentioned that almost of the studied children did not reach the optimal level of Glycemic control.

The finding of the present study revealed that the diabetic children socio demographic characteristics were found to be affecting their level of diabetes control and school achievement , where as the present study revealed that the majority(72.5%) of children were in Continous education , these appears in school achievement where 80% of present study have moderate success. In despite Children at this stage of education are able to acquire basic knowledge about diabetes, and demonstrate self care practice in this age group also the children should be under close supervision & attention from their parent and teachers, this also revealed to increase recurrences of hypoglycemia and poor school attendance this agreement with, Schoenle, .(2002): who consider that: Impaired Intellectual Development in Children With Type1 Diabetes Associated with HbA1c ,Age at Diagnosis and sex Diabetologin.

Regarding to the duration of illness the finding of the current study revealed that the majority (80%) of diabetic children had DM

for three or more years, 20% had duration less that one year, diabetic children who had diabetes for shorter duration had more diabetes control than those of longer duration, this might be explained that diabetic children's families with shorter duration may experience fear and anxiety about diagnosis and how to control it. This finding is agreement with **Becker (2004),** who mentioned that every child newly diagnosed with type 1 diabetes should be evaluated by a diabetes team to provide up-to-date pediatric-specific management ,education and support.

In relation to family's monthly income the result of study revealed that the majority of the studied diabetic children have be attributed to the cost of medical care which was barrier of diabetes control.

The knowledge is consider as back bone of the management of diabetes and it is control finding of the present study reflect that 35, 5% there was a lake in the total knowledge of diabetics children about diabetes millets and its control it could be related to lack of educational level of the mothers and diabetic children as well as being the doctors the most sources (90%) of information. They usually had no time to demonstrate the various details of

information related to D.M. These result as the same time with Kishta (2004) who estimated that the diabetics children knowledge was in adequate and some time incorrect in the area of the diabetes management.

Finding of current study revealed that the most (90%) of diabetic's children were compliant with insulin treatment which is the first corner stone of diabetes control ., this was agreement to **Jame (200)**, who indicate that the majority studded diabetics who have controlled diabetes were found among those – who were compliant with insulin injection. 90% of the studied group had insulin regimen twice\ day. The most of the diabetic child deterring insulin dose according to doctors recommendation This could be attributed to the parent trust in doctors instruction than the result of analysis of blood and urine and , 65% of diabetic children don't know the precaution and complication related to insulin injection.

The diet is considered second corner stone of the diabetes control it was found that two third (65%) of diabetic children not adherent to diet regimen. The majority (70%) of studded group preferred vegetable diet .7.5% preferred carbohydrate this is was in

accordance with **Hagerty (2002)**, who mentioned that most of diabetic children didn't with ideal diabetic diet.

About the knowledge of control of diabetes with diet less than half (47%) of study group eating determined diet, 42% increase snakes between meals about this lead to uncontrolled level of glycemia. less intake of carbohydrate or prevent diabetic child from it lead to hypoglycemia uncontrolled diet among diabetics children in study setting return to Sudanese culture and habit in types of food .

Exercise is the third corner stone in control and management of diabetes, in the present study about two third (62%)of diabetic children were practicing Exercise and they have knowledge about the benefit of it, 37.5% unpracticed exercise lead to uncontrolled diabetes these need more education about sport or practicing exercise and support . As considered hygiene is one of the most basic factor that affect diabetes control. the result of my present study revealed that the majority (70%) of diabetic children were compliant with hygienic care this could be attributed to these who were afraid of complication.

The finding of the present study reveled that the majority (80%) of studied children were hospitalized and most of them were found

among those with diabetes this was in agreement to **(James et, at 2001)**, who mentioned that high incidence of hospitalization is reported among diabetics children with poor Glycemic control.

The majority (75%)of the present study shows mothers who takes care for the diabetic child in hospital this return to all fathers works ,all information and instruction about diabetes taken from physician health services care is the other factor that affect control of diabetes among children ,In the study the majority (87.5%) of studied diabetes children has no provided health services and also there were difficulties to contact their physician to have information and instruction this lead to uncontrolled Glycemic level and lake of knowledge and practice to control diabetes.

No one in my present study of diabetics children were performed the glycosylat hemoglobin test (HBA1C) this could be explained that test is not available in study setting or it could be expensive that physician not prescribed it .

It was oblivious in the present study that the physician is the main sources of information for most or all of diabetic's children ,on the other hand role in diabetes education is limited between diabetic's children. This might be related to lake of the nurse who are

specialized in diabetes children or the nurses is not knowledgeable about diabetes control, or there is shortening of number of experiences nurses in the study setting.

Conclusion

Based on the finding of the present study, It was concluded that several factor affecting diabetes control. The current study showed poor diabetes control among study group.

Recommendation

Based on the present study finding the following recommendations are suggested;-.

1. Diabetics' children and their families are in need to recognize the benefits of diabetes control ad factors that affect it.
2. Continuing education program for all diabetics' children, Families and relatives Regarding to diabetes control and supply them with information booklet with simple instructions and diagrams.
3. Planning of periodic in crevice training for nurses is very essential to up- date their knowledge and to gain skill in diabetes management and control.
4. Counseling, close supervision and support required to keep diabetics children out of hospital, As well as utilization of optimum resources is the key of diabetes control.
5. Improvement of health service and supported by governmental program, this program should expert pressures in the government to secure insulin and other diabetes supplies at low cost this is done through partnership between health services and health insurance companies,
6. There is need for exist of national diabetes program to provide specialist training for health care personnel to raise awareness of

diabetes among them and alert the public about the serious of diabetes.

7. There is need to establish medical center for diabetics children in the capital and major cities ,
8. Farther researches should be made and teaching program for diabetics children in shendi city and nearest villages should be done by mobile health team to educate them about control of diabetes. Mellitus .

Summary

Diabetes mellitus is a chronic illness which continually influences the child life, for diabetic's children to contained a normal family life thier diabetes need to be controlled proper and optimal diabetes control is achieved by integration of many factors such as Childs age duration of ill ness and knowledge about diabetes, insulin, diet, exercise and family support.

The aim of current study is to identify the factor that affect diabetes control of children with type I diabetes mellitus.It was conducted on 40 diabetics children attending to outpatient clinic and ward of shendi teaching hospital & Elmek Nimer hospital&, selected randomly. collected data were presented using suitable tables and analyzed using appropriate statistical test.

Regard to socio- demographic chemaclerstics of diabetes children's mother, the study finding that the majority (72.5%) of mothers had illiteracy and primary education, All of them were did not work, The result of the study revealed that the majority (80%) of diabetic's children had diabetes with duration more than three years, and result about income per month is insufficient

(70%).Concerning diabetic's children knowledge the finding of the present study revealed that tow third of them (62%) had poor level of knowledge about diabetes and its control .Moreover the result of the study also revealed that all of present study of diabetics children had more total compliance related to therapeutic regimen, In regarding to diet present study shows that tow third(62%) of study children eat family food, and it was also showed that about tow third of studied group were practice exercise. 1t was found that most of diabetic children admitted to the hospital by diabetes milieus. the result of present study revealed that the overall diabetes mellitus among attended children were uncontrolled ,So I recommended that .

Continuing education for all diabetics' children and their family regarding to diabetes and it's control, and supply them with information booklet with simple instructions and diagrams.

Improvement of health service by secure insulin and other diabetes supplies at low cost. .

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بسم الله الرحمن الرحيم

استمارة استبيان

لقياس العوامل المؤثرة علي التحكم في النوع الاول من السكرعند الاطفال في مدينة شندى

رقم الاستمارة ( )

بيانات عن الام:-

الاسم: العمر:-

مستوي التعليم: ( )امية ( )اساس ( )ثانوي ( )جامعى ومافوق الجامعى

الوظيفة: ( )تعمل ( )لا تعمل

بيانات عن الطفل:-

الاسم :

العمر: 3- 6( ) , 7-10 ( ), اكثر من 11 سنة ( )

النوع: ( )دكر ( )انثى

تعليم الطفل: ( )دون السن ,( )اساس ,( )ثانوى , ( )اخر .

مدة الاصابة بالمرض: ( )اقل من سنة ,( )من سنة-ثلاثة سنة اكثر من –ثلاثة سنة

بيانات عن الأسرة:

* عدد أفراد الأسرة:.....

* هل هناك أفراد مصابين بالسكر في الأسرة؟ ( ) نعم ( ) لا

بيانات عن الحالة الإقتصادية:

* دخل الأسرة بالجنيه في الشهر.

( ) كافى ( ) غير كافى .

* هل يوجد الأنسولين الذي تأخذه في التامين الصحى .

( ) نعم ( ) لا

في حالة عدم وجود الانسولين فى التامين الصحى ما زا تفعل؟.

( ) أشتري العلاج بنفسي ( ) أتوقف عند أخذ العلاج ( ) أخر يذكر

بيانات عن الإنتقال من وإلى عيادة السكر

* هل الإنتقال من وإلى عيادة السكر مكلف؟

( ) نعم ( ) لا

عوامل تتعلق بمعلومات الأم والطفل عن مرض السكر وعلاقته بالتحكم

* ما هو مرض السكر.....

* هل هناك أنواع من مرض السكر؟ ( ) نعم ( ) لا

* إذا كانت إجابتك نعم فما هي تلك الأنواع؟

.....

* ما هو المعدل الطبيعي لسكر الدم؟

( ) أقل من 80 مجم/لتر ( ) 80 أقل من 120 مجم/لتر

( ) 120 – 160 مجم/لتر ( ) أكثر من 160 مجم/لتر

* ما هي أعراض مرض السكر عند الأطفال

( ) كثرة التبول ( ) .زيادة الشهية

( )فقدان في الوزن ( ) غيبوبة

( ) عطش شديد ( ) آخر يذكر

* هل هناك مضاعفات لمرض السكر؟

( ) نعم ( ) لا

* إذا كانت إجابتك نعم فما هي:

( ) مضاعفات الكلى ( ) مضاعفات بالجهاز الدوري

( ) مضاعفات بصرية ( ) غيبوبة

( ) مضاعفات جلدية ( ) أخر يذكر

*هل تعرفى ما هي غيبوبة السكر العالى؟: ( ) نعم ( )لا

*هل تعرفى ماهى غيبوبة السكر المنخفض؟ ( ) نعم ( ) لا

( ) نعم ( )لا

عوامل تتعلق بالأنشطة الرياضية وعلاقتها بالتحكم في السكر

* ما هي الفوائد الرياضية بالنسبة للطفل المريض بالسكر؟

( ) زيادة اللياقة البدنية والقدرة على بذل مجهود.

( ) تحسين مرو الدم في الأطراف وباقي أجزاء الجسم.

( ) إستهلاك الدهون الزائدة

( ) زيادة فاعلية الأنسولين

( ) أخر يذكر

* هل يمارس طفلك أنشطة رياضية:

( ) نعم ( ) لا

- عوامل مرتبطة بالأنسلولين وعلاقته بالتحكم في السكر:

* يستخدم الأنسولين لـ

( ) زيادة نسبة السكر في الدم ( ) تقليل نسبة السكر في الدم

( ) لا تعرف ( ) آخر يذكر

* ما هو نوع الأنسولين الذي تأخذه .....

* عدد مرات الحقن يومياً.....

* هل يواظب طفلك على آخذ العلاج؟

( ) دائماً ( ) أحياناً ( ) أبداً ( ) أخر يذكر

* ما هو الوقت المناسب لحقن الأنسولين؟

( ) قبل الأكل ( ) بعد الأكل

* كيف يمكن تحديد جرعة الأنسولين؟

( ) بناء على استشارة الطبيب ( ) بناء على استشارة الممرضة

( ) بناء على تحليل السكر بالبول ( ) بناء على تحليل الدم

( ) آخر يذكر

* من يقوم بحقن الأنسولين؟

( ) الطفل ( ) الأم ( ) الأم + الطفل ( ) آخر يذكر

هل هناك مضاعفات لحقن للانسولين ؟ ( )نعم ( )لا

من علمك طريقة حقن الأنسولين

( ) الطبيب ( ) الممرضة ( ) الأقارب ( ) أخر يذكر

*عوامل مرتبطة بالتغذية وعلاقتها بالتحكم فى السكر ك:-

هل يوجد نوع غداء خاص لمريض السكر؟

( )نعم ( )لا

ماهي متطلبات الغداء الجيد؟

( )يكون الغداء كافي ( )يكون في اوقات منتظمة ( ) ياخد ثلاثة وجبات فقط

ماهي انواع الاغذية التى يتناولها الطفل مريض السكر ؟

( ) مجموعة الخضروات ( ) السكريات ( ) الفواكه ( ) الدهون

كيف يمكن التحكم في مرض السكر من خلال التغذية؟

( )تحديد مقدار المكونات الغذائية فى الوجبة ( ) حرمان الطفل من السكريات

( ) تحديد عدد الوجبات ( )اخر يدكر

* عوامل مرتبطة بالنظافة الشخصية وعلاقتها بالتحكم في السكر:

* هل الإهتمام بجلد الطفل المريض بالسكر ضروري للتحكم في السكر؟

( ) نعم ( ) لا

إذا كانت الإجابة نعم ، كيف.

( ) أجفف الجلد جيداً بعد الإستحمام

( ) أستخدم كريم مرطب

( ) أتجنب الخدش أو الجروح عند استخدام المقص أو السكاكين.

( ) أخر يذكر

* هل الإهتمام بنظافة فم وأسنان الطفل المريض بالسكر ضروري للتحكم في السكر؟

نعم ( ) لا ( )

إذا كانت الإجابة نعم ، كيف

( ) أجعله يقوم بغسيل فمه وأسنانه بعد الأكل دائما

( ) أقم بزيارة طبيب الأسنان بإستمرار

( ) أذهب إلى الطبيب فوراً إذا شعرت بأي آلام في فمي وأسناني.

( ) أخر يذكر

* هل تهتمي بالأطراف عند طفلك المصاب بالسكر؟

( ) نعم ( ) لا

إذا كانت الإجابة نعم ، كيف

( ) أفحص قدمه يومياً لملاحظة أي خدوش أو تشققات أو تقرحات

( ) ألاحظ أي تغير في اللون أو درجة حرارة قدمه

( ) أغسل قدمه جيداً بالماء الدافئ والصابون يومياً وأجففها جيداً

( ) اتجنب لبس الحذاء الضاغط

( ) آخر يذكر

عوامل خاصة بالتحصيل الدراسي وعلاقته بالتحكم في السكر:

* هل يحقق طفلك المريض بالسكر نجاحاً؟

( ) نجاحاً متفوقاً ( ) نجاحاً مقبولاً ( ) نجاحاً متوسطاً

( ) لا يحقق نجاحاً ( ) دون السن ( ) آخر يذكر

عوامل مرتبطة برعاية الطفل المريض بالسكر أثناء أزماته:

* سبق دخول الطفل المستشفى بسبب السكر:( ) نعم ( ) لا

إذا كانت الإجابة نعم فمن الذي يقوم برعايته في هذه الفترة؟

( ) الأب ( ) الأم) أحد الأقارب ( ) أخر يدكر

عوامل تتعلق بالخدمات المتاحة في عيادة السكر:

* ما هي مصادرك التي تلجأ إليها للحصول على معلومات تتعلق بمرض السكر والتحكم فيه؟

( ) الطبيب ( ) الممرضة ( ) الأقارب ( ) أخر يذكر

عوامل تتعلق بتحليل السكر بالبول:
هل تحلل السكر في البول أو الدم عندك في المنزل؟
( ) نعم ( ) لا

* من علمك طريقة تحليل السكر في الدم و البول؟
( ) الطبيب ( ) الممرضة ( ) الأقارب ( ) أخر يذكر
* يتم تحليل السكر عن طريق:
( ) الشرائط ( ) جهاز تحليل السكر بالدم ( ) آخر يذكر
* من يقوم بتحليل السكر في البول أو الدم:
( ) الطفل ( ) الأم ( ) آخر يذكر
* هل تستطيع أن تفسر نتائج تحليل السكر بالدم أو البول؟
( ) نعم ( ) لا
* كيف تتصرف في حالة وجود سكر في بول إبنك أو إرتفاعه في الدم؟
( ) أكثر من ممارسة الرياضة ( ) لا بد أن أنتظم في أخذ العلاج
( ) أذهب إلى الطبيب ( ) أخر يذكر
* هل تستفيد من الخدمات الصحية المتاحة في عيادة السكر؟
( ) نعم ( ) لا
إذا كانت الإجابة بنعم فما هي هذه الخدمات؟
( ) تحليل السكر بالدم والبول( ) النصح والإرشاد ( ) إعطاء الأدوية
( ) عمل فحص طبي ( ) آخر يذك

الجزء الثانى: قياسات:
1. مستوى السكر في البول
2. مستوى الأسيتون في البول
3. نسبة الجليكوز يلاندهيموجلوبين في الدم
4. نسبة السكر في الدم

بسم الله الرحمن الرحيم
جامعة شندي
كلية الطب والعلوم الصحية
ماجستير التمريض العالي

تقييم معلومات الستر عن الرعاية التمريضية اللازمة في وحدة الأطفال المبسترين :-

زميلتي الستر:-

يهدف هذا الاستبيان إلي معرفة معلومات الستر عن الرعاية التمريضية اللازمة لوحدة الأطفال المبسترين علماً بأن هذه المعلومات سرية ولغرض البحث العلمي فقط.

برجاء مراعاة ما يلي:-

أولاً: ملء البيانات في أماكنها.

ثانياً : وضع علامة(/) إمام الإجابة المناسبة

رقم المتسلسل:( )

البيانات الشخصية:-

العمر:.....

المؤهل الدراسي: أ. بكالوريوس ( ) ماجستير ( )

التخصص :-

1. مدة الخبرة في التمريض ( ) سنة.

ثانياً:-

معلومات عن أطفال حديثي الولادة (الرجاء اختيار إجابة واحدة فقط).

1. الطفل حديث الولادة وكامل النمو محيط رأسه عادة.
   1. 35سم ( ) 2. 30 سم( )
   3. 28 سم( )
2. عدد دقات قلب المولود كامل النمو
   1. 80-120 دقة/ الدقيقة.( )
   2.120160دقة/ الدقيقة ( )
   200-240 دقة/ دقيقة ( )
3. عدد مرات التنفس للمولود كامل النمو:-
   1. 20-25 دقيقة.( )
   2. 35-50 دقيقة.( )
   3. 50-60 دقيقة.( )
   4. 60-80 دقيقة( )
4. ضغط الدم للمولود كامل النمو:
   1. 26/50مم زئبق ( )

2. 40/70 مم زئبق( )
3. 15/40 مم زئبق ( )
4. 60/90 مم زئبق( )

5. الطفل المبستر هو الذي يولد وعمره الرحمي:-
1. 39 أسبوع( )
2. 38 أسبوع( )
3. اقل من 37 أسبوع( )
4. أكثر من 40 أسبوع ( )

6. تظهر الصفراء الفسيولوجية خلال:-
1. 2-3 أيام الأولي من الولادة ( )
2. الأسبوع الثاني ( )
3. اليوم الأول من الولادة( )
4. الأسبوع الثالث ( )

7. يرجع ظهور الصفراء الفسيولوجية للطفل حديث الولادة:
1. عدم توافق دم الطفل مع فصيلة دم الأم( )
2. انسداد القناة المرارية( )
3. عدم نضج الكبد( )
4. التهاب كبدي.

8. من صفات الطفل المبستر:
1. وجود غضروف بالأذن ( )
2. بطن القدم بها ثنايا ( )
3. طول الأطراف في شكل منبسط ( )
4. كعب الرجل يصل للأذن ( )
5. الاستجابات ضعيفة( )

9. من الأسباب التي تؤدي إلي طفل مبستر:
1. تسمم الحمل( )
2. سن الأم أقل من 18 سنة( )
3. انخفاض المستوي المعيشي( )
4. تشوهات الجنين ( )

10. من العوامل المسببة لأمراض الجهاز التنفسي لطفل مبستر:
1. انخفاض نسبة السكر والكالسيوم بالدم( )
2. انخفاض نسبة السكر والكالسيوم بالدم ( )
3. نزيف حاد( )

4. نقص المناعة ( )

11. من العوامل المسببة لتوقف التنفس:

1. زيادة الإفرازات التنفسية( )
2. عدم نضج الرئتين( )
3. عدم الحفاظ علي درجة الحرارة( )
4. الجفاف ( )

ثالثاً معلومات عن الرعاية التمريضية:-

الرجاء اختيار إجابة واحدة فقط

1. يفضل قياس درجة حرارة الطفل المبستر عن طريق:
   1. الفم ( )
   2. الشرج ( )
   3. تحت التأبط ( )
   4. لافرق ( )
2. تنظف الحضانة يوميا:-
   1. الكحول( )
   2. الماء فقط( )
   3. الماء والسافلون( )
   4. تنظف علي حسب قوانين المستشفي داخل وخارج الحضانة( )
3. بعد خروج الطفل من الحضانة ، يجب تعقيمها بالفورملين لمدة:-
   1. 72 ساعة( )
   2. 24 ساعة ( )
   3. ساعة ( )
4. زيادة نسبة الأكسجين في الحضانة عن 40% تؤدي إلي:-
   1. مضاعفات بعين ورئة الطفل( )
   2. مضاعفات الكبد وطحال الطفل( )
   3. لا ضرار ( )
5. عند العلاج الضوئي للطفل المبستر يجب علي المبستر يجب علي الممرضة ملاحظة:
   1. زيادة درجة حرارة الجسم( )
   2. استفراخ( )

3. علامات الجفاف ( )
4. تغيير لون الجلد إلي اللون البرونزي ( )

6. لتسهيل تركيب أنبوبة الريل يبلل طرفها بـ:-
1. ماء عادي ( )
2. ماء معقم أو محلول ملح