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Faculty of Post Graduate Studies and Scientific Research

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Research title:

Assessment of mothers knowledge regarding insulin use for diabetic children at Ahmed Gassim Pediatric Hospital

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الآية

قال تعالى : (اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ {1} خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ {2} اقْرَأْ وَرَبُّكَ
الْأَكْرَمُ {3/العلق} الَّذِي عَلَّمَ بِالْقَلَمِ {4} عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ {5} كَلَّا إِنَّ الْإِنْسَانَ
لَيَطْغَى {6} أَنْ رَآهُ اسْتَغْنَى {7} إِنَّ إِلَىٰ رَبِّكَ الرُّجْعَى {8}

صدق الله العظيم

سورة العلق الآيات (1-8)

DEDICATION

I have dedicated this research to my rear parents

Who gave we all efforts and facilities to my study from childhood until adulthood

Father and Mother

Also I would like to dedicate it to my remaining brothers and sisters for their
continuous assistance and help.

To all my Friends:

Those who precede me and no longer with me,

Those who precede me and are still among me,

My teachers

And to those who will follow me,

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First for all thank Allah that for giving me strength and patience to perform this work.

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A special word of thanks:

Mothers of diabetic child , diabetic clinic in Ahmed gassem pediatric hospital for their helps.

And finally I would like to extend our thanks to our families, frinds.

ملخص البحث

أجريت هذه الدراسة الوصفية بهدف تقييم معرفة الأمهات بالأنسولين .

أجريت الدراسة بمستشفى احمد قاسم للأطفال حيث شملت الدراسة 70 من الأمهات زوي الأطفال المصابين بالنوع الأول من السكري تم الاختيار عشوائيا وجمعت العينات بواسطة الاستبيان.

أوضحت الدراسة أن معرفة الأمهات بالأنسولين جيدة ومعظم الأمهات لديهم المهارة الكافية في حفظ وتحضير وحقن الأنسولين كما أوضحت الدراسة ضعف معرفة الأمهات في تغير مواضع الحقن والمضاعفات التي تحدث من عدم التغير (44%) ، 24% ليس لديهم المعرفة بعدد الوحدات التي تحتوي عليها حقنة الأنسولين ، 17% ليس لديهم المعرفة بعدد الوحدات التي يحتوي عليها الخط الواحد في حقنة الأنسولين .

أيضا أوضحت الدراسة عدم وجود علاقة ارتباط بين التعليم ومعرفة وسلوك وممارسات الأمهات تجاه استخدام الأنسولين .

Abstract

This descriptive cross sectional study was conducted in order to assess the mother's knowledge about insulin.

This study was conducted at Ahmed Gassem Children's Hospital. The study included 70 mother's of children with type 1 diabetes, randomly selected and collected by questionnaire.

The study showed that knowledge of mothers about insulin is good and most mothers have sufficient skill in storage , preparing and injecting insulin. The study also showed the weakness of mothers knowledge about change of injection sites and complications occurs from not change (44%) , 24% not knowledgeable about number of unites in insulin syringes ,17% not knowledgeable about number of internal units in insulin syringes

The study also showed that is no correlation between education and the mothers knowledge , attitude and practices towards the use of insulin .

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Chapter one

Introduction

Justification

Objectives

(1-1)INTRODUCTION

Diabetes mellitus (DM) is the most common endocrine metabolic disorders of childhood and adolescence with long-term effects on child's physical and psychological growth and development . It can lead to damage, dysfunction, or failure of various organs specially eyes, kidneys, nerves, heart, blood vessels, etc. Diabetes mellitus is a disorder of glucose intolerance due to deficiency in insulin production and its action leading to hypoglycemia and abnormalities in carbohydrate, protein and metabolism .⁽¹⁾

Diabetes mellitus is now classified as two types: Type 1 and type 2, type 1 diabetes it result from autoimmune destruction of beta cells. It is characterized by gross deficiency of insulin for prevention of ketoacidosis. It occurs mainly in childhood, (juvenile-onset diabetes) though there is no age bar. Majority of type 1 cases are idiopathic .Type process or disease . It is usually not insulin dependent and not complicated by ketoacidosis . Previously it was known as adult-onset diabetes or maturity onset diabetes or stable diabetes.⁽¹⁾

Evidence has been accumulating that demonstrates a worldwide increase in the incidence of type 1 diabetes mellitus, with incidence rising specially in areas where type 1 diabetes was previously low. ⁽²⁾ The prevalence of diabetes mellitus in Sudan was dramatically increased from 3.4% in 1996 to 8.05% in 2012 according to (IDF international diabetic Middle East and North Africa (MENA). With the increasing of diabetes prevalence, the diabetes related complications will also increase. The aspects of diabetes

care in Sudan; health education is the most deficient among children^(3) . History of classical triad symptoms. i.e. polyuria, polyphagia, polydipsia are very important diagnostic criteria. Physical examination along with other history of illness and laboratory investigations help to confirm the prevention of diabetic is under trial. Detection of pre-diabetic stage by measurement of auto antibodies, genetic risk suppression are also in experimental phase.⁽¹⁾

Insulin therapy is an essential part of the treatment of diabetic in children. The dosage of insulin is adjusted according to blood glucose levels so that the levels are maintained near normal . Two type of insulin are often combined for the best result. Insulin can be grouped into rapid acting , short acting ,intermediate acting , and long acting . An intermediate acting and a short acting insulin often are given together . Some preparations come in a premixed proportion of 70% intermediate acting and 30% short acting insulin , eliminating the need for mixing . Many children are prescribed an insulin regimen in which a dose containing a short acting insulin and an intermediate , insulin are given at two times during the day.⁽⁴⁾

Attitude of mothers before administration of insulin for diabetic child include: Wash hands, Check that you have the correct *insulin* types .You will be drawing up the **rapid or short-acting insulin first** , If your long-acting insulin is “cloudy” insulin, mix by tipping the cartridge up and down ten to 20 times. *Do not shake the cartridge* as this damages the insulin. Clear insulin does not need to be mixed. Open a new syringe. Make sure there is *no air* in the syringe by first pushing the plunger right down. Insert the needle into the cartridge of **rapid or short-acting insulin**.

Pull back the plunger of the syringe to draw up the dose of insulin required plus an extra 2 units which allows you room to get rid of any air bubbles. The rubber stopper in the cartridge will gradually move down as you draw out the insulin and equalize the pressure. Remove the syringe from the bottle, hold it vertically and push the plunger gently to get rid of any air bubbles and any extra insulin to obtain the correct dose. It may help to tap the side of the syringe to remove all air bubbles. Insert the needle into the cartridge of **long acting insulin** and turn it upside down. Pull back the plunger to obtain the correct dose. If you draw back too much, you will have to discard the whole syringe and start again. *Do not push any insulin into the cartridge.* Now you are ready to inject the insulin. ⁽⁵⁾

(1-2)Justification

Diabetes mellitus (DM) is the most common endocrine metabolic disorders of childhood and adolescence with long-term effects on child's physical and psychological growth and development . It can lead to damage, dysfunction, or failure of various organs specially eyes, kidneys, nerves, heart, blood vessels, etc.⁽¹⁾

If too much insulin is delivered or the person eats than he or she dosed for , there may hypoglycemia .On the other hand , if too little insulin is delivered , there will be hyperglycemia , both can be life-threatening.⁽¹⁰⁾

To avoid the long term complications associated with diabetes and the immediate health risk associated with potentially life-threatening episodes of hypo- and hyperglycemic control including type of insulin in use.

Knowledge , attitude and practices of mothers in insulin use can influence compliance the level of glyceimic control and over roll treatment out comes.

(1-3)Objectives

General objectives:

Assessment of mothers knowledge and practice regarding insulin use for diabetic children at Ahmed Gassim Pediatric Hospital

Specific objectives:

-To assess the knowledge of mothers regarding insulin use for diabetic child

-To assess the practice of mother regarding insulin use for diabetic child

Chapter two
Literature review

(2)LITERATURE REVIEW

Insulin (medication):

Insulin is used as a medication to treat high blood sugar.⁽⁶⁾ This includes in diabetes mellitus type 1 , diabetes mellitus type 2 , gestational diabetes , and complication of diabetes such as diabetic ketoacidosis and hyperosmolar hyperglycemic states. ⁽⁶⁾ It is also used along with glucose to treat high blood potassium levels. ⁽⁷⁾ Typically it is given by injections under the skin , but some forms may also be used by injection into a vein or muscle.⁽⁶⁾

The common side effect is low blood sugar.⁽⁶⁾ Other side effects may include pain or skin changes at the sites of injection , low blood potassium , and allergic reactions. ⁽⁶⁾ Use during pregnancy is relatively safe for the baby. ⁽⁶⁾ Insulin can be made from the pancreas of pigs or cows. ⁽⁷⁾

Insulin was first used as a medication in Canada by Charles Best and Frederick Banting in 1922. ⁽⁸⁾ It is on the world Health organization's list of Essential medicines , the most effective and safe medicines needed in a health system. ⁽⁹⁾

2-1-Medical uses of insulin

Insulin is used to treat a number of diseases including diabetes and its acute complication such as diabetic ketoacidosis and hyperosmolar hyperglycemic states. ⁽⁶⁾ It is also used along with glucose to treat high

blood potassium levels. ⁽⁶⁾ Insulin was formerly used in a psychiatric treatment called insulin shock therapy. ⁽¹⁰⁾

2-2-Side effects of insulin

If too much insulin is delivered or the person eats than he or she dosed for , there may hypoglycemia .On the other hand , if too little insulin is delivered , there will be hyperglycemia , both can be life-threatening.

2-2-1Allergy

Allergy to insulin products is rare with a prevalence of about 2% of which most reactions are not due to the insulin itself but to preservatives added to insulin such as zinc , protamine , and meta-cresol . Most reactions are type 1 hypersensitivity reactions and rarely cause anaphylaxis . A suspected allergy to insulin can be confirmed by skin prick testing , patch testing and occasionally skin biopsy . First line therapy against insulin hypersensitivity reactions include symptomatic therapy with antihistamines . The affected persons are then switched to a preparation that does not contain the specific agent they are reacting to or undergo desensitization ⁽¹⁰⁾

2-3-Type of insulin

Medical preparations of insulin are never just insulin in water. Clinical insulin are specially prepared mixtures of insulin plus other substances including preservatives. These delay absorption of the insulin , adjust the PH of the solution to reduce reactions at the injection site , and so on. Slight variations of the human insulin molecule are called insulin analogues , (technically insulin receptor ligands) so named because they

are not technically insulin , rather they are analogues which retain the hormones glucose management functionality. They have absorption and activity characteristics not currently possible with subcutaneously injected insulin proper. They are either absorbed rapidly in an attempt to mimic real beta cell insulin (as with insulin lispro, insulin aspart, and insulin glulisine), or steadily absorbed after injection instead of having a peak followed by a more or less rapid decline in insulin action (as with insulin detemir and insulin glargine), all while retaining insulin glucose-lowering action in the human body. Cochrane collaboration in 2005,⁽¹¹⁾ Germanys institute for Quality and cost in Effectiveness in the Health Care Sector(IQWiG) released in 2007,⁽¹¹⁾ and the Canadian Agency For Drugs and Technology in Health(CADTH),⁽¹²⁾ also released in 2007 have shown no unequivocal advantages in clinical use of insulin analogues over more conventional insulin types.

The commonly types of insulin are as follows:

2-3-1-Short-acting insulin

Soluble insulin is a short-acting form of insulin. For maintenance regimens it is usual to inject it 15 to 30 minutes before meals.

Soluble insulin is the most appropriate form of insulin for use in diabetic emergencies and at the time of surgery. It can be given intravenously and intramuscularly, as well as subcutaneously.

When injected subcutaneously, soluble insulin has a rapid onset of action (30 to 60 minutes), a peak action between 2 and 4 hours, and a duration of action of up to 8 hours.

When injected intravenously, soluble insulin has a very short half-life of only about 5 minutes and its effect disappears within 30 minutes.

The human insulin analogues, insulin aspart, insulin glulisine, and insulin

lispro, have a faster onset (10–20 minutes) and shorter duration of action (2–5 hours) than soluble insulin; as a result, compared with soluble insulin, fasting and pre-prandial blood-glucose concentrations are a little higher, postprandial blood-glucose concentration is a little lower, and hypoglycaemia occurs slightly less frequently. There is no evidence to justify switching from conventional insulin to a human insulin analogue if glycaemic control is adequate; they should only be used in children in preference to soluble insulin when a fast onset of action is required, e.g. in very young children who refuse food and when timing of injections in

relation to meals is difficult. They may also be useful in children susceptible to pre-lunch hypoglycaemia and those who eat late in the evening and are prone to nocturnal hypoglycaemia. Insulin aspart and insulin lispro can be administered by subcutaneous infusion (see Insulin Administration above). They can also be administered intravenously and can be used as alternatives to soluble insulin for diabetic emergencies and at the time of surgery.⁽¹³⁾

2-3-2- Intermediate- and long-acting insulin

When given by subcutaneous injection, intermediate- and long-acting insulin have an onset of action of approximately 1–2 hours, a maximal effect at 4–12 hours, and a duration of 16–35 hours. Some are given twice daily in conjunction with short-acting (soluble) insulin, and others are

given once daily. Soluble insulin can be mixed with intermediate and long-acting insulins (except insulin detemir and insulin glargine), essentially retaining the properties of the two components, although there may be some blunting of the initial effect of the soluble insulin component (especially on mixing with protamine zinc insulin, see below).

Close monitoring of blood glucose is essential when introducing a change to the insulin regimen; the total daily dose as well as any concomitant treatment may need to be adjusted. Isophane insulin is a suspension of insulin with protamine; it is of particular value for initiation of twice-daily insulin regimens. Isophane can be mixed with soluble insulin before injection but ready-mixed preparations may be more appropriate

(biphasic isophane insulin, biphasic insulin aspart, or biphasic insulin lispro).

Insulin zinc suspension (30% amorphous, 70% crystalline) has a more prolonged duration of action. Protamine zinc insulin is usually given once daily with short-acting (soluble) insulin. It has the drawback of binding with the soluble insulin when mixed in the same syringe and is now rarely used.

Insulin detemir and insulin glargine are human insulin analogues with prolonged duration of action; insulin detemir is given once or twice daily and insulin glargine is given once daily. There is little evidence to justify switching from conventional intermediate- or long-acting insulin to a human insulin analogue if glycaemic control is adequate. NICE (December 2002) has recommended that insulin glargine should be available as an option for patients with type 1 diabetes. NICE (May 2008)

has recommended that, if insulin is required in patients with type 2 diabetes, insulin glargine may be considered for those:

- . who require assistance with injecting insulin or
- . whose lifestyle is significantly restricted by recurrent symptomatic hypoglycaemia or
- . who would otherwise need twice-daily basal insulin injections in combination with oral antidiabetic drugs. A trial of insulin glargine may be offered to those who have experienced significant nocturnal hypoglycaemia when treated with isophane insulin.⁽¹³⁾

2-4-Strategies of insulin

A long-acting insulin is used to approximate the basal secretion of insulin by the pancreas, which varies in the course of the day.⁽¹⁰⁾ NPH , isophane, lente, ultralente, glargine, detemir may be used for this purpose. The advantage of NPH is its low cost, the fact that you can mix it with short-acting forms of insulin, therapy minimizing the number of injections that must be administered, and that the activity of NPH with peak 4-6 hours after administration , allowing a bedtime dose to balance the tendency of glucose to rise with the dawn,⁽¹¹⁾ along with a smaller morning dose to balance the lower afternoon basal need and possibly an afternoon dose to cover evening need. A disadvantage of bedtime NPH is that if not taken late enough (near midnight) to place its peak shortly before dawn, it is the potential of causing hypoglycemia. The theoretical advantage of glargine and detemir, primary for type 2 patients, is that they only need to be administered once a day, although in practice many patients find that

neither lasts a full 24 hours. They can be administered at any time during the day as well, provided that they are given at the same time every day. Glargine and detemir are significantly more expensive than NPH, lente and ultralente, and they cannot be mixed with other forms of insulin.

A short-acting insulin is used to simulate the endogenous insulin surge produced in anticipation of eating. Regular insulin, lispro, aspart and glulisine can be used for this purpose. Regular insulin should be given with about a 30 minute lead-time prior to the meal to be maximally effective and to minimize the possibility of hypoglycemia. Lipro, aspart and glulisine are approved for dosage with the first bite of the meal, and may even be effective if given after completing the meal. The short-acting insulin is also used to correct hypoglycemia.

The usual schedule for checking finger stick blood glucose and administering insulin is before all meal and sometime also at bedtime. More recent guidelines also call for a check 2 hours after a meal to ensure the meal has been covered effectively.⁽¹⁰⁾

2-5-Sliding scales of insulin

What physicians typically refer to as sliding-scale insulin (SSI) is fast- or rapid-acting insulin only, given subcutaneously, typically at meal times and sometime bedtime, but only when blood glucose is above a threshold, usually 10mmol/L (180mg/dl). No basal insulin is given, usually resulting

in an elevated blood glucose each morning, which is then chased throughout the day, with the cycle repeated the next day.⁽¹²⁾

2-6-Detection in biological fluids of insulin

Insulin is often measured in serum, plasma or blood in order to monitor therapy in diabetic patients, confirm a diagnosis of poisoning in hospitalized persons or assist in a medico-legal investigation of suspicious death. Interpretation of the resulting insulin concentrations is complex, given the numerous types of insulin available, various routes of administration, the presence of anti-insulin antibodies in insulin-dependent diabetics and the ex vivo instability of the drug. Other potential confounding factors include the wide-ranging cross-reactivity of commercial insulin immunoassays for the biosynthetic insulin analogs, the use of high-dose intravenous insulin as an antidote to antihypertensive drug over-dosage and postmortem redistribution of insulin within the body. The use of a chromatographic technique for insulin assay may be preferable to immunoassay in some circumstances, to avoid the issue of cross-reactivity affecting the quantitative result and also to assist identifying the specific type of insulin in the specimen.⁽¹¹⁾

2-7-Combination with other-anti-diabetic drugs of insulin

A combination therapy of insulin and other anti-diabetic drugs appears to be most beneficial in diabetic patients who still have residual insulin secretory capacity.⁽¹²⁾ A combination of insulin therapy and sulphonylurea is more effective than insulin alone in treating patients with type 2 diabetes

after secondary failure to oral drugs, leading to better glucose profiles and or decreased insulin needs.⁽¹²⁾

2-8-Economic of insulin

The wholesale cost in the developing world is about us to\$ 2.39 to \$ 10.35 per 1,000 IU of regular insulin and \$ 2.23 to \$ 10.35 per 1,000 IU of NPH insulin.^{(14)(15)} In the united kingdom 1,000 IU of regular or NPH insulin costs the NHS E 7.48, while this amount of insulin glargine costs E 30.68.⁽⁷⁾

2-9-Research of insulin

2-9-1-Inhalation

Administration approved the use of Exubera, the first inhalation insulin.⁽¹⁶⁾ It was withdrawn from the market by its maker as of third quarter 2007, due to lack of acceptance.

Inhaled insulin claimed to have similar efficacy to injected insulin, both in terms of controlling glucose levels and blood half-life. Currently, inhaled insulin is short acting and is typically taken before meals, an injection of long-acting insulin at night is often still required.⁽¹⁷⁾ When patients were switched from injected to inhaled insulin, no significant difference was observed in Hb A1c levels over three months. Accurate dosing was a particular problem, although patients showed no significant weight gain or pulmonary function decline over the length of the trial, when compared to the baseline.⁽¹⁸⁾

Following its commercial launch in 2005 in the United Kingdom, it was not (as of July 2006) recommended by National Institute for Health and Clinical Excellence for routine use, except in cases where is "proven injection phobia diagnosed by a psychiatrist or psychologist".⁽¹⁷⁾

In January 2008, the world's largest insulin manufacturer, Novo Nordisk, also announced that the company was discontinuing all further development of the company's own version of inhalable insulin, known as company ended its efforts to develop its inhaled Air insulin in March 2008.⁽²⁰⁾ However, Mannkind Corp. (majority owner, Alfred E. Mann) remains optimistic about the concept.⁽²¹⁾

2-9-2 Trans-dermal

There are several methods for trans-dermal delivery of insulin. Pustule insulin uses micro jets to pulse insulin into the patient, mimicking the physiological secretions of insulin by the pancreas.⁽²²⁾ Jet injection had different insulin delivery peaks and durations as compared to needle injection. Some diabetics find control possible with jet injectors, but not with hypodermic injection.

Both electricity using iontophoresis,⁽²³⁾ and ultrasound have been found to make the skin temporarily porous. The insulin administration aspect remains experimental, but the blood glucose test aspect of "wrist appliances" is commercially available.

Researchers have produced a watch-like device that tests for blood glucose levels through the skin and administers corrective doses of insulin through

pores in the skin. A similar device, but relying on skin-penetrating "micro-needles" , was in the animal testing stage in 2015.⁽²⁴⁾

2-9-3 Intranasal

Intranasal insulin is being investigated.⁽²⁴⁾ A randomized controlled trial which will determine whether intranasal insulin can delay or prevent the onset of type 1 diabetes in children and young adults at risk is expected to give results in 2016.⁽²⁵⁾

2-9-4 By mouth

The basic appeal of hypoglycemic agents by mouth is that most people would prefer pill or an oral liquid to an injection. However, insulin is a hormone, which is digested in the stomach and gut and in order to be effective at controlling blood sugar, cannot be taken orally in its current form.

The potential market for an oral form of insulin is assumed to be enormous, thus many laboratories have attempted to devise ways of moving enough intact insulin from the gut to the portal vein to have a measurable effect on blood sugar.⁽²⁵⁾

A number of derivatization and formulation strategies are currently being pursued to in an attempt to develop an orally available insulin.⁽²⁶⁾ Many of these approaches employ nanoparticle delivery system,⁽²⁷⁾⁽²⁸⁾⁽²⁹⁾ and several are being tested in clinical trials.⁽³⁰⁾

As an example, Ovalin is a pre-meal oral insulin under investigation. The medicine is administered as oral spray. It is evaluated in comparison with

oral hypoglycemic agents, mostly in patients with type 2 DM . The clinical data appears promising , but further evaluation of its efficacy in type 1 DM is needed.⁽³¹⁾

2-9-5 Pancreatic transplantation

Another improvement would be a transplantation of the pancreas or beta cell to avoid periodic insulin administration . This would result in a self-regulating insulin source .Transplantation of an entire pancreas (as an individual organ) is difficult and relatively uncommon. It is often performed in conjunction with liver or kidney transplant, although it can be done by itself. It is also possible to do a transplantation of only the pancreatic beta cells. However, islet transplants had been highly experimental for many years, but some researchers in Alberta, Canada, have developed techniques with a high initial success rate (about 90% in one group) . Nearly half of those who got an islet cell transplant were insulin-free one year after the operation : by the end of second years that number drops to about one in seven . However, researchers at the university of Illinois at Chicago (UIC) have slightly modified the Edmonton protocol procedure for islet cell transplantation and achieved insulin independence in diabetes patients with fewer but better-functioning pancreatic islet cells.⁽³²⁾ Longer-tem studies are needed to validate whether it improves the rate of insulin. Beta cell transplant may become practical in the near future. Additionally, some researchers genetically engineered non-beta cells to secrete insulin.⁽³¹⁾ Clinically testable results are far from realization at this time . Several other non-transplant methods of automatic insulin delivery are being development in research labs, but none is close to clinical approval.⁽³²⁾

2-10-Technique of insulin injection

2-10-1-Injection site, site rotation and sterile technique

The most common injection site is the abdomen (or stomach) while avoiding the area within two inches of the umbilicus. The back of the upper arms, the upper buttocks or hips, and the outer side of the thighs are also used. Individuals self-injecting medications should be taught to inspect the intended injection site prior to injection.¹ They need to understand the value in proper site rotation as well as to change sites when there are signs of lipohypertrophy, inflammation, edema or infection. It is good practice to wash hands prior to injecting medication.⁽³³⁾ Outside of institutional settings, disinfecting sites prior to injection is not usually required.⁽³⁵⁾

2-10-2-Choice of injection device

The most common choices for medication injection are vial and syringe, and injection pens. The decision may be a function of the particular medication which may only be available via a particular delivery system. Both pens and syringes have characteristics which can be perceived as advantages and disadvantages. Financial factors such as insurance coverage, can impact injection device choice.

2-10-2-1-Vial and Syringe

Individuals injecting medications need to be taught to engage in ‘quality control’ and should know how the medication is to be stored and be

advised to inspect the injectable medication before each use. If altered in appearance, a new vial (with a normal appearance) must be used to ensure potency. Patients should be aware that medications have expiration dates which should to be checked prior to use.

Insulin is typically injected subcutaneously using insulin syringes which measure units of insulin. People need to know that injecting a volume of air equal to the amount of medication to be

withdrawn from the vial greatly eases pulling the medication into the syringe and that tapping the syringe is an effective means to move air bubbles to the top where they can be removed by moving the medication up with the plunger.⁽³⁴⁾ Because the aim is to inject the medication in the

subcutaneous space⁴ while at the same time minimizing discomfort, smaller gauge and shorter needles i.e. < 8 mm are preferable to decrease the chance of intramuscular (IM) injection.⁽³⁶⁾⁽³⁷⁾

Four mm needles are appropriate for most individuals including youths⁷ and those lean,⁽³⁸⁾ or obese⁽³⁹⁾ adults for minimizing discomfort while optimizing medication delivery. Although reuse of either needles or syringes is not recommended, many patients adopt this practice.⁽⁴⁰⁾ Needles and syringes should never be used to administer insulin to more than one person and should be disposed of immediately after use in an approved sharps container. The CDC 'One and Only' campaign is a resource of materials that can be used to reinforce this message.⁽⁴¹⁾

2-10-2-2-Pens

It is important for individuals considering use of pens that they will not be able to see the insulin being injected and that while obstructed flow with pens is rare, it can occur.² It should be recommended that patients not keep needles on pens other than for injection because the needle can provide a channel for the medication to leak from the cartridge, allowing air to enter which can affect accuracy of the dose delivered. Pens need to be primed according to the manufacturer's instructions.¹⁰ It is essential to raise awareness that pens and cartridges are for use by a single individual and should not be shared.

2-10-3-Injection Technique

When administering medication with a syringe, the needle should be inserted quickly (but carefully). Especially when using needles > 5mm, pinch up a thick fold of skin and quickly insert the needle at a 90 degree angle (or, to avoid IM injection in thin persons, inject at a 45 degree angle). Slowly inject the insulin, hold for 5 seconds, then pull the needle straight out. Remind the person to avoid injecting insulin near scar tissue or moles.

When administering medication with a pen, after pushing the thumb button in completely, patients should be advised to wait for a slow count to 10 before withdrawing the needle to help reduce leakage and ensure complete expulsion of the medication.⁽⁴²⁾

2-10-4-Injection Discomfort and Complication

It is useful for individuals to be aware of possible complications from injections they may encounter so that they are prepared with an appropriate course of action to take.

Rotation of the injection site is helpful for reducing irritation, bruising and risk of infection. It is also critical for lipohypertrophy prevention, a complication reported in nearly 50% of individuals using insulin who fail to rotate injection sites.⁽⁴³⁾

While a definitive cause for lipohypertrophy has not been established,13 patients should recognize the appearance of lipohypertrophic tissue. This will enable them to avoid injecting into this tissue as it may alter kinetics of insulin absorption.⁽⁴⁴⁾

There are a number of practical tips for minimizing pain during injection that should be shared

as part of the process of educating about injection.¹⁵ These include:

- Using insulin and other injectable medication at room temperature
- Always using a new needle for injection
- Being sure to remove air bubbles from the syringe
- Waiting for alcohol to evaporate completely from injection site prior to injection
- Rapid insertion of the needle
- Maintaining needle alignment during insertion and withdrawal

For intramuscular injection of insulin, relaxing the muscle prior to injection can minimize discomfort during injection.

One problem that can occur with medication injection is leakage. When this occurs, pressure should be applied to the injection site for 5-8 seconds. Following the incident, blood glucose monitoring during that day should be more frequent since the dose of the medication injected was less than was planned.⁽⁴⁶⁾

Education about injection technique for delivery of insulin should include review of hypoglycemia (causes, treatment, and prevention). Periodic review of injection education is warranted, especially when blood glucose control is suboptimal.⁽⁴⁶⁾

2-10-5-Disposal of used sharps

There is a need to raise awareness about the risks associated with sharps, including syringe needles and pens, so that persons with diabetes can minimize infection risk to themselves and others. This should include information about proper disposal both at home and when out in public, as well as being alert to keep all needles and other sharps out of the reach of children and pets.⁽⁴⁶⁾

2-11-Insulin storage

For optimal affect, insulin need to be stored under refrigerator conditions, between 2 and 8C , and be protected from light when vials or pens are unopened.^(47) Pens or vials in use may be kept at room temperature, protected from sunlight, up to 25C.

Exposure to higher temperature during storage and use may degrade insulin by hydrolysis, or transform in Pudcherry, India, showed that storage of regular and biphasic insulin at 32C and 37C decreased the potency of insulin by 14 to 18%.⁽⁴⁷⁾

This means that people with diabetes need to be educated about the temperature and duration of storage of insulin vials needed to maintain adequate glycemic control.

2-11-1-Improvisation in Storage

Lack of refrigerators in a hot, tropical climate can be a major challenge for people with diabetes on insulin therapy.⁽⁴⁸⁾ Even in places where refrigerators are available, electrical supply may be erratic. This makes it a challenge to store essential drug supplies correctly.

Some of the improvised methods for storage of insulin are listed below:

Insulin can be stored in a small bowl of water. Remember not to keep this container in direct sunlight. The water level should be below the neck of the vial, to prevent possible leakage into, and contamination of, insulin supply.

As the label tends to peel off when wet, one should use waterproof tape to stick a label with the name of the insulin, its expiry date, and its date of opening. In a hospital ward where insulin vials of more than one patient are stored together, the name and bed number of the patient should be mentioned clearly. If available, a small clay pot or earthenware pitcher is a

perfect storage utensil for the drug, and reduces an exposure to external temperature variations.⁽⁴⁹⁾

One should insure that insulin vial cap is not submerged, and the labels with insulin name, date of opening , and date of expiry are preserved .

One can use thermo cool boxes, with ice packs inside them, as effective refrigeration devices for insulin. The temperature will remains within acceptable limits for many days and be monitored using a room thermometer. Ice packs can be replaced by frozen ones on weekly basis.

Extra vaccination boxes , used for storing and transporting vaccines, can be utilized, if available, for keeping insulin. A good insulated vaccination box can keep insulin stable for many days.

Keeping a cool wet cloth around insulin helps to preserve insulin potency.

2-11-2-Using a Refrigerator

A refrigerator is the best place to store insulin in. Insulin should never be frozen as this will make it lose its potency. Unopened insulin is best kept at 2-8C temperature . This temperature is maintained below the freezer or in the butter compartment of most fridges. Opened insulin may be kept at room temperature , or in the vegetable compartment of the fridge, where temperature is maintained at a stable 14C. Avoid keeping insulin in the door of the fridge, as this area is most prone to temperature fluctuations.

2-11-3-Traveling with Insulin

Traveling with insulin can be a challenge in hot climates. Carry a small thermos flask, in which you can keep insulin, lightly packed in polythene

so that water does not enter the vial. If this is not possible, wrap the insulin in cool, wet cloth, and keep it moist.

If possible , try disposable or reusable insulin pens, which are insulated and do not need refrigeration. Remember not leave your insulin In a locked car or in the glove compartment in the heat. Temperature in closed vehicles may reach very high levels. When traveling by air, carry insulin supplies, along with a prescription, in cabin baggage or handbags. Luggage kept in the hold, i.e., check in luggage, may freeze, and any insulin kept here may lose its potency.⁽⁴⁸⁾

Chapter three

Methodology

(3)Methodology

3-1 Study design:

This is descriptive cross sectional study . Aim to assess the mothers knowledge regarding insulin use for diabetic children in period extend from December 2017 to February 2018 .

3-1 Study area:

Ahmed Gassim pediatric hospital which located in the north of Bahry city in Almazad , from the north Almoasasa streete. It consist of outpatient department which contain three wards and High Dependent Units (HDU) for emergency cases and referral clinics, and inpatient department which contain seven wards and Pediatric Intensive Care Units (PICU) , regarding nursing staff were consist of 90 with Diploma and 20 with Becaloria.

3-3 Study setting:

Pediatric diabetic clinic, was established in Ahmed Gassem Hospital in 2004 and consist of pediatrician, a nurse trained, a nutritionist and psychologist. Full care is provided for children with diabetes and their families are educated about diabetes manly about (70) per month.

3-3 Study population:

All mothers of diabetic children come to referred diabetic clinic in Ahmed Gassim pediatric hospital during the period were included in the study.

3-5 Sampling:

3-5-1- Sample technique:

Simple random sampling

3-5-2- Sample size:

Total cover sample. 70 mothers for diabetic child were included in the study.

3-6 Data collection tool:

Structured interview sheet were designed by the researcher depend on the literature review which consist of 2 parts:

Part 1: Socio demographic data about mothers (2) question

Part 2: Which include knowledge of mothers about insulin, practice and attitude (17) question .

3-7 Data collection technique:

By researcher himself each questionnaire took about 10-15 minutes.

3-8 Data analysis:

The data were entered in the statistical package for social sciences (SPSS) for analysis and organized , categorized , tabulated in forms of tables.

3-9 Ethical consideration:

Permission from university of shendi faculty of post graduate studies to Ahmed gassim pediatric hospital in diabetic clinic to mothers of patients

were contacted and informed about the purpose of the study then consented and personally interviewed was done .

Chapter four

Result

(4)Results

Table (1): Distribution of study group according to their socio democratic data (age , Education level):

Age	Frequency	Percent
20 to 15	6	8.6%
21 to 30	17	24.3%
31 to 40	24	34.3%
More than 40	23	32.9%
Education level	Frequency	Percent
Non-educated	15	21.4%
Primary	22	31.4%
Secondary	21	30.0%
University education	12	17.1%
Total	70	100.0

The above table showed that (34.3%) of study group their age ranged between (31-40) and (31.3%) of them were primary education.

Table (2): Distribution of study group in relation to their knowledge about type of insulin taken by their children's.

	Frequency	Percent
soluble insulin	1	1.4 %
mix tart insulin	54	77.1 %
soluble and mix-tart insulin	15	21.4 %
Total	70	100.0

The above table showed that (77.1%) of study group were knowledgeable about type of insulin that taken by their children (mix tart insulin).

Table (3): Distribution of study group in relation to their knowledge about number of doses that taken by their children's during the day

	Frequency	Percent
before breakfast + before lunch	2	2.9 %
before breakfast +before dinner	54	77.1 %
before breakfast + before lunch +before dinner	14	20.0 %
Total	70	100.0

The above table showed that (77.1%) of study group were knowledgeable about number of doses that taken by their children's during the day (before breakfast and dinner).

Table (4): Distribution of study group in relation to their knowledge about the right time of insulin administration before meal.

	Frequency	Percent
one hour	2	2.9 %
two hours	1	1.4 %
a quarter hour	65	92.9 %
I do not know	2	2.9 %
Total	70	100.0

The above table showed that (92.9%) of study group were knowledgeable about the right time of insulin administration before meal (a quarter hour) .

Table (5): Distribution of study group in relation to their knowledge about number of unites of insulin syringes

	Frequency	Percent
80 unites	1	1.4 %
100 unites	51	72.9 %
60 unites	1	1.4 %
I do not know	17	24.3 %
Total	70	100.0

The above table showed that (24.3%) of study group were not knowledgeable about number of units in insulin syringes

Table (6): Distribution of study group in relation to their knowledge about number of internal units in insulin syringes.

	Frequency	Percent
tow unites	52	74.3 %
one unite	6	8.6 %
I do not know	12	17.1 %
Total	70	100.0

The above table showed that (17.1%) of study group were not knowledgeable about number of internal units in insulin syringes.

Table (7): Distribution of study group in relation to their knowledge about right sites of insulin injections.

	Frequency	Percent
upper hands	32	45.7 %
upper thighs	14	20.0 %
All right sites	24	34.3 %
Total	70	100.0

The above table showed that (34.3%) of study group were knowledgeable about all right sites of insulin injections.

Table (8): Distribution of study group in relation to their knowledge about repetition of injection in the same sites.

	Frequency	Percent
five times	31	44.3 %
seven times	8	11.4 %
I do not know	31	44.3 %
Total	70	100.0

The above table showed that (44.3%) of study group were not knowledgeable about repetition of insulin injection in the same sites.

Table (9): Distribution of study group in relation to their knowledge about complication occurs from repetition of injection in the same sites.

	Frequency	Percent
fibrosis in the region	40	57.1 %
non-absorption of insulin	14	20.0 %
does not cause any damage	1	1.4 %
I do not know	15	21.4
Total	70	100.0

The above table showed that (21.4%) of study group were not knowledgeable about complication occurs from repetition of injection in the same sites.

Table (10): Distribution of study group in relation to their knowledge about insulin injection method .

	Frequency	Percent
under the skin	3	4.3 %
At a 90 degree angle	64	91.4 %
At a 45 degree angle	2	2.9 %
I do not know	1	1.4 %
Total	70	100.0

The above table showed that (91.4%) of study group were knowledgeable about right method of insulin injections (at a 90 degree angle).

Table (11): Distribution of study group in relation to their knowledge about infection control before insulin injection.

	Frequency	Percent
clean the area before injection	49	70.0 %
Do not stump the area after the injection	1	1.4 %
I do not know	20	28.6 %
Total	70	100.0

The above table showed that (70.0%) of study group were knowledgeable about good attitude before insulin injection (clean the area before injection) .

Table (12): Distribution of study group in relation to their knowledge about If insulin is taken without taking the meal.

	Frequency	Percent
severe hypoglycemia occurs	63	90.0 %
Does not affect diabetes	1	1.4 %
I do not know	6	8.6 %
Total	70	100.0

The above table showed that (90.0%) of study group were knowledgeable about complication occurs from if insulin is taken without taking the meal (severe hypoglycemia).

Table (13): Distribution of study group in relation to their knowledge about administration of insulin if their child reject the meal.

	Frequency	Percent
take the insulin dose	41	58.6 %
Do not take insulin dose	28	40.0 %
All that is true	1	1.4 %
Total	70	100.0

The above table showed that (58.6%) of study group were knowledgeable about administration of insulin if their child reject the meal(take the insulin does).

Table (14): Distribution of study group in relation to their knowledge about how to save insulin .

	Frequency	Percent
in the freezer	1	1.4 %
in the refrigerator door	66	94.3 %
under zeer	3	4.3 %
Total	70	100.0

The above table showed that (94.3%) of study group were knowledgeable about how to save insulin (in the refrigerator door).

Table (15): Distribution of study group in relation to their knowledge about right attitude before using insulin vial.

	Frequency	
tipping the vial up and down(rolling the vial)	Percent	
shake the vial gently	95.7 %	
Total	4.3 %	100.0

The above table showed that (95.7%) of study group were knowledgeable about right attitude before using insulin vial (tipping the vial up and down (rolling the vial))

Table: (16) Correlation between education level and the right site of insulin injection.

		Education level	Right site of insulin injection
Education level	Pearson correlation	1	.139
	Sig (2.tailed)		.252
	N	70	70
Right site of insulin injection	Pearson correlation	.139	1
	Sig (2.tailed)	.252	
	N	70	70

P. value = 0.252

Correlation coefficient = 0.139

N= 70

Correlation is significant at the 0.05 level (2.tailed) .

The above table showed that is no correlation between level of education and the right site of insulin injection, also notes that the value of p .value is equal to 0.252 ie 25.2% which is greater than the moral level of 0.05. Therefore, we accept the null hypothesis and reject the alternative assumption that is no correlation between level of education and the right site of insulin injection.

Table: (17) Correlation between level of education and insulin injection method.

		Education level	Insulin injection method
Education level	Pearson correlation	1	-0.029
	Sig (2.tailed)		0.813
	N	70	70
Insulin injection method	Pearson correlation	-0.029	1
	Sig (2.tailed)	0.813	
	N	70	70

P. value = 0.813

Correlation coefficient = 0.029

N= 70

Correlation is significant at the 0.05 level (2.tailed) .

The above table showed that is no correlation between level of education and insulin injection method, also notes that the value of p .value is equal to 0.813 ie 81.3% which is greater than the moral level of 0.05. Therefore, we accept the null hypothesis and reject the alternative assumption that is no correlation between level of education and insulin injection method.

Table: (18) Correlation between education level and the right attitude before using insulin vial.

		Education level	Right attitude before using insulin vial
Education level	Pearson correlation	1	.114
	Sig (2.tailed)		.348
	N	70	70
Right attitude before using insulin vial	Pearson correlation	.114	1
	Sig (2.tailed)	.348	
	N	70	70

P. value = 0.348

Correlation coefficient = 0.114

N= 70

Correlation is significant at the 0.05 level (2.tailed) .

The above table showed that is no correlation between level of education and the right attitude before using insulin vial , also notes that the value of p .value is equal to 0.348 ie 34.8% which is greater than the moral level of 0.05. Therefore, we accept the null hypothesis and reject the alternative assumption that is no correlation between level of education and the right attitude before using insulin vial .

Chapter five

Discussion

Conclusion

Recommendations

(5-1)Discussion

Wrong insulin uses is one of the causes of uncontrolled diabetes which lead to the development of complication , the current study is a descriptive cross sectional study conducted to assess the mothers knowledge regarding insulin use for diabetic children in Ahmed gassem pediatric hospital from December 2017 to April 2018 . 70 mothers of diabetic child randomly were chosen , and the following were showed

The age of study group were ranged between 15 to more than 40 years , less than half (34.3%) of them their age ranged between (31-40) years, less than half (31.3%) of them were primary education .

The present study showed that: more than two third (77.1%) of study group were knowledgeable about the type of insulin taken by their children (mix tart insulin), the same percent of study group were knowledgeable about number of doses that taken by their children during the day (before breakfast and dinner) , also study showed that : majority (92.9%) of study group were knowledgeable about the right time of insulin administration before meal (a quarter hour) , all this result agree with (5) which state that: (Most children have an injection routine that uses a combination of rapid or short acting insulin and long acting insulin. These injection plans usually involve long acting insulin being given before breakfast or before bed, or sometime both, and short acting insulin being given before and afternoon tea or dinner. Most insulin injection are given before a meal or snack, the child should eat within 15 minutes of the injection or pump bolus, otherwise hypoglycemia is likely. For children on

these injections it is important that the meal is ready and available before the insulin is given).

Also the present study reflected that: less than two third (24.3%) of study group were not knowledgeable about number of units in insulin syringes , less than one third (17.1%) of study group do not aware about number of internal unites in insulin syringes, according to ⁽⁵⁾ which state that: (Insulin pens are generally preferred and most convenient for giving injections; however syringes will deliver insulin perfectly well and can be used if preferred or if pens are not available. They are available in various sizes (25, 30 50 and 100 units) depending on the dose required)

Regarding the right site of insulin injection the study revealed less than half (34.3%) of study group were knowledgeable about all right sites of insulin injections. Also the study showed that: less than half (44.3%) of study group do not aware about repetition of injection in the same sites, less than two third (21.4%) of study group were not knowledgeable about complication occurs from repetition of insulin injection in the same sites, according to study was done by (American Association of Diabetes Educators in January 2017) show the most common injection site is the abdomen (or stomach) while avoiding the area within two inches of the umbilicus. The back of the upper arms, the upper buttocks or hips, and the outer side of the thighs are also used. Individuals self-injecting medications should be taught to inspect the intended injection site prior to injection. They need to understand the value in proper site rotation as well as to change sites when there are signs of lipohypertrophy, inflammation, edema or infection.

According to method of insulin injection the study showed that: majority (91.4%) of study group were knowledgeable about right method of insulin injection (at a 90 degree angle) , according to study was done by (American Association of Diabetes Education in January 2017) show the method of insulin injection should be inserted the needle at a 90 angle that is agree with result.

About attitude of mothers before insulin injection the study showed that more than two third (70%) of study group were knowledgeable about clean the area before insulin injection that is good attitude of infection control , also the study showed that: majority (90%) of study group were knowledgeable about complication occurs from if insulin is taken without taking the meal (severe hypoglycemia) that is good knowledge .

Also the study determined that: more than half (58.6%) of study group were knowledgeable about administration of insulin if the child reject the meal that is wrong attitude , also the study showed that: majority (94.3%) of study group were knowledgeable about how to save insulin (in the refrigerator door) , according to study was done by (Amna Ahme Eltyeb university of shendi 2010) show that: (56%) of study group know that insulin can be store at degree of cooling or in break ice .

In addition the study revealed that: most (95.7%) of study group were knowledgeable about tipping the vial up and down before using insulin(rolling the vial) ,this result agree with ⁽⁵⁾ (Attitude of mothers before administration of insulin include the cloudy insulin mix by tipping the cartridge up and down ten to 20 times .

The study also showed that is no correlation between education and the mothers knowledge , attitude and practices towards the use of insulin .

(5-2)Conclusion

The present study which conducted on Ahmed Gassem Pediatric Hospital on period extend from December 2017 to April 2018 , aim to assess the mothers knowledge regarding insulin use for diabetic children concluded that:

Majority of study group had good knowledge about use , store , attitude before injection and technique of insulin injection.

The study also showed that is no correlation between education and the mothers knowledge , attitude and practices towards the use of insulin .

(5-3)Recommendations

The present study which conducted on Ahmed Gassem Pediatric Hospital on period extend from December 2017 to April 2018 , aim to assess the mothers knowledge regarding insulin use for diabetic children recommended that:

(A) – Recommendations for hospital:

- 1- Introduce for a proper diabetic clinic .
- 2- Introduction of education as a part of diabetic clinic .
- 3- The hospital should train specialized nurses to perform health education at center.

(B) – Recommendations for mothers:

Impotence of increase knowledge about:

- 1- New trained in insulin and it is therapy.
- 2- Meals , exercise and their time to their children's affected with diabetes mellitus.

Chapter six


Appendix and References

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University of Shendi

Post Graduate studies

A questionnaire for the purpose of obtaining a master's degree

Dear mother, the researcher is doing a study on the mother's knowledge of insulin

The information is confidential for the purpose of study only and for the right to participate or refuse

(A)-Personal data

1- Age

(A)-(15-20)()

(B)-(21-30)()

(C)-(31-40)()

(D)-(More than 40)()

2- Education level

(A)-

(primary)()

(B)-(secondary)()

(C)-(university education)()

(D)-(Non-educated)()

(B)- Data on diabetes

3- The time period for diabetes in the child

(A)- (less than six months)()

(B)- (more

than six months)()

(C)- (more than two years)()

(D)-(more than five years)()

4- The type of insulin taken by their children's

- (A)- (soluble insulin) () (B)- (mix tart insulin)() (C)- (zinc insulin)()
(D)- (soluble and mix-tart insulin)()

5- Number of doses that taken by their children during the day

- (A)-(before breakfast and lunch)() (B)- (before breakfast and dinner)()
(C)-(before breakfast and lunch and dinner)() (D)-(all that is true)()

6- The right time of insulin administration before meal.

- (A)-(one hour)() (B)-(two hours)() (C)-(a quarter hour)()
(D)-(I do not know)()

7- Number of units in insulin syringes

- (A)-(80 unites)() (B)- (100 unites)() (C)-(60 unites)()
(D)-(I do not know)()

8- Number of internal units in insulin syringes

- (A)-(tow units)() (B)-(4 units)() (C)-(one unite) ()
(D)-(I do not know)()

9- Right sites of insulin injections

- (A)-(upper hands)() (B)-(upper thighs)() (C)-(around the umbilicus)()
(D)-(All right sites)()

10-Number of repetition of insulin injection in the same sites

- (A)-(five times)() (B)-(seven times)() (C)-(ten times)()
(D)-(I do not know)()

11- Complications occurs from repetition of insulin injection in the same sites

(A)-(fibrosis in the region)() (B)-(non-absorption of insulin) ()

(C)-(does not cause any damage)() (D)-(I do not know)()

12- Insulin injection method

(A)-(under the skin)() (B)-(At a 90 degree angle)()

(C)-(At a 45 degree angle)() (D)-(I do not know)()

13- Infection control before insulin injections

(A)-(clean the area before injection)() (B)-(stump the area after the injection)()

(C)-(Do not stump the area after the injection)() (D)-(I do not know)()

14-Complications occurs from if insulin is taken without taking the meal

(A)-(severe hypoglycemia occurs)() (B)-(high blood sugar)()

(C)-(Does not affect diabetes)() (D)-(I do not know)()

15- Give insulin to the child by

(A)-(a family member)() (B)-(the mother)()

(C)-(the child himself)() (D)-(by others)()

16- Administration of insulin if the child reject the meal

(A)-(take the insulin dose)() (B)-(Do not take insulin dose) ()

(C)-(does not affect taking a dose of insulin or not to take them)()

(D)-(All that is true)()

17- How to save insulin

(A)-(in the freezer)()

(B)-(in the refrigerator door)()

(C)-(under zeer)()

(D)-(all that is true)()

18- Before using insulin vial

(A)-(Tipping the vial up and down (rolling the vial))()

(B)-(shake

the vial gently)()

(C)-(check the end date)()

(D)-(I do not know)()

19- Knowledge of mothers about insulin acquired from

(A)-(the pediatrician)()

(B)-(the media)()

(C)-(access)()

(D)-(all that is true)()

بسم الله الرحمن الرحيم

جامعة شندي

الدراسات العليا

استبيان بغرض نيل درجة الماجستير

عزيزتي الأم تقوم الباحثة بعمل دراسة عن معرفة الأم بالأنسولين
المعلومات سرية بغرض الدراسة فقط ولكي الحق في المشاركة أو الرفض

(أ)- البيانات الشخصية:

1-العمر

(أ)- (15-20) () (ب)- (21-30) () (ج)- (31-40) () (د)- (أكثر من 40) ()

2- مستوى التعليم

(أ)- (أساس) () (ب)- (ثانوي) () (ج)- (تعليم جامعي) ()

(د)- (أمي) ()

(ب)- بيانات عن الإصابة بالسكري:

3-الفترة الزمنية لمرض السكري لدى الطفل

(أ)- (أقل من ستة شهور) () (ب)- (أكثر من ستة شهور) () (ج)- (أكثر من

سنتين) () (د)- (أكثر من خمسة سنة) ()

4- نوع الأنسولين الذي يأخذه الطفل

- (أ)- (أنسولين صافي) () (ب)- (أنسولين مخلوط) () (ج)- (زنك أنسولين) () (د)- (صافي+ مخلوط) ()

5- عدد المرات التي يأخذ فيها الطفل الأنسولين خلال اليوم

- (أ)- (قبل الفطور+قبل الغدا) () (ب)- (قبل الفطور + قبل العشاء) ()
(ج)- (قبل الفطور+ قبل الغداء + قبل العشاء) () (د)- (كل ما ذكر صحيح) ()

6- يتم اخذ الأنسولين قبل الوجبة بي

- (أ)- (ساعة) () (ب)- (ساعتين) () (ج)- (ربع ساعة) () (د)- (لا اعرف) ()

7- حقنة الأنسولين بها

- (أ)- (80 وحدة) () (ب)- (100 وحدة) () (ج)- (60 وحدة) () (د)- (لا اعرف) ()

8- الخط في حقنة الأنسولين يساوي

- (أ)- (2 وحدة) () (ب)- (4 وحدات) () (ج)- (وحدة واحدة) () (د)- (لا اعرف) ()

9- الأماكن التي يجب اخذ الأنسولين فيها

- (أ)- (أعلى اليدين) () (ب)- (أعلى الفخذين) () (د)- (حول السرة) () (د)- (كل ما ذكر صحيح) ()

10- عدد المرات التي يتم فيها تكرار حقن الأنسولين في المنطقة الواحدة

- (أ)- (خمسة مرات) () (ب)- (سبعة مرات) () (ج)- (عشرة مرات) () (د)- (لا اعرف) ()

11- تكرار الأنسولين في منطقة واحدة يسبب

- (أ)- (تليف في المنطقة) () (ب)- (عدم امتصاص الأنسولين) () (ج)- (لا) يسبب أي ضرر () (د)- (لا اعرف) ()

12- طريقة حقن الأنسولين

- (أ)- (تحت الجلد) () (ب)- (بزاوية 90 درجة) () (ج)- (بزاوية 45 درجة) () (د)- (لا اعرف) ()

13- في منطقة حقن الأنسولين يجب

- (أ)- (نظافة المنطقة قبل الحقن) () (ب)- (دعك المنطقة بعد الحقن) () (ج)- (عدم دعك المنطقة بعد الحقن) () (د)- (لا اعرف) ()

14- إذا تم اخذ الأنسولين ولم يتم تناول الوجبة بعده

- (أ)- (يحدث هبوط شديد في سكر الدم) () (ب)- (يحدث ارتفاع في سكر الدم) () (ج)- (لا يؤثر علي السكري) () (د)- (لا اعرف) ()

15- إعطاء الأنسولين للطفل

- (أ)- (بواسطة احد أفراد الأسرة) () (ب)- (بواسطة الأم) () (ج)- (بواسطة الطفل نفسه) () (د)- (بواسطة آخرين) ()

16- اذا كان المريض لا يريد تناول وجبة الفطور فانه

- (أ)- (ياخذ جرعة الأنسولين) () (ب)- (لا ياخذ جرعة الأنسولين) () (ج)- (لا يؤثر اخذ الجرعة أو عدم أخذها) () (د)- (لا اعرف) ()

17- طريقة حفظ الأنسولين

- (أ)- (في الفريزر) () (ب)- (في باب الثلاجة) () (ج)- (تحت الزير) () (د)- (كل ما ذكر صحيح) ()

18- قبل استخدام الأنسولين يجب

- (أ)- رج الفتيل () (ب)- عدم رج الفتيل () (ج)- التأكد من تاريخ الانتهاء () (د)- لا اعرف ()

19- معرفة الأم بالأنسولين تم اكتسابها من

- (أ)- الطبيب المعالج للطفل () (ب)- وسائل الإعلام ()
(ج)- الاطلاع () (د)- كل ما ذكر صحيح ()