

Assessment of Mother's Knowledge Regarding Insulin injection of Children with Diabetes Mellitus Type 1

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ABSTRACT:

Diabetes is one of the main health problems in the world. it's one of the main causes of illness and death. It's complication leads to the rise in disability, reduced life anticipate and many health care expenses to the community. A Descriptive cross-sectional design is used through the present study in order to : assess the mother's knowledge regarding the insulin injection of their children with diabetes mellitus type 1. and to determine the relationship between the mothers' knowledge and their socio- demographic characteristics. The period of the study is from 20th September 2018 until August 20th , 2019. A non-probability (purposive sample) of the study consisted of (100) mothers with their diabetic children. Those who visit Al- Sadder Medical city / Al- Najaf Center for Diabetes and Endocrine, are included in the study sample. The data are collected through using a well-designed questionnaire that consist of (2) parts: Part I consists of socio demographic Characteristics of diabetic children containing (4) items. In addition to Part I consists of socio-demographic characteristics of mothers; it contains (7) items. Part 2 consists of Information about the mothers knowledge regarding Insulin injection containing (19) items . Reliability of the questionnaire is determined by using the Alpha Cronbach's technique, and the validity through (23) experts from different specialties (Face Validity) for reviewing the study instrument. The data was analyzed through using of the descriptive and inferential statistical analysis approaches. The findings of the present study indicate that the Overall assessment for Mothers' Knowledge about the management of diabetes mellitus are Fair. Also there is a highly significant association between the Mothers' Knowledge concerning management of diabetic children and their (Number Of Children, Father's Occupation, Father's Education, and Mother's Education). While there is a non-significant relationship with remaining demographic and clinical data. The study concludes The study concludes most mothers have insufficient knowledge about management their children with diabetes mellitus type 1 and that is a strong effect of educational levels of mothers on management of diabetic children. The study recommends that An educational program should be designed and implemented to increase mothers information about insulin injection of their children with T1DM in order to reduce or prevent complications, and Make new unit within the diabetes center to develop the association between mothers and center to training mothers of diabetic on management and insulin injection.

KEY WORDS: Assessment, Mother's, Knowledge, insulin, Children with Diabetes, Type 1 diabetes.

INTRODUCTION:

Proper insulin injection practice is essential for better diabetic control. This study aims to assess the insulin injection practice of patients with diabetes (Poude et al,2017)

As indicated by the most recent version of the Diabetes Atlas, an expected 490,100 youngsters underneath the age of 15 years are living with type 1 diabetes.1 A further 77,800 kids less than 15 years are expected to develop the illness in 2011 (Guariguata , 2011).

Diabetes Mellitus is a global health issue affecting children, adolescents, and adults that requires continuing care and instruction. When compared with the general population, mortality and morbidity is increased in diabetes, due mainly to connected Chronic complications of diabetes such as retinopathy, neuropathy, coronary heart disease and nephropathy, which are still present, might be prevented . A cute metabolic complications (e.g. diabetic ketoacidosis) remain to be a common acute complication to main causes of mortality in developing countries (Cade,2008).

Diabetes Mellitus is a chronic disorder of metabolism characterized by a partial or complete lack of the hormone insulin. It is the most widely recognized metabolic infection, bringing about metabolic alteration or physiologic change in every aspect of the body . Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset diabetes) is described by inadequate insulin creation in the body. Individuals with type 1 diabetes require day by day organization of insulin to manage the measure of glucose in their blood. If they do not have admission to insulin, they cannot survive (WHO,2016) .

Type 1 diabetes is described by destruction of the pancreatic beta cells, which create insulin, this usually leads to absolute insulin deficiency, Type 1 diabetes is one of the most common endocrine and metabolic conditions in childhood. The International Society for Pediatric and Adolescent Diabetes (ISPAD) depicts the objectives for working with kids and teenagers with diabetes as taking after: ideal wellbeing, and a good quality of life emphasizing the importance of age-appropriate education and the addition of the family, school or college in the process (Jonsson, 2014).

The discovery of insulin in 1921-22 was one of the best forward ever. People, for the most part kids with type 1 diabetes, whose futures were measured in months were currently ready to anticipate lethal ketoacidosis by taking infusions of rough "dissolvable" (later known as general) insulin. So insulin a hormone that raises the blood glucose level by setting off the breakdown of glycogen to glucose (Shapiro,2015).

Kinds of insulin combine fast acting, short acting, intermediate acting, and long acting (Table 2.3). Each sort works at an alternate pace and most youngsters will utilize more than one write. Sometimes premixed mixes of the middle of the road and short or quick acting, for example, 70% NPH and 30% standard, might be utilized. Once more, this relies upon the requirements of the kid. Insulin can be kept at room temperature (insulin that is controlled frosty may expand inconvenience with infusion) yet ought to be disposed of 1 month in the wake of opening regardless of the possibility that refrigerated. Any additional unopened vials ought to be put away in the icebox (Kyle and Carman, 2013)

Insulin types, Action, and Duration				
Type	Generic (Brand) Name	Onset	Peak	Duration
Rapid acting	Aspart/(Novolog) Lispro/(Humalog) Glulisine/(Apidra)	Within 15 minutes	30-90 minutes	3-5 hours
Short action	Regular/(Humulin R, Novolin R)	30-60 M.	2-4 hours	5-8 hours
Intermediate action	NPH (Humulin N, Novolin N)	1-3 hours	2-4 hours	10-16 hours
Long acting	Glargine(Lantus) Determir(Levemir)	1-2 hours	No clear peak, offer continuously steady coverage	6-24 hours

A child needs infusions of insulin to enable his or her body to utilize the glucose in the nourishment for energy. Insulin brings down blood glucose. The sum and sort of insulin child requires to rely upon his or her eating regimen, movement and different needs (Table 2.4) demonstrate the act of insulin infusion for diabetic kids (Hamilton Health Sciences, 2008).

A few kids require a program of insulin treatment that includes three injections day by day (a short-acting and middle of the road acting insulin before breakfast, a short-acting insulin before dinner, and a sleep time infusion of a moderate acting insulin). Still others get an infusion of general or Humalog insulin before every feast, in addition to a sleep time infusion of middle of the road acting insulin (a sum of four infusions day by day). Despite of the fact that a regimen with the least infusions every day at first appears to be invaluable, various infusions consider more prominent variety in movement and supper utilization (Pillitter, 2010)

The fundamental point of each diabetes management is to enhance controlling the glucose in the blood. Management select for diabetes be disposed to be numerous and quality of life of children and their family.(Gupta ,2007). Along these lines, the health care group must be the guides who set the phase, provides instruction and oversight and helps to re-focus the efforts when the aims were not being met at all (Al-Odayani et al., 2013).

Methods And Materials

Design of the Study:

A descriptive cross-sectional design was adopted in the current study to achieve the early stated objectives. The period of the study is from 20th September 2018 until August 20th , 2019.

Setting of the Study:

The study was conducted in Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate / Al-Sadder Medical City/ At Al - Najaf Center for Diabetes and Endocrine .

Sample of the Study:

A Non-probability (purposive sample) of the study consisted of (100) mothers with their diabetic children , those who visit Al- Sadder Medical city / Al- Najaf Center for Diabetes and Endocrine, are included in the study sample.

Study Instrument:

An assessment tool was adopted and developed by the researcher to assess the mother's knowledge regarding insulin injection . The complete instrument of the study consists of (2) parts:

Part I: Socio-Demographic Characteristics of Diabetic Child .

Part II: Information of the Mothers Knowledge their practices about insulin administration.

Data Collection:

The data collection is done by applying of the developed questionnaire with the aid of arranged interview. The researcher uses Arabic version of the questionnaire. The study subjects are interviewed in a similar method. The data collection process has started from March 28 , 2018 to June, 11th, 2018. The interview technique spends about 20-25 minutes for each subject.

Validity of the Instrument:

The questionnaire validity faces validity for the initial developed instrument which is specified through panel of (23) experts (with experience of > 5 years at their jobs field.

Statistical analysis:

The data were analyze through application of the descriptive and inferential data analysis methods, included:

- Frequency, mean, Standard Deviation , and mean of scores.
- Chi-square.
- Alpha Cronbach for the reliability of questionnaire (Internal consistency).

STUDY RESULTS AND FINDINGS

Table (1) Children’s and their Parents Demographic Data (n 100)

Children’s and Their Parents Demographic Data	Rating And Intervals	Frequency
Age / Years	<= 5.00	11
	6.00 - 8.00	19
	9.00+	70
Gender	Male	53
	Female	47
Number of Children In The Family	<= 3.00	32
	4.00 - 6.00	54
	7.00+	14
Number of Diabetic Child	<= 2.00	49
	3.00 - 4.00	30
	5.00+	21
Age of Mothers / Years	<= 29	12
	30 – 39	45

	40+	43
Marital Status	Married	98
	Widowed	2
Father Occupation	Dead	2
	Highly Qualified	1
	Lower Professional	36
	Unskilled	61
Mother Occupation	Lower Professional	8
	Unskilled	92
Father Education	Dead	2
	Illiterate	12
	Read And Write	6
	Primary School	18
	Intermediate School	28
	Secondary School	21
Mother Education	High Education	13
	Illiterate	16
	Read And Write	7
	Primary School	35
	Intermediate School	18
	Secondary School	16
	High Education	8
Family Type	Nuclear	74
	Extended	26
Socio-Economic Status	Middle	65
	High	29
	Low	6
Residency	Urban	80
	Rural	20

Table (1) shows the Children's and their parents Demographic Data of the study sample .The majority of the study sample (70 %) are at age (9.00+). Regarding gender the study results revealed that the majority (53 %) are male. About (54%) are Number of Children in the Family between (4.00 - 6.00), and about (49%) are number of diabetic child. Regarding the age of mothers, the study sample show (45%) are within the age (30 – 39) , Concerning

the marital status the highest percentage (98%) are married. Also concerning the father occupation the majority of the study sample (61%) are unskilled, and Regards the mothers occupation, the majority of the study sample (92%) are unskilled , and father education show (28%) are intermediate school , and Regards the mother education the study show that (35%) are primary school graduate , Concerning the family type the results show that (74%) are nuclear type. As for the socio-economic status more than half of the sample (65%) reveal their economic status who are middle , and (80 %) are living in urban residency.

Table (2) Association between the Overall Mothers’ Knowledge about Management of Diabetes Mellitus and selected variables.

Selected Variables	Chi-Square Value	D.F.	P-Value
Number of Children	14.475	4	0.006
Number of Diabetes Children	5.064	4	0.281
Age of Mothers	6.602	4	0.158
Marital Status	.680	2	0.712
Father’s Occupation	34.149	6	0.001
Mother’s Occupation	3.578	2	0.167
Father’s Education	44.211	12	0.001
Mother’s Education	21.496	10	0.018
Family Type	2.366	2	0.306
Socio-Economic Status	4.177	4	0.383
Residency	5.693	2	0.058
Age of Child At Diagnosis	2.650	4	0.618
Disease Duration	1.136	4	0.888
Visit Center	4.180	2	0.124

Table (2) reveals that there is a highly significant association between the Mothers’ Knowledge concerning management of diabetic child and their (Number Of Children, Father’s Occupation, Father’s Education, and Mother’s Education), while there is a non-significant relationship with the remaining demographic and clinical data.

Table (3): Assessment of Mothers’ Knowledge (Mothers’ knowledge about their practices about insulin administration) (n 100)

List	Items	M.S.	Std. Deviation	RS%	Assessment
1.	When using bottle of insulin placed an hour before the administration at room temperature to reduce the irritation at the injection site as a result of giving the cold insulin	1.9	0.4	63.3	Fair
2.	Check the expiration date on the insulin bottle	2.0	0.8	66.7	Fair
3.	Wash hands Before and after preparation	1.8	0.8	60.7	Fair
4.	Roll the bottle of insulin between the palms of the hand to be confused before the withdrawal of insulin	2.4	0.6	79.7	Good

5.	Clean rubber stopper on insulin bottle with alcohol wipe	1.2	0.5	39.7	Poor
6.	Remove syringe cap and pull air into the syringe; line up the end of the black plunger to the exact amount the insulin dose will be	2.3	0.5	78.0	Good
7.	Turn the insulin bottle upside down and pull the syringe plunger so that the insulin enters the syringe until the top of the black plunger exactly lines up with the dose of insulin to be given	2.1	0.4	69.3	Fair
8.	Mix short acting and medium acting insulin accordance with instructions physician	2.6	0.6	86.7	Good
9.	Remove every air bubble, always checking that the dose is exact	2.7	0.5	91.3	Good
10.	Not to touch the needle to keep it sterile	2.8	0.5	93.3	Good
11.	The arms, thighs, hips, and abdomen are usual injection sites for insulin	2.2	0.6	74.7	Fair
12.	Tell the child to relax the muscles in the area of injection to decrease the pain	1.4	0.6	46.3	Poor
13.	Pinch up the skin slightly and gently, with the syringe at a 90-degree angle	2.3	0.6	77.7	Fair
14.	Slowly inject the dose of insulin	2.5	0.6	83.0	Good
15.	Do not change the needle direction during insertion or withdrawal	1.9	0.6	63.0	Fair
16.	Discard the used syringe in a hard, rigid container with a tight-fitting lid	1.7	0.6	55.7	Fair
17.	Rotate sites with each injection	2.3	0.7	75.3	Fair

Table(4) shows Mothers' knowledge about their practices of insulin administration domain items are Poor in (Clean rubber stopper on insulin bottle with alcohol wipe), (Tell the child to relax the muscles in the area of injection to decrease the pain), (After finish using insulin must be kept in a refrigerator at a temperature 4°C), and (Allowing the child to participate may help the child feel more in control of the condition), and are Good in the following items (Roll the bottle of insulin between the palms of the hand to be confused before the withdrawal of insulin), (Remove syringe cap and pull air into the syringe; line up the end of the black plunger to the exact amount the insulin dose will be),(Mix short acting and medium acting insulin accordance with instructions physician),(Remove every air bubble, always checking that the dose is exact), (Not to touch the needle to keep it sterile), and (Slowly inject the dose of insulin), while it is Fair in other items.

Discussion:

The present study revealed that (70%) among diabetic children of the study are within (9 and more) years. This outcome is reinforced by a study done by Darwish et al., (2011) who concluded in their results that the dominant age of the study are 9 years old and more.

Regarding gender, the results reveal that the Majority are (53%)of subjects are males. Several studies are in agreement with the results of the present study, Maja , et al., (2016) Alisha et al., (2012); and Khandelwal et al., (2016) and Noorani et al., (2016) . In their studies they Mentioned that males are the dominant gender for children with diabetes mellitus. This will lead to the fact that the diabetes mellitus are more common in male than in female.

Regarding the number of diabetic children, the results reveal, that the Majority are (49%) of subjects are <=2 (middle child). This outcome is reinforced by a study done by Moawad et al., (2014) who concluded in their results that the highest percentage was for middle child.

Regarding age of mothers, show that there are (45%) among mothers diabetic children of sample study is within (30-39),this result agrees with the results done by Abdel Megeid and El-Sayed ,(2012) who concluded in their results that the dominant age of the study sample are 30 years old and more.

Concerning the Martial status, the majority of subjects (98%) are married. this result is agrees with the results done by Al-Odayani et al., (2013) in this study they found that the most of the sample of their study samples were married mothers.

In regard to the mother's occupation, the highest percentage of mothers is unskilled (housewife). This result is matches with Abdel Megeid and El-Sayed ,(2012). mentioned that the most of mothers are housewives.

Concerning the father's education the higher percentage (28%) are intermediate school. This results is an agreement with the results which are obtained from Amer,(2005) .They found that the majority of study subjects are completed intermediate school graduates .

Concerning the type of family, the highest percentage of participants is from Nuclear families. This result is an agreement with Khandelwal et al.,(2016), who reported that the majority of study sample are from Nuclear family.

Regarding to socio-economic status, the most of the study sample are with middle socio-economic status. This result approving with Johnson et al., (2001). stated that the most of the study sample are with middle socio-economic status.

Regarding Residency, the current study results show that most of the sample (80%) live who at urban areas, and remaining is living in the rural areas, This result is an agreement with AL-Rubae, (2013), who reported that the majority of study sample from urban. these results might come because of the Diabetes Mellitus that refer to a modern scourge of an industrialized society .therefore, the diabetes mellitus incidence increases in people who live in urban areas, than those in rural areas. Also those individuals in rural residential area often practice daily exercises when compared with those in urban areas, so they less risky for diabetes than urban residents. Furthermore, the rural residents are lived in a good environment in regarding to noises, pollution, and psychological stressors so they less prone to get Diabetes Mellitus because of the danger reasons that are common in town that countryside areas e.g. psychological stress.

The study results reveal that there is a high-significant relationship between the mothers knowledge and their (Number of children, Father's occupation, Father's education, and mother's education), while there is a non-significant relationship with other demographic and clinical data. These study results are supported by the Maureen et al., (2006) who indicated that there is a high significant effect of Number of children (family composition) on their mothers knowledge, Forsander, (2000) who reported significant relationship between father education on their mothers knowledge about management of diabetic children.

Conclusion :

the study concludes the following :

- 1- . Most mothers have insufficient knowledge about Practice of Insulin Injection for Diabetic Children
- 2-. The great member of children with T1DM are males.

- 3- . There is a strong effect of educational levels of mothers on management of diabetic children.
- 4- Education about management is not applied by medical nursing staff for most of the mothers who attend the center.

Recommendations :

the study recommends that:

- 1- Mothers need to instruction with administration of insulin to provide them with new devices.
- 2-An educational program should be designed and implemented to increase mothers information about care and treatment of their children with T1DM in order to reduce or prevent complications .
- 3- Make emphasize must be direct toward the helping for sharing in continues educational program and course by nursing staff related to insulin injection of diabetic children.
- 4.Nurses providing scientific booklet , publication and journal about diabetes mellitus type1.
- 5.Make new unit within the diabetes center to develop the association between mothers and center to training mothers of diabetic on management and insulin injection

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