

## **Study the incidence of Diabetes mellitus Type 1 among children in primary school age**

**\*Amany Mohamed Jasim and \*\*Safaa ,S.Abd Al-Hamid**

\*Medical analysis Dept. College of Medical & Health Technology & \*\* Biochemistry , Toxicol. & Feed Def. Department, Animal Health Research Institute, Dokki, Giza.

### **Abstract**

The present study included 150 sample collected from children in primary school age ( male and female ) from (5-13) years attending laboratory of Karbala Hospital in Iraq . All children blood samples were examined to estimate their blood Glucose level .Results suggested that the incidence of diabetic children in primary school age did not have a relation with age and gender , diabetes was also more frequently among who accidentally acquired the disease and those who had psychological pressure. There was correlation between diabetes and urinary tract infections and other diseases among diabetic children studied

**Key words :** primary school, ketoacidosis, nutrition, Karbala, Glucose

### **Introduction**

Diabetes mellitus is a group of diseases characterized by a high levels of glucose in blood resulting from defects in insulin production, action, or both .The disease is associated with serious complications like damage to the cardiovascular system, kidneys, eyes, nerves, blood vessels, skin, gums, and teeth. (**McCance et al,1994**).

Type 1 diabetes occurs when the beta cells of islets of Langerhans, which are responsible for insulin production, are progressively destroyed by the immune system, The body's ability to produce insulin becomes progressively impaired until eventually no insulin is produced (**Lawrence et al,2008** ). Insulin deficiency results in decrease insulin utilization and increase hepatic glucose production leading to hyperglycemia. In addition, there is an increase breakdown of adipose tissue this may leading to ketonemia and diabetic ketoacidosis .the disease may if left untreated is potentially fatal (**Handelsma,2009**). Symptoms of type 1 diabetes in children tend to develop rapidly over a period of a few weeks and the disease can affect children or adults but it represents a majority of the diabetes cases in children (**Haller et al,2005**). Predisposition to urinary tract infections (UTIs) in diabetes mellitus in children results from several factors which increases with longer duration and greater severity of diabetes ,high urine glucose content and defective host immune factors predispose to infection. (**Honor,2016**). In many cases, children with type 1 diabetes are not diagnosed until they are seriously ill, and in a few tragic cases, this delay in diagnosis can even be fatal (**Maughan,1982**).

**This study is aimed to:**

- 1-study the incidence of diabetes mellitus type1 among children.
- 2-study the relation between age and sex among diabetic children studied.
- 3-study the causes of diabetic among patient children .
- 4-study the relation between diabetes mellitus and urinary tract infection among children studied

**Materials and Methods**

A total of 150 sample were collected from children in primary school age from (5-13) years children ( male and female ) attending laboratory of Karbala Hospital in Iraq .during a period of 3/7/2015 to 1/4/2016 .A Questionnaire sheet was filled out for each child which included age, sex ,causes of disease, type of analysis, The proportion of diabetes the relation with other disease Glucose estimation procedure was determined according to (Maughan,1982). A series of simple methods for the measurement of these metabolites whereby all can be measured on a single 20-microl blood sample is described here. All methods, with the exception of that for glucose, which is measured spectrophotometrically . samples then read at 510 nm wave length (Alian et al,1995)

**Statistical analyses**

Statistical analyses were performed using SPSS version 17 (SPSS 14,2006) for Windows(Statistical Package for Social Science, Inc.,Chicago, IL, USA).Descriptive analysis was obtained percentage and qi square of the variables of the parameters included in this study.

**Results and Discussion**

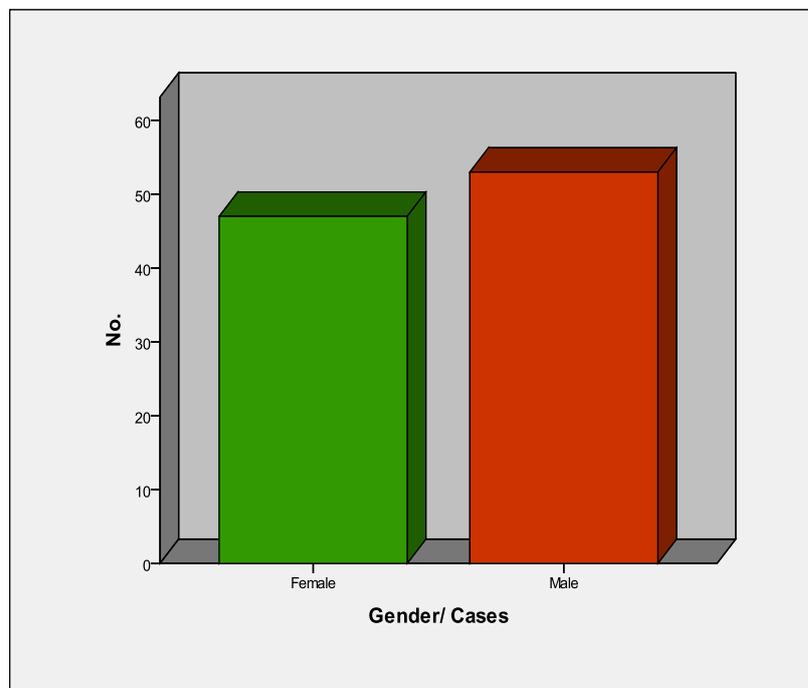
**Table (1): Distribution of diabetic children and control groups according to Gender and age groups**

Gender	Cases(n=100)		Control(n=50)	
	No.	%	No.	%
Female	47	47.0	25	50.0
Male	53	53.0	25	50.0
<b>Test of sig.</b>	$X^2 = 5.399$ P>0.05 (NS)			
<b>Age groups(Years)</b>				
(5-7)	22	22.0	17	34.0
(8-10)	30	30.0	17	34.0
(11-13)	48	48.0	16	32.0
<b>Test of sig.</b>	$X^2 = 4.119$ P>0.05 (NS)			

**Table (1)** showed the distribution of children studied according to age and gender no significantly differences were noticed among healthy male and female and diabetic , this result was in agreement with (**Kelly et al,2002**).

**Mousse et al (2005)** documented that the incidence of the disease were increase with the age of children , other study by (**Mohd,2008**) suggested that Type 1 diabetes most likely to affect kids who are girls ,Overweight children who have a family history of diabetes and if have a problem of insulin resistance

No significantly differences were also noted among healthy male and female among diabetic children , this may be due to the hormonal changes begins during adolescence age(**SPSS 14,2006** ).



**Figure.(1):** Distribution of children studied according to gender

**Table (2): Distribution of diabetes according to causes and Duration of disease**

Causes of diseases	Cases studied	
	No.	%
<b>Accident</b>	65	65.0
<b>Bacterial infection</b>	8	8.0
<b>Genetic</b>	3	3.0
<b>Psychological pressure</b>	24	24.0
<b>Total</b>	100	100.0
<b>Duration of diabetes (Years)</b>	<b>Cases studied</b>	
<b>(&lt;1)</b>	20	20.0
<b>(1-3)</b>	47	47.0
<b>(4-6)</b>	19	19.0
<b>(7-9)</b>	9	9.0
<b>(10+)</b>	5	5.0
<b>Total</b>	100	100.0

**Table 2** showed the distribution of the causes of diseases among patients studied, the incidence of diabetes was more frequently among patients who accidentally acquired the disease( 65%) followed by children who had psychological pressure( 24%) ,children who had bacterial infection (8% ) and genetic reason( 3% ) respectively

**Loredana. ( 2005)** also revealed that psychological pressure and stress may increases the risk for diabetes mellitus, especially in overweight children and even young individual ,any psychological changes may alters the level of insulin needs in blood .

**Table (3): Distribution of children studied and control according the incidence of urinary tract infections**

urinary tract infections		Cases(n=100)	Pecentag(%)
	No	39	39.0
	Yes	61	61.0
	Total	100	100

**Table (4): Distribution of children studied and control according to infected with other diseases by gender**

Infected with other diseases	Cases(n=100)				Control(n=50)			
	Female		Male		Female		Male	
	No.	%	No.	%	No.	%	No.	%
NO	30	30.0	35	35.0	15	30.0	16	32.0
Yes	17	17.0	18	18.0	9	18.0	10	20.0
Test of sig.	MCP < 0.001 (HS)							

**Table 4** showed according to the presence of other diseases( Sensitivity in chest, Anemia , weakness in eye and wheat allergy ) among children studied and control group according to gender ,highly statistically significant were recorded among male and female studied compared with control group at **P < 0.001**,the results were in agreement with **Loredana ( 2005)**who revealed diabetes, may related with the presence of other diseases which include nephropathy, retinopathy and neuropathy, are characterized by damage to the microvasculature of the kidney, retina and neurons (**Marcovecchio et al,2009**)

### Conclusion

1. The incidence of diabetic in primary school children not have a relation with age and gender
2. Incidence of diabetes was more frequently among who accidently acquired the disease and those who had psychological pressure
3. Incidence of diabetes was also more frequently among patients who had urinary tract infections than those were none .

4. Diabetes was also noted in high frequently among children who had Sensitivity in chest, Anemia , weakness in eye and wheat allergy

### **Recommendation**

- 1-Children with type 1 diabetes should receive diet nutrition , nutrition therapy can reduce glucose in blood improve clinical and metabolic outcomes. patients
- 2-Reduced caloric intake to achieve and maintain a healthier body weight of diabetic Children should be a treatment goal to avoid overweight or obese.
- 3-Intensive lifestyle interventions in children with type 2 diabetes can produce improvements in weight management, fitness, glycemic control

### **References**

- McCance DR, Hanson RL, Charles , Jacobsson LTH, Pettitt DJ, Bennett PH.(1994):** Comparison of tests for glycated haemoglobin and fasting and two hour plasma glucose concentrations as diagnostic methods for diabetes. *BMJ*; 308: 1323–
- Lawrence J.M, Contreras R, Chen W, Sacks DA (2008):** Trends in the prevalence of preexisting diabetes and gestational diabetes mellitus among a racially/ethnically diverse population of pregnant women, 1999-2005. *Diabetes Care* 31 :899-904.
- Handelsma, Yehuda, M.D.(2009):**A Doctor's Diagnosis: Pre-diabetes. Power of Prevention, *Inter J.Pharm Pharmaceu.Vo11 ( 2)*1-4
- Haller M.J, Atkinson M.A, Schatz D. (2005) :**Introduction Type 1 diabetes mellitus. *Pediatric .Clin. North .Am.* 52(6):1553-78
- Honor ,W (2016) :**Diabetes in Children and Teens: Signs and Symptoms  
<http://www.medicalnewstoday.com/articles/284974.php>
- Maughan RJ (1982 ) :**A simple, rapid method for the determination of glucose, lactate, pyruvate, alanine, 3-hydroxybutyrate and acetoacetate on a single 20-ml blood sample. *Clin Chim Acta.* 1;122(2):231-40.
- Alian Gaw, Robert A. Cowan ,Denis S.T.J. O Reilly , Micheal J . James Shephere (1995):** Clinical Biochemistry .Glucose metabolism and D.M 1<sup>st</sup> ED. Distribution in the United State of American by Churchill Livingstone Inc, , 1<sup>st</sup> Ed. P:58-59.
- SPSS 14 .Statistical Package for Social Science.SPSS for windows Release14.0.0,12 ,(2006):** Standard Version, Copyright SPSS Inc., 1989-2006,All Rights Reserved, Copyright ® SPSS Inc
- Kelly J. A .; Nilka R. B. , Kelly ,M.; Linda Q., M.;,Linda, S. G, and Michael. M. E, (2002):**Trends in Diabetes Prevalence Among American Indian and Alaska Am. J .Pub. Health. 92(9): 1485–1490
- Moussa M.A, Alsaeid, M, Abdella N, Refai T.M, Al-Sheikh N, Gomez J.E.(2005):** .Prevalence of type 1 diabetes among 6- to 18-year-old Kuwaiti children.*Med Princ.Pract.* 14(2):87-91

**Mohd, R.S.(2008 ):**Life Event, Stress and Illness Malays J. Med .Sci.15(4): 9-18

**Loredana., M. M (2011 ):**Microvascular disease in children and adolescents with type 1 diabetes and obesity *Pediat. Nephrol.* 26, (3,)365–375

**Marcovecchio M.L, Dalton R.N, Schwarze C.P (2009):**Ambulatory blood pressure measurements are related to albumin excretion and are predictive for risk of microalbuminuria in young people with type 1 diabetes.  
52:1173–1181