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A descriptive and statistical study for diabetics under 18 years of age in Thi-Qar Province for the year 2020

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Abstract:
The aim of this study was a descriptive and statistical study of the types of diabetes that affect people under the age of 18. This study was conducted at the Diabetes and Endocrinology Center in Nasiriyah, based on hospital statistics for the year 2020, where the number of cases of children with diabetes reached (165) Cases of diabetes center auditors for the period from January 2020 to December 2020. The information included: (gender, age, type of diabetes, complications, family history, place of residence and type of treatment).
The current study showed that the incidence of diabetes in children under 18 years of age for 2020 was higher in male children (92 cases)(56%) than in female children (73 cases)(34%). The highest incidence was in the age group (10-12) years, then the age group (13-15) years. The highest incidence period of onset of diabetes of diabetes was in the age group (10-12) years (25%), then the group (13-15) years (23%) as in the table (2). The incidence of type 1 diabetes (90%) and type 2 diabetes (10%). The complications with diabetes patients under the age of 18 years, (21%) of the complications were thyroid disease, cardiovascular disease (15%). Both kidney damage and celiac disease (14%), while other complications came at low rates such as asthma, conjunctivitis, and eczema. Diabetes is not due to genetic causes (63%) was especially in type 1 diabetes, due to genetics (family history) (37%) especially in type 2 diabetes. where the incidence of the disease was (52%) in the rural areas and the incidence of the disease in the city center was (48%). where the incidence was dependent on insulin (insulin injections) (88%), and oral medications (12%).
Key words: diabetics under 18 years, Causes, Complications and Family history.

Introduction:

Diabetes is a chronic disease that affects adults and children, and this disease is the inability of the body to produce insulin, or the resistance of the body's cells and their lack of response to the secreted insulin, which leads to the rise in blood sugar levels beyond the normal range, It should be noted that the types of diabetes that affect children are the same types that affect adults, but children in the case of diabetes can suffer from some psychological problems, which makes treatment a little difficult (ADA1, 2020).

Diabetes that can affect children has two main types:

Type 1 diabetes: This type of diabetes is the inability of pancreatic cells to produce insulin responsible for controlling blood sugar levels due to the exposure of pancreatic cells to accidentally attack the immune

system in the body itself, so diabetes is type 1 autoimmune disease, and some have explained the occurrence of this disorder as a result of the child's exposure to certain environmental factors in addition to carrying some genes responsible for increasing the chance of diabetes, it has been shown Children with type 1 diabetes are more likely to suffer from other autoimmune disorders, such as abdominal disease known among the general public as wheat allergies as well as thyroid diseases (ADA2, 2014 ; Ziegler et al., 2013).

Type1 diabetes is more common in children than type2 diabetes, and a 2.3% annual increase in the incidence of type 1 diabetes in children has been reported, where 5-year-olds have the largest increase compared to all groups of children (Vehik et al., 2007).

Since type 2 diabetes is rarely appears in children less than 10 years old. Type2 diabetes is the failure of cells to respond to secreted insulin, as well as the lack of insulin production over time.

In fact, the occurrence of this type of diabetes is not due to the presence of autoimmune diseases, but rather to the interaction of a number of environmental and genetic factors that differ between sick children, including obesity, family history of the disease, and ethnicity (Dabelea et al., 2014).

There are a number of symptoms associated with these two types of diabetes: (increase feeling of thirst and the need to urinate, Feeling abnormal hungry , Weight loss, Feeling tired and general fatigue, Irritability and instability, Fruit-like odor appears from the same patient) (Ozougwu et al., 2013).

Diabetes can affect major organs in the body, increasing the risk of many complications including: Cardiovascular disease, Nerve damage, Kidney damage, Eye damage, Osteoporosis (Cusick et al., 2005).

There is nothing that can be done to prevent a child from developing diabetes (type 1), it can help a child prevent complications by keeping levels of blood sugar close to normal most of the time, and this can significantly reduce the risk for many complications (ADA3, 2020).

The treatment of type 1 diabetes depends on giving the child an insulin injection to compensate for the deficiency in the body, in addition to the necessity of developing a nutritional plan and a plan for exercising the child and educating the child and his parents appropriately about the disease (ADA1, 2020).

Type2 diabetes treatments depends mainly on a child changing certain daily habits and lifestyles, such as stimulating exercise, losing weight and eating healthy food, and at some point in their life they may need to take certain types of oral medications to control blood sugar level , or maybe you need insulin, or both options for treatment (Siminerio et al., 2014).

Diagnosis: There are several tests, for the detection type 1 diabetes in blood of children: (ADA1, 2020 ; Ziegler et al., 2013).

1. Random blood sugar test: A basic test for type 1 diabetes, it takes a blood sample at a random time, and indicates that the blood sugar level is 200 mg/dL (11.1 mmol/L) or higher for diabetes.

2. A fasting blood sugar test performed after a child fasts overnight indicates a blood glucose level of 126 mg/dL (7.0 mmol/L) or greater, Indicating the presence of diabetes (type 1)

3. Diabetes hemoglobin (A1C) test: In this test shows the average blood sugar level of children over the past 3 months. A hemoglobin level of 6.5% or higher is diagnosed on two separate tests for diabetes patients.

Patients and working methods:

This study was conducted at the Diabetes and Endocrinology Center in Nasiriyah, based on hospital statistics for the year 2020, where the number of cases of children with diabetes reached (165)cases from hospital auditors for the period from January 2020 to December 2020, as shown in the hospital records ,and the information for the study was collected through a simple questionnaire by contacting the patient directly or by looking at the hospital records Information included age, type of diabetes, place of residence, history of the disease, family history, Complications and type of treatment. Arranging the statistics in the form of tables and then performing the statistical analysis using the program (Microsoft Office Excel 2010), where the percentage of the variables in the study was calculated.

Results and discussion:

The prevalence of diabetes is increasing worldwide, studies indicate an increased risk of developing the disease in children, and there are currently no known way to prevent the disease **(ADA4, 2018).**
Through table 1, the current study showed that the incidence of diabetes in children under the age of 18 for 2020 was higher in males children(92 case) than in female children (73 case).
The highest incidence was in the age group (10-12) years (27%), then the age group (13-15) years (21%), where diabetes appears at any stage of life, may occur at an early age with difficulty in detecting the disease.

Table 1: Shows the number of males and females with diabetes under the age of 18

Age	Male	Female	Total	Percentage
1-3	7	3	10	6%
4-6	17	9	26	16%
7-9	20	12	32	19%
10-12	23	22	45	27%
13-15	15	19	34	21%
16-18	10	8	18	11%
Total	92	73	165	100%

Through Table 2, shows the period of onset of diabetes (onset of the condition) for males and females under the age of 18. The Highest percentage incidence was in the age group (10-12) years, which are (25%), and then the category (13-15) years with a rate of (23%).
This is consistent with scientific a research that shows that most cases of diabetes in children and adults under the age of 18 are (11-13) years old, which represents the beginning of the first type of diabetes, and this type is called childhood diabetes because it usually appears at age 15 or younger.
The exact cause of type 1 diabetes is unknown. But from previous studies, it has been found in most children with type 1 diabetes, the body's immune system mistakenly destroys insulin-producing cells in the pancreas when it tries to eliminate harmful bacteria and viruses, and genetic and environmental factors seem to play a role in this process, so type1 diabetes is an autoimmune disease **(Moussa et al., 2005)**.

Table 2: Shows the period of onset of diabetes (onset of the condition) for males and females under the age of 18

Age	Male	Female	Total	Percentage
1-3	4	5	7	4%
4-6	18	8	26	16%
7-9	23	10	33	20%
10-12	22	20	42	25%
13-15	17	21	38	23%
16-18	8	11	19	12%
Total	92	73	165	100%

Table 3 shows the Type of diabetes in children under 18 years of age, where the incidence of type1 diabetes was (90%), and type2 diabetes was (10%).
Type 1 diabetes is an autoimmune disease that destroys beta cells in the pancreas for unknown reasons. It usually occurs in children, where this destruction process occurs quickly and lasts from a few weeks to a few years while it may continue in adults for many years.
Type 1 diabetes can affect people at any age but most often appears in childhood or adolescence, and many people may develop type 1 diabetes at an advanced age **(ADA2, 2014 ; Ziegler et al., 2013)**. While type 2 diabetes damages and destroys beta cells in the pancreas for genetic reasons and may be supported by external factors, this process is too slow to last for decades **(ADA5, 2001)**.

Table 3: Shows the Type of diabetes for patients under the age of 18

Type of diabetes	No. patients	Percentage (%)
Type 1	149	90%
Type 2	16	10%
Total	165	100%

Table 4 shows the complications with diabetic patients under 18 years of age. In the long run, diabetes increases the likelihood of certain complications and health problems, where (21%) of patients were Thyroid disease. Thyroid disease and diabetes are among the most common endocrine disorders in clinical practice. It has been shown that diabetes and thyroid disorders affect each other, and the association between the two conditions has been reported for a long time (ADA1, 2020), thyroid hormones contribute to the regulation of carbohydrate metabolism and pancreatic function, on the other hand, diabetes effects on the Functional tests of the thyroid gland **(Kordonouri et al., 2002).**

Cardiovascular disease (15%), high blood sugar affects the blood vessels, resulting in damage to the body's small and large blood vessels, and may lead to high blood pressure, heart disease and stroke later in life. Both kidney damage and celiac disease (14%), diabetes damages the glomeruli in the kidneys, which filter waste products from the blood, leading to diabetic nephropathy **(ADA1, 2020)**.

Table 4: Shows the Complications for patients under the age of 18

Complications	No. patients	Percentage (%)
Thyroid disease	35	21%
Cardiovascular diseases	25	15%
Kidney damage	23	14%
Nerve damage	21	13%
Celiac disease	24	14%
Asthma	11	7%
Conjunctivitis	19	12%
Eczema	7	4%
Total	165	100%

Table 5 shows the role of family history (genetics) in developing diabetes in children under 18 years of age, Diabetes is not due to genetic causes (63%) was especially in type 1 diabetes, so type 1 diabetes is considered an autoimmune disease. Due to genetics (family history) (37%) diabetes was a metabolic disorder (glucose) that leads to an abnormal rise in blood sugar, as a result of a defect in insulin secretion from the pancreas (insulin deficiency), especially type 2. The body's resistance to insulin function occurs for various reasons that may be psychological, organic, immune or genetic factors. And in doing so, genetics plays an important role in the disease **(Altobelli et al., 1998).**

Table 5: Shows the family history (genetics) for patients under the age of 18

Family history (genetics)	No. patients	Percentage (%)
Yes	61	37%
No	104	63%
Total	165	100%

Table 6 shows the place of residence for diabetic patients under the age of 18 years, where the incidence of the disease in the rural areas was (52%), and the incidence of the disease in the city center was (48%). During this study, there was no significant difference in the incidence of the disease in districts, rural areas, and patients in the city center, where the percentage was close, and this confirms that there is no effect of housing on the incidence of the disease.

Table 6: shows the place of residence for diabetic patients under the age of 18 years

Place of residence	No. patients	Percentage (%)
City center	80	48%
Districts and Rural areas	85	52%
Total	165	100%

Table 7 shows the most important methods used in the treatment of diabetes, as it shows the type of diabetes in children under 18 years of age, where the incidence was dependent on insulin (insulin injections) (88%), and oral medications (12%).

Type1 diabetes (called insulin-dependent diabetes or childhood diabetes) occurs when the pancreas cannot produce enough insulin, and insulin is a hormone that regulates blood sugar levels. The reasons

for the appearance of this pattern are still unknown and there is currently no known way to prevent this pattern and the treatment of diabetes cases depends on giving the child an insulin injection to compensate for the deficiency of the body, in addition to, the needs to develop a food plan for the child so that he eats the need for carbohydrates and foods necessary for his growth and at the same time without causing the blood sugar levels to rise beyond the desired goal.

Type 2 diabetes (sometimes called non-insulin dependent diabetes or advanced diabetes) results from the body's ineffective use of insulin, while treatment is based on oral medications (Altobelli et al., 1998).

Table 7: shows Type of treatment for diabetic patients under the age of 18 years

Type of treatment	No. patients	Percentage (%)
Insulin injections	145	88%
Oral medications	20	12%
Total	165	100%

Conclusion:

The current study showed that the incidence of diabetes in children under 18 years of age for the year 2020 was higher in males than in females, and that the incidence of type 1 diabetes in children is much higher than in type 2.The highest incidence of diabetes onset was in the age group (10-12) years (25%). The most important complications were thyroid disease, cardiovascular disease, both kidney damage and celiac disease.

And the most important causes of diabetes are immune in type1 diabetes and genetic in type2 diabetes. The incidence of the disease was higher in rural areas than in the city center, and patients were more dependent on insulin (insulin injections) than on oral medications.

In addition to the need to develop a nutritional plan for the child to take his needs of carbohydrates and foods necessary for his growth and at the same time without causing an increase in blood sugar levels, and finally teaching the child and his parents ways to deal properly with the disease.

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