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A STUDY OF THE PREVALENCE AND RISK FACTORS OF DIABETES IN CHILDREN IN IRAQ

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Abstract
This study aims to know the prevalence of diabetes among children in Iraq were. A cross-sectional study was conducted from different hospitals in Kirkuk, Iraq. where 120 patients were collected, and the patients were divided into 37 boys and 83 girls. This was designed in order to know the study and prevalence of diabetes in Iraqi children, and we concluded in the study there was no difference in the incidence of diabetes between female and male children and that there was a positive linear relationship between obesity (or higher body mass index) and the incidence of diabetes.

Keywords: Obesity, diabetes, children, BM.

Introduction

The association between obesity and diabetes has been known since antiquity, and it has been observed that diabetes mellitus more often occurs in patients who are overweight [1,2,3].
Where 1800 patients were added every year and according to future expectations, which indicate that the number of patients will increase relatively in the coming years [4,5].
People with type 1 diabetes must supply the blood sugar-lowering hormone insulin for the rest of their lives because their immune system destroys insulin-producing cells [6].
Diabetes develops over the years, and the cells of the body become increasingly insensitive to the hypoglycemic hormone insulin. Thus, this insulin resistance leads to a relative lack of insulin. The patient's body usually still produces enough insulin initially, but its effectiveness in cells does not decrease [7,8]. To compensate, the pancreas increases insulin production; however, at some point, it

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becomes exhausted due to the overload, and then insulin production decreases, and in the advanced stages of the disease, absolute insulin deficiency can occur [9,10,11].

The blood sugar value of children is different from that of adults, and there are also age-related differences in normal values between children. In a one-day-old infant, the values are between 34 and 99 mg/dL, and from the second day of life, the value is between 46 and 81 mg/dL. After that, the same healthy value applies to children, which can be found in the tables [12,13].

Table 1- Blood sugar levels children

Measurement in mg/dl	**healthy value**
Sober	65 – 100
2 hours after eating	80-126
HbA1c	< 6.05

Diabetes in children causes the body's cells to be unable to use glucose from foods to produce energy, which leads to it accumulating in the blood [14,15]. The disease is divided into two common types; The first is caused by a defect in the immune system, and it occurs at an early age, while the second is caused by an unhealthy lifestyle, and the reason behind this type is insulin resistance and monitoring the child is the most important early detection of the problem that can cause health complications that accompany during the age [16,17].

Material and Method

Patient Sample

A cross-sectional study was conducted from different hospitals in Kirkuk, Iraq. where 120 patients were collected, and the patients were divided into 37 boys and 83 girls. This was designed in order to know the study and prevalence of diabetes in Iraqi children.

Study Design

This study was designed based on the prevalence of diabetes in children from 8 to 14 years of age, and it was based on a meta-analysis and the type of relationship between diabetes and children, where the data and demographic information of patients consisting of age, gender, and demographic information were identified.

Impaired fasting glucose, in addition, Distribution of type 2 diabetes risk factors in total participants and impaired fasting glucose cases.

Body mass index, hypertensiona, and family history of diabetes were calculated.

The patient's fasting blood sugar level is measured. And fasting in this context means before the patient eats. The result is called fasting blood sugar. Gently prick your finger or earlobe to get a small drop of blood. This drop is placed on a small stick that is inserted into a blood glucose meter; after about 30 seconds, the device displays the checked blood sugar content

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Study Period

In the beginning, all the licenses allowed for this study were obtained, then information and demographic data on children with diabetes were collected in a full-year period from 7/29/2019 to 7/28/2020

Aim of Study

This study aims to know the prevalence of diabetes among children in Iraq

Results

Table 1- mean SD according to age and Hypertension

Statistics			
		Hypertension	age
N	Valid	120	120
	Missing	0	0
Mean		80.6417	10.9417
Median		80.0000	11.0000
Mode		80.00	12.00
Std. Deviation		11.53496	1.95020
Variance		133.055	3.803
Range		48.00	6.00
Minimum		60.00	8.00
Maximum		108.00	14.00
Percentiles	25	70.0000	9.0000
	50	80.0000	11.0000
	75	89.0000	13.0000

Table 2- relationship between age * sex Crosstabulation

age * sex Crosstabulation				
Count				
		sex		Total
		B	G	
age	8.00	10	5	15
	9.00	1	20	21
	10.00	5	14	19
	11.00	1	10	11
	12.00	10	12	22
	13.00	4	15	19
	14.00	6	7	13
Total		37	83	120

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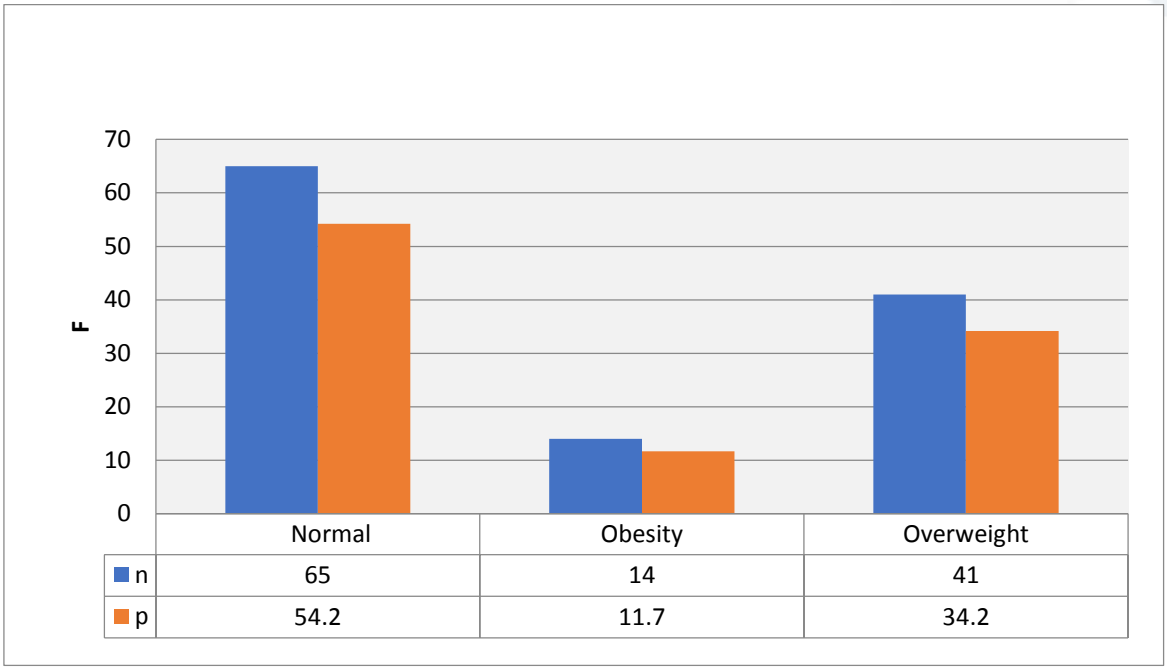

Figure 1- distribution of patient according to BMI

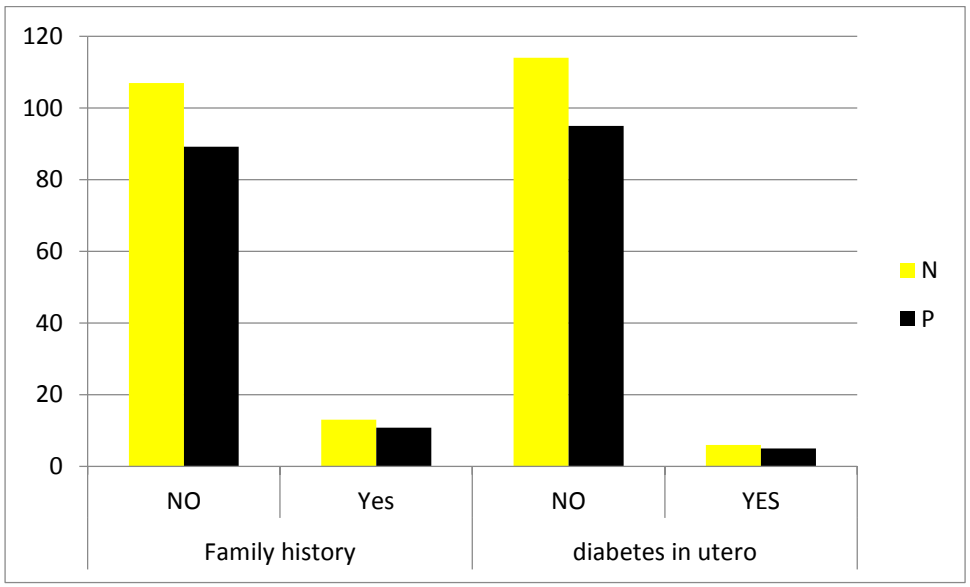

Figure 2- demographic results of patients

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Table 3- results of patients according to RF

		f	P%	VP	CP
Valid	FIRST DEGREE	7	5.8	5.8	5.8
	SECOND DEGREE	17	14.2	14.2	20.0
	THERE ISNT RISK FACTOR	84	70.0	70.0	90.0
	THIRD DEGREE	12	10.0	10.0	100.0
	Total	120	100.0	100.0	

Table 4- Posterior Distribution between age * RF * sex Crosstabulation

age * RF * sex Crosstabulation							
Count							
sex			RF				Total
			FIRST DEGREE	SECOND DEGREE	THERE ISNT RISK FACTOR	THIRD-DEGREE	
B	age	8.00	5	1	4	0	10
		9.00	0	0	0	1	1
		10.00	0	0	5	0	5
		11.00	0	0	1	0	1
		12.00	0	0	10	0	10
		13.00	0	0	4	0	4
		14.00	0	5	1	0	6
	Total		5	6	25	1	37
G	age	8.00	1	0	3	1	5
		9.00	1	1	18	0	20
		10.00	0	0	4	10	14
		11.00	0	0	10	0	10
		12.00	0	0	12	0	12
		13.00	0	3	12	0	15
		14.00	0	7	0	0	7
	Total		2	11	59	11	83
Total	age	8.00	6	1	7	1	15
		9.00	1	1	18	1	21
		10.00	0	0	9	10	19
		11.00	0	0	11	0	11
		12.00	0	0	22	0	22
		13.00	0	3	16	0	19
		14.00	0	12	1	0	13
	Total		7	17	84	12	120

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Discussion

One hundred twenty diabetic children were collected. Information and demographic data about the patients were collected by relying on the electronic information in the hospital. All data was then sent to the expert specialized in statistical analysis, where the program was relied spss soft 20 in data analysis and was found Mean value and sd for age of patient which was 10.9+1.9, and it ranged between 8 to 14 years as for hypertension was 80.64+11.53 as shown in Table 1

In Table 2, which shows the distribution of patients according to gender, it was distributed to 83 children, girls and 37 boys, and the most prevalent category was patients aged nine years.

In Figure 1, we find that BMI was normal for 65 patients, overweight for 41 patients, and obasity for 14 patients.

A recent 2017 King's College London study suggests that obesity in children can increase the risk of developing type 2 diabetes compared to children with a normal BMI.

Children who are overweight have an increased likelihood of insulin resistance. As the body struggles to regulate insulin, high blood sugar leads to a number of potentially serious health problems.

In addition, genetics may also play a role; for example, the risk of developing type 2 diabetes increases if one or both parents have the disease.

During another study to the data similar to our study, the researchers presented the following results. Six hundred fifty-four cases of type 2 DM and 1,318 cases of type 1 were identified. The incidence of type 2 diabetes (per 100,000 person-years) increased from 6.4 cases in 1994-98 to as high as 33.2 in 2009-2013. As for type 1 diabetes, rates rose from 38.2 to 52.1 cases per 100,000 people over the same period. The number of diagnosed cases of type 2 diabetes increased with both overweight and obesity between 1994 and 2013.

Conclusion

Participants with proven obesity, who represented 47.1% of the incidence of type 2 diabetes, were more likely to develop diabetes with an incidence of 4.33 compared to subjects with a normal BMI. The authors determined that during the study, there was no difference in the incidence of diabetes between female and male children and that there was a positive linear relationship between obesity (or higher body mass index) and the incidence of diabetes.

Recommendation

1. The child avoids eating sugars and sweets excessively and replaces them with the natural sugar found in fruits (of course, in a moderate manner.
2. The child should eat a lot of dietary fiber and protein
3. Exercise is very important to prevent obesity and diabetes in children. Physical activity increases metabolism

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