Physical Problems among Children and Adolescents Complain of Diabetes Type I in Erbil City.

المشاكل الجسميه بين الأطفال والمراهقين الذين يشكون من مرض السكري النوع الأول في مدينة أربيل

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الخلاصة:
الخلفية: إن النوع الأول من مرض السكري هو عبارة عن مرض مزمن له تأثير على الحالة الصحية و البدنية.
الهدف: تهدف هذه الدراسة إلى تقييم تأثير داء السكري من النوع الأول على الحالة الجسمية للأطفال و المراهقين.
المنهجية: أجريت دراسة وصفية في مركز ليلى قاسم لرعاية مرضى السكري في مدينة أربيل / إقليم كوردستان - العراق، ابتداء من 15 مايو إلى 13 أب للعام 2012, و تم استخدام المقياس العالمي (النسخة 0.3) الخاص بمرض السكري من النوع الأول (المجال الجسمي) لتقييم المشاكل الجسمية للأطفال والمراهقين الذين يشكون من النوع الأول من مرض السكري. ويتضمن الاستبيان ثلاثة محاور رئيسية و هي: أولا المعلومات الديموغرافية, المحور الثاني يتضمن أسئلة حول العلامات و الأعراض, أما المحور الثالث فقد تضمن أسئلة حول حالتهم الجسمية. و تم الاعتماد على الاستبيان بعد تصديقها من قبل المحكمين و من خلال استخدام معامل الارتباط (r = 0.80) لغرض الثبات، و تم جمع البيانات عن طريق المقابلات المباشرة. و بعدها تم تحليل البيانات من خلال تطبيق برنامج SPSS (النسخة 20). فإذا كانت قيمة p-value يعادل أو اقل من 0.05 يعتبر الارتباط هام.
النتائج: أوضحت نتائج الدراسة أن معظم الأطفال والمراهقين من الإناث، تراوحت أعمارهم بين 11.80 ± 3.12 سنة، معظمهم من الطلاب. فيما يخص الوضع الاقتصادي و الاجتماعي فقد كانت منخفضة. و يعاني بعض المرضى من مشاكل جسمية كالتعب والعطش وكثرة التبول، و أيضا يشكون من اعتلال الشبكية والكلية، ولكن لا يشكون من اعتلال الأعصاب.
الاستنتاج: أظهرت النتائج هذه الدراسة بان معظم الأطفال والمراهقين المصابين بالسكري من النوع الأول يشكون من مشاكل جسمية مثل التعب والعطش وكثرة التبول، وبالنتيجة فقد أثرت سلبا على حالتهم الجسمية.
التوصيات: أوصت هذه الدراسة إلى ضرورة فتح الوحدة الخاصة بالتثقيف الصحي في المراكز الصحية الخاصة بمرضى السكري لغرض تثقف المرضى فيما يخص كيفية التعامل مع المرض من الناحية الجسمية والنفسية و الاجتماعية و استخدام العلاج المناسب.
الكلمات المفتاحية : الوضع الجسمي, الأطفال, المراهقين, مرض السكري من النوع الاول.

Abstract:
Background: Type one diabetes mellitus is a chronic condition that may have an impact on health status affecting the whole of physical activities.
Objective: This study aimed to assess the impact of diabetes type 1 on children and adolescent's physical status.
Patients and Methods: A descriptive study was conducted at Leila Qasim Center for Diabetes Care in Erbil City /Kurdistan Region-Iraq, started from 15th May. 2012 to 13th Aug. 2012. A reliable questionnaire (pedql™ diabetes module version 3.0)(physical problem) was selected to assess the physical problem of children and adolescents complained of type I diabetes mellitus, and it was consisted of three main part which were concerned the socio-demographic characteristics, second information related signs and symptoms, and information related to physical problems, The validity of the tool was applied through 14 panel experts related to the specialty, correlation coefficient was used (r= 0.80), data were collected by direct interview technique; the data were analyzed through SPSS software (version 20), p-value ≤ 0.05 was considered as significant association.
Results: The finding of the study indicated that most of children and adolescents were female, mean of age were 11.80± 3.12 years, most of them were students, and at low socio economic status. The samples were complained of fatigue, thirst, frequent urination, unusual hunger, nocturnal enuresis, and also complained of retinopathy and nephropathy, but not complained of neuropathy.
Conclusion: Children and adolescents with type 1 diabetes complained of physical problem such as fatigue, thirst and frequent urination, and it was affected on their physical status.
Recommendation: Health education can be an integral part of diabetes management in all diabetic clinics and hospitals rather than a set of instructions given once at the beginning of the follow up. Education needs to be supported by psychosocial and possibly family therapy interventions.
Key words: Physical status, Children, Adolescents, Type 1 Diabetes**.**

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INTRODUCTION

Diabetes is a disease in many parts of the world, especially for childhood or adolescences **(1).** Type 1 Diabetes (T1Ds) has a greater negative impact on physical status than other type 2 diabetes **(2).** It is one of the most common chronic childhood illnesses, affecting approximately one in every 400–600 children and adolescents **(3).** The incidence of T1Ds continues to increase by 3-5% per year, which associated with severe morbidity, mortality and enormous health care expenditures, makes T1Ds a prime target for prevention **(4).** It is characterized by chronic hyperglycemia resulting from defects in insulin secretion, or insulin action or both **(5).**

Insulin helps the body use glucose from food for energy. People with T1Ds need to take insulin every day **(6).** The incidence of childhood onset diabetes is increasing in many countries in the world; the overall annual increase is estimated at around 3% with 70,000 children worldwide are expected to develop T1Ds **(7).** Patient and families need to understand what causes diabetes and need to understand how nutrients, physical activity, and insulin interact and how these factors can affect on blood glucose levels **(8).** Assessment of physical problems in people with diabetes is increasingly seen as an important aspect of care, particularly as new treatments and services **(9).** Children with diabetes and their parents consider their overall physical and psychological health, and how this differs from children without diabetes. Diabetic care requires many injections of insulin per day, with an impact on the daily physical of patients and their parents **(10).**

The main aims of diabetes care in children and adolescents are to achieve optimal glycemic control, normal psychosocial development, a major challenge is to maximize physical problem for the adolescent **(11).** Generally, lower physical problem scores were associated with old age, poor glycemic control, an increasing number of hypoglycemic episodes, complications, low levels of education and outcome, self-reported depression, and female gender **(12).** Diabetes in children has been given less attention, and many children that die early with complication **(13).** It is the most common disease which affected the physical problem of children in different aspect of life **(2).**

The world health organization (WHO) reported that diabetes has reached epidemic proportions and expects that 80% of all new cases of diabetes will appear in developing countries by 2025 **(14).** The five countries with the highest percentage of diabetes are the United Arab Emirates, Saudi Arabia, Bahrain, and Kuwait **(15).** The incidence of T1Ds among aged 0–15 years was doubled in Sweden, with the largest increase among children aged 0–5 years **(16).** During the period started in 1stDec. 2007 to 15th Nov. 2008 Leila Qasim Centre (LQC) for diabetes care had registered 62 patients within childhood developmental stage.According to the statistical record of LQC for diabetes care in 2012, the number of diabetic pediatric registration was 230 patients from birth to 15 years old and 50 patients at age 16-18 years old (17).

OBJECTIVES OF THE STUDY:

The study aimed

1. To assess children and adolescent's socio-demographic characteristics.
2. To find out the association between socio-demographic characteristics and physical problems.

PATIENTS AND METHODS

A descriptive study was conducted at LQC for diabetes care in Erbil City in Kurdistan Region of Iraq, this center is the only center which is provide care and cure for all types of diabetes

in Erbil city. A non- probability (purposive) sample of 120(65 children and 55 adolescents)who visited this center for health checkup and routine care, during the period started from May 15th, 2012 to August 13th 2012, were asked to participate in the study, and who were diagnosed by the physician as T1Ds patients. For the purpose of the study a special questionnaire was prepared by the researchers, through the review of related literatures studies. The questionnaire form was consisted of three phase.

Part I: was to assess the socio-demographic characteristics of child and adolescent with T1Ds, which was consisted of general information about study sample with T1Ds such as; age, gender, occupation, duration of illness and socio economic status (SES). A special scale of SES was used according to WHO which includes; parent level education, parent occupation, crowding index and property. It was measured with special scale compose 150 score range from low than 90 score, middle score 90-120 and high 121-150 score. In the second phase; some special questions related to child and adolescent's medical findings about T1Ds which included the medical information of patients with T1Ds,

Part II: consisted of two sections the first section was consisted of 11 related questions, and included the signs and symptoms which were consisted of six items. The second section included the risk factors of disease, the questions related to family history of DM of parent, sibling, and first degree of relative.

Part III: included the physical problem of a reliable tool (Pedql™ diabetes module version 3.0,) available from: http://www.pedsql.org. was selected to assess the impact of condition on physical status of patients with T1Ds, manipulation has made regarding purposive of the study, which was consisted of fatigue, thirst, frequent need urination, feeling unusually hungry, nocturnal enuresis, and hypoglycemia, complications such as neuropathy, nephropathy, and retinopathy. Likert scale was used for all related questions as follow; 1 for never, 2 score for some time and 3 score for severs, was applied. Both genders, aged between 6-18 years, under treatment for more than one year, registered in this center were included; while patients with type 2 of diabetes, gestational diabetes, aged above 18 o less than 6 years old or newly diagnosed were excluded. A pilot study was carried out on 10 patients who were selected randomly**; c**orrelation coefficient was 0.89 which indicated that the scale was adequately reliable. Validity of the instrument was determined initially through the panel of 14 experts of different specialties related to the field of the present study. Official permission was obtained from Ministry of Erbil General Health Directorate and principal of LQC for Diabetes Care. The purpose of the study was explained to all participants; verbal agreements were obtained from participants. Data were collected by using questionnaire format and filled out by the investigators, direct interview techniques was used with whom kindly accepted to participate in the study. Each interview session took approximately 15- 20 minutes. The researchers tried to keep the confidentiality and the anonymity of the data. In the present study, data were analyzed through the use of Statistical Package for Social Sciences (SPSS, version 20). Basic descriptive statistics data analysis and Chi-square was applied for the confirmation of the association between the physical problems and patients socio-demographic characteristics.

RESULTS:

Table (1) : Socio demographic data of T1Ds patients.

Socio demographic data items	**F**	%
	n*=120	**100%**
Age group		
6-9	34	28.3
10-12	31	25.8
13-15	42	35.0
16-18	13	10.9
mean± SD	11.80±3.129	
Gender		
Male	56	46.7
Female	64	53.3
Patient occupation		
Employed	0	0
Unemployed	17	14.2
Student	103	85.8
Education of mother		
Illiterate	54	45
Read and write	18	15
Primary school graduate	28	23.3
Secondary school graduate	11	9.2
Preparatory school graduate	0	0
Education of father		
Illiterate	23	19.2
Read and write	22	18.3
Primary school graduate	32	26.7
Secondary school graduate	21	17.5
Preparatory school graduate	7	5.8
Socio economic status/score		
low (<90)	106	88.3
middle (90-120)	8	6.7
high (121-150)	6	5

n*=number

Table 1 shows the distributions of socio-demographic characteristics of 120 children and adolescents having T1Ds, showed that their ages were ranged between 6-18 years old, and showed that the highest percentages (35 %) of the patients were at the age group 13-15 years and the lowest percentages (10.8 %) were at the age group between (16-18) years: the mean age and SD of the children and adolescent was 11.80±3.129 years old. Only half (53.3%) of them were females while the others (46.7%) of them were males, moreover, the highest percentage (85.8%) of children and adolescents were students. Regarding mother's education, the highest percentages (45%) of them were illiterate. In addition to father's education, the highest percentage (26.7%) graduated from

primary school. Furthermore, according to the classification of their SES, the highest proportion (88.3%) of children and adolescents reported to low SES.

Table (2) : frequency of physical problem of T1Ds

Physical problem	Never		Sometimes		Sever		Total		**MS
	*F.	%	F.	%	F.	%	F.	%	
feeling hungry	0	0	32	26.7	88	73.3	120	100	2.73
feeling thirsty	1	0.8	30	25.0	89	74.2	120	100	2.73
going to bathroom a lot	2	1.7	47	39.2	71	59.2	120	100	2.58
having stomachaches	94	78.3	26	21.7	0	0	120	100	1.22
going low	93	77.5	22	18.3	5	4.2	120	100	1.27
having have headaches	56	46.7	58	48.3	6	5.0	120	100	1.58
feeling tired or fatigue	8	6.7	92	76.7	20	16.7	120	100	2.10
getting shaky	95	79.2	23	19.2	2	1.7	120	100	1.23
getting sweaty	27	22.5	74	61.7	19	15.8	120	100	1.93
having trouble sleeping	33	27.5	82	68.3	5	4.2	120	100	1.77
getting irritable	9	7.5	100	83.3	11	9.2	120	100	2.02

***F=frequency **MS= mean score**

Table 2 shows the result shows that most (73.3%) of them felt hungry, the highest percentages (74.2%) of them felt a lot of thirsty, 59.2% were a lot going to bathrooms, most (78.3%, 77.5%) of children and adolescents had no problem in stomach and losing weight respectively, around half (48.3%) of them were sometimes complained of headaches. the highest percentage (76.7%) of them were felt tired or fatigued sometimes. In general the highest percentage (79.2%) was not getting shaky. most of children and adolescents (61.7%) were sometimes sweaty, more than half (68.3%) getting trouble in sleeping (insomnia), majority (83.3%) of samples were sometimes irritable while only one quarter (21.7 %) of sample size were so irritable.

Table 3: Association between socioeconomic and physical problem

Physical problem	Low	Middle	High	Total	x^2 p. value
Socioeconomic (SES)					
Never	**0**	**0**	**0**	**0**	
Sometime	**74**	**8**	**6**	**88**	**0.05**

Sever	**32**	**0**	**0**	**32**
Total	**106**	**8**	**6**	**120**

Table 3 shows there was significant association between SES and physical problem at (p=0.05).

Table 4: Association between physical problems and signs &symptom of T1Ds

Physical problems Signs & Symptoms	Never F.	Sometimes F.	Sever F.	Total	x^2 p. value
Fatigue					
Frequent	**0**	**51**	**30**	**81**	**0.000**
Infrequent	**0**	**37**	**2**	**39**	
Thirst					
Frequent	**0**	**68**	**32**	**100**	**0.003**
Infrequent	**0**	**20**	**0**	**20**	
Frequent need urination					
Frequent	**0**	**51**	**31**	**83**	**0.000**
Infrequent	**0**	**37**	**1**	**38**	
Felt unusually hungry					
Frequent	**0**	**68**	**31**	**99**	**0.012**
Infrequent	**0**	**20**	**1**	**21**	
Nocturnal enuresis					
Frequent	**0**	**27**	**25**	**52**	**0.000**
Infrequent	**0**	**61**	**7**	**68**	
Hypoglycemia					**0.29**
Frequent	**0**	**10**	**6**	**16**	
Infrequent	**0**	**78**	**26**	**104**	
Total	**0**	**88**	**32**	**120**	

Table 4 shows there were highly significant association between physical problem and signs and symptoms including fatigue at (p=0.000), thirst at (p=0.003), frequent urination at (p=0.000), unusual hunger at (p=0.01), nocturnal enuresis at (p=0.000) while there was no significant association with hypoglycemia at (p=0.29).

Table 5: Association between family history type 1 diabetic with physical problems

Physical problem **Family history**	**Parents**	**Sibling**	**Relative**	**Non**	**Total**	x^2 **p. value**
Never	**0**	**0**	**0**	**0**	**0**	
Sometime	**13**	**8**	**9**	**58**	**88**	**0.05**
Sever	**11**	**0**	**3**	**18**	**32**	
Total	**24**	**8**	**12**	**76**	**120**	

Table 5 shows there were significant association between family history of diabetes and physical problems at p=0.05.

Table 6: Association between physical problems and complication

Physical problem	Never F.	Sometimes F.	Sever F.	Never F.	x^2 p. value
Retinopathy					
Yes	**0**	**7**	**10**	**17**	**0.000**
No	**0**	**81**	**22**	**103**	
Nephropathy					
Yes	**0**	**4**	**6**	**10**	**0.01**
No	**0**	**84**	**26**	**110**	
Neuropathy					**0.28**
Yes	**0**	**2**	**2**	**4**	
No	**0**	**86**	**30**	**116**	
Total	**0**	**88**	**32**	**120**	

Table 6 shows there was a highly significant association between the physical problem with complications of retinopathy at (p=0. 00), nephropathy (p=0. 01) While there was no significant association between physical problem and neuropathy at (p=0.28).

DISCUSSION

Socio- demographic data

Present study shows that the highest percentage of the children and adolescents were at age group of 13- 15 and the mean age and standard deviation of the patients were 11.80±3.129.

This finding agreed with the result of the previous research which is emphasized that about two third of the Saudi Arabia diabetes children (42.1%) were in the age group more than 14 years **(18).** The present study agreed with another study was done by Balasubramanyam in 2006, which found that the highest incidence ratio was observed among the group of adolescent's stage **(19).** And with a study done by Guo *et al*, in 2012 and added that the incidence rates for T1Ds were largely based on observations in children under the age of 15 years **(20).**

The majority of the children and adolescents having T1Ds in the present study were females rather than males, which supported by the study done in Basra on 96 patients who have been admitted to pediatric hospital found that the majority of them were females 65.6% **(4).** While another study was done in Shiraz/ south of Iran, among 94 children and adolescents having T1Ds mentioned that there were 56.4% female and 43.6% male patients **(21).**The result of the present study mentioned that most of the study sample were students, this result was supported by the study finding mentioned that most of children and adolescents having T1Ds were students **(20), (22).**

According to the classification of SES in the present study, it shows that the highest of children and adolescents were from low SES. This result agreed with the study which showed that most people with TIDs were in the middle SES group **(12).**

Physical problem of T1Ds patients

The finding of the present study referred, that the majority of samples complained of thirst and hunger. This result is in agreement with a study mentioned that most physical symptoms of T1Ds patients were excessive thirst, excessive urination, hunger and fatigue [(23)].The result also is in agreement with another study emphasized that the symptoms such as thirst, hunger and frequent urination as an impact on the diabetic patient [(24)].

The results of the present study found that there was a significant relation between SES of the family and physical problems of quality of life. Present study agreed to a study mentioned that there was a significant relation between physical problems among different levels of socio-economic status [(25)].

Association between physical problems and medical data

Signs and Symptom

The present study found that there was highly significant association between physical problem and the symptoms such as hungry, thirsty, fatigue and urination. This result is in agreement with another study done by Hockenberry *et al*, in 2007 emphasized that there was significant association between physical problem and hungry, thirsty [(26)].The present study found that there was no significant relation between hypoglycemia and physical problem, our result was supported by a study finding that the frequency of severe hypoglycemia had no significant association with the physical problem of diabetic patients [(27)].

The Present study found that there was a significant relation between family history of DM and physical problems of quality of life. In a study was done by Ausili *et al* in 2007 found that there was a highly significant relation between family history of DM and physical problems of quality of life.[(10)]

Complication

The finding of the present study reported that there were significant association between physical problem with both of retinopathy and nephropathy respectively, while there was no significant association between neurology and physical problems of T1Ds. Comparable to a study that found an association between nephropathy and reduced health related physical problem in the problem of physical functioning and general health perceptions.[(28)]

CONCLUSIONS

Children and adolescents were complained of physical problem such as hunger, thirst, nocturnal enuresis and the study found a significant relationship between retinopathy and nephropathy as a complication of T1Ds.

RECOMMENDATION

Health education can be an integral part of diabetes management in all diabetic clinics and hospitals rather than a set of instructions given once at the beginning of the follow up. Education needs to be supported by psychosocial and possibly family therapy interventions.

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