

Quality of Life among Adolescents with Type I Diabetes Mellitus at AL-Najaf Center for Diabetes and Endocrine

نوعية الحياة للمراهقين المصابين بالسكري النوع الاول في مركز النجف للسكري والغدد الصماء

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الخلاصة

الهدف: تقييم نوعية الحياة للمراهقين المصابين بالسكري النوع الاول ومعرفة العلاقة بين نوعية الحياة والخصائص الديموغرافية للمراهقين. **المنهجية:** أجريت دراسة وصفية مستعرضة في مركز النجف للسكري والغدد الصماء في مدينة الصدر الطبية للفترة من 20 ايلول 2016 ولغاية 5 تموز 2017. وقد تم اختيار عينة غير احتمالية (غرضية) من 150 مراهق مصاب بالسكري النوع الاول، وقد تم جمع العينة من مركز النجف للسكري والغدد الصماء في مدينة الصدر الطبية. اما البيانات جمعت من خلال استخدام استبانة مصممة تصميمًا جيدًا (شبه منظمة) حيث تضمنت الاستمارة ثلاثة اجزاء: الجزء الاول تضمن الخصائص الاجتماعية والديموغرافية، المستوى الاقتصادي للأسرة والمقاييس الجسمانية وتشمل قياس الوزن والطول. الجزء الثاني: تضمن الخصائص السريرية وقد احتوى على 8 فقرات. الجزء الثالث: تضمن مجالات نوعية الحياة للمراهقين احتوى 51 فقرة. وقد تم تحديد ثبات الاستمارة من خلال اجراء دراسة مصغرة بعد تحديد مصداقيتها من خلال مجموعة من الخبراء (17) خبيراً، واخيراً تم وصف وتحليل البيانات من خلال استخدام المنهج الإحصائي الوصفي والإحصائي الاستدلالي.

النتائج: أن أعلى نسبة 58.0% من المراهقين كانوا من جنس الذكور. 74.7% من المراهقين كان لديهم وزن طبيعي. بينما نوع العلاج كان حقن في 98.7% من المراهقين؛ وكان قياس نسبة السكر التراكمي اعلى من 6.5 في 80.7 من المراهقين؛ كان متوسط التقييم العام لنوعية الحياة هو 2.22 (معتدل) لأن تقييم المجال الاجتماعي ومجال التواصل ضعيف جداً.

الاستنتاج: استنتجت الدراسة ان نوعية الحياة للمراهقين كان متوسط بسبب الانخفاض في المجال الاجتماعي ومجال التواصل للمراهق. وان اقلية المراهقين يعانون من ارتفاع نسبة السكر التراكمي نتيجة لعدم اتباع توصيات الطبيب فيما يتعلق بمراقبة النظام الغذائي وقياس نسبة السكر بالدم باستمرار. كما استنتجت الدراسة ان غالبية عينة الدراسة كانوا من المراهقين الذكور ذوي الاعمار المتقدمة.

التوصيات: أوصت الدراسة بإقامة دورات تثقيفية وتدريبية للمراهقين المصابين بالسكري النوع الاول لتعزيز نوعية الحياة لديهم وكذلك أوصت بمراقبة الكربوهيدرات المأخوذة عن طريق حساب الكربوهيدرات او تقديرها على أساس الخبرة و اعتبارها استراتيجية رئيسية للسيطرة على نسبة السكر بالدم. وأيضاً أوصت الدراسة بان يكون مقدمو الرعاية ومعلمي المدارس على دراية بكيفية اعطاء الأنسولين بناء على أوامر الطبيب في حالة عجز المراهق عن اخذها بنفسه.

ABSTRACT:

Aim of study: To assess the quality of life among adolescent with type I diabetes mellitus and to identify the relationship of adolescent's quality of life and their demographic data.

Methodology: A cross-sectional descriptive design is carried out in AL-Sadder Medical City/ AL-Najaf Center for Diabetes and Endocrine, from September 20th, 2016 until July 5th, 2017. A Non-Probable (Purposive Sample) of (150) Diabetes Mellitus Adolescents is selected: they visited Al-Sadder Medical City at Al-Najaf Center for Diabetes and Endocrine. The data were collected through the use of well-designed questionnaire, consisting of three parts: the first part is the socio demographic data form, socio- economic status scale of the family and Anthropometric Measurement of Weight and of Height. The second part is the clinical data for adolescents that consists of (8) items. The third part is the quality of life domains that consists of (51) items. The reliability of the questionnaire was determined through a pilot study and the validity was determined through a panel of (17) experts. The data were described statistical, and analyzed through the use of descriptive statistical and inferential statistical methods.

Results: the highest percent 58.0% of the adolescents was male gender; 74.7% of the adolescents have normal weight; whether the type of treatment was injection in 98.7% of adolescents; the measurement of the HbA1c was > 6.5 in 80.7 of the adolescents; mean of score for QOL was 2.22 (moderate) because the lowest scores were reported by adolescents (social and communication) domain.

Conclusion: the study concluded that quality of life as moderate. Specific domains that lead to the deterioration of quality of life, including social and communication, were identified. Almost adolescents have elevated HbA1c that occur as a result of not following doctor order concerning monitoring eating regimen levels and refused frequency blood glucose monitoring. Male and late adolescent age/ were majority adolescents with T1DM.

Recommendation: Instruction and educational sessions must take place thoroughly for the adolescents with Type I Diabetes Mellitus to improve their quality of life. Carbohydrate intake must be monitored, by carbohydrate calculating or the estimation based on experience. This is a key strategy for achieving glycemic control. Caregivers and school teachers should be knowledgeable about how to administer insulin based on, doctor orders in case the adolescent is incapable of personal achieve.

Key Words: Quality Of Life, Adolescents, Type I Diabetes Mellitus.

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INTRODUCTION

Diabetes mellitus type 1 (also known as type 1 diabetes) is a form of diabetes mellitus in which insufficient insulin is created ⁽¹⁾. Diabetes is one of the world's major health problems. Around 4.6% about, 285 million, of diabetic patients are in 2010 in the world, and the expectancy will move higher in 2030 to 7.7%, about 439 million ⁽²⁾. As of 2016, 422 million people have diabetes worldwide ⁽³⁾. As expected in 2015, 415 million people had diabetes worldwide ⁽⁴⁾, up from an assessed 382 million people in 2013 ⁽⁵⁾, and from 108 million in 1980 ⁽⁶⁾. The five countries with highest proportion of diabetes are the United Arab Emirates, Saudi Arabian, Bahrain, and Kuwait ⁽⁷⁾. In 2011, the distribution of cases of diabetes among the Iraqi population about (3,527,354) million, is compared with the incidence of Najaf province, about one (144,591) thousand ⁽⁸⁾.

In 2015 the statistic shows that new cases are (2335), while in 2016 statistics show that new cases are (3005) in Al- Najaf Province ^(9,10). T1DM usually improves during infancy and adolescence and results from the progressive destruction of pancreatic beta cells and reduced insulin production ⁽¹¹⁾. The increase incidence of T1DM reflects the modern life style ⁽¹²⁾. Quality of life (QOL) concept encompasses bodily, functional, and emotional besides psychosocial well-being. General QOL tools measure all characteristics of individual's perception QOL. T1DM among adolescents may be linked with reduced Quality of Life ⁽¹³⁾.

METHODOLOGY

Design of the study: A descriptive Cross-Sectional Design used in the current study to achieve the study objectives. The study started from September 20th, 2016 until July 5th, 2017.

Setting of the study: The study is conducted at Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate Al-Sadder Medical City (Najaf Center for Diabetes and Endocrine).

Sample of the study: A Non-Probable (Purposive Sample) of (150) Type I Diabetes Mellitus Adolescents, those who visit Center for Diabetes and Endocrine for treatment or follow up or both. The purposive sample was used in order to obtain the much controlled sample according to the following criteria.

Study instrument: An assessment tool was adopted and modified by the researcher to assess the adolescent's quality of life T1DM.

The questionnaire format consists of (3) parts:

Part 1: Socio-demographic Data

This part consists of (11) items, including gender, age, level of adolescent educational, father education, mother education, father occupation, mother occupation, residence area ,type of family, Socio-economic data, and Growth percentiles. Socioeconomic status measured through scale socio-economic status scale (SESS). This scale is obtained after the calculation of socioeconomic information about parents occupation status, parents educational levels, family type, family number, number of rooms, type of house, house area, house content and car possession).The calculated scores help in classifying the family level of socioeconomic as high or moderate or low level. According to the total scores of SESS three social economic levels represented as follow: high SES (80-100), middle SES (60-79), and low SES (59 and less). The level of socio-economic status identified through the application of socio-economic status scale ⁽¹⁴⁾. Growth percentiles data was height (Ht.) measured by an audiometer, while Weight (Wt.) was measured by kilograms within an electronic scale.

Part 2: Clinical Data

This part consists of (8) items that were included the duration of disease since diagnosis, number of insulin injection, number of hypo/hyper glycaemia, number of hospitalized admission, type of medication, level of HbA1c and complications. HbA1c measurements are made once every three months, and the average of the last three measurements (taken over nine months) was taken in the study. HbA1c measurements were obtained from the records of the endocrinology clinic. HbA1c values were categorized using the American Diabetes Association–recommended (<6.5%; >6.5%) ⁽¹⁵⁾.

Part 3: Quality of life measurement scale

The PedsQL Generic Core Scale is a 23-item questionnaire that evaluates subdomains QOL emotional (5 items), physical (8 items), school functioning (5 items) and social (5 items), with age-specific scales (13-19 years). It has been validated for use in the pediatric population with T1D ⁽¹⁶⁾. The Diabetes Module is a 28-item questionnaire that examines diabetes-specific QOL in the subdomains of treatment barriers (4 items), treatment adherence (7 items), diabetes symptoms (11 items), communication (3items) and worry (3 items).

Validity of the instrument:

The questionnaire validity was used to determine the questionnaire capability for gathering the data. Face validity was used to complete the development of the questionnaire which was specified by using the panel of experts to examine the questionnaire relevancy, clarity, and adequacy. A preparatory questionnaire was designed and submitted to (17) experts, with experience of 10 years. Moreover, the experts' suggestions had been taken into consideration. Their suggestions were used in the final copy of the developed instrument which was accomplished to be ready for carry out the study. Descriptive data analysis was done through (Frequencies, Percentages, Mean, Mean of scores ,Chi-Square test (X^2), Pearson's Correlation Coefficients, and cutoff point due to the three points Likert scales) through application by SPSS version 20.

RESULTS:

Table (1): Socio-Demographic Characteristics of the Study Sample

Demographic data		Frequency	Percent
Age groups (years)	<= 15	73	48.7
	> 15	77	51.3
	Mean \pm SD	15.85 \pm 2.33	
Gender	Male	87	58.0
	Female	63	42.0
Residence	Urban	127	84.7
	Rural	23	15.3
Adolescents' levels of education	Read & Write	48	32
	Primary school graduate	69	46.0
	Intermediate school graduate	20	13.3
	Preparatory school graduate	13	8.7
Father education	Illiterate	10	6.7
	Read & Write	28	18.7
	Primary school graduate	39	26.0
	Intermediate school graduate	26	17.3
	Preparatory school graduate	17	11.3
	Institute graduate	12	8.0

	College graduate	18	12.0
	Postgraduate	0	0.0
Mother education	Illiterate	24	16.0
	Read & Write	58	38.7
	Primary school graduate	29	19.3
	Intermediate school graduate	23	15.3
	Preparatory school graduate	6	4.0
	Institute graduate	6	4.0
	College graduate	4	2.7
	Postgraduate	0	0.0
Father occupation	High professional jobs	0	0.0
	Lower professional jobs	45	30.0
	Unskilled workers	105	70.0
Mother occupation	High professional jobs	1	0.7
	Lower professional jobs	10	6.7
	Unskilled workers	139	92.7
type of family	Nuclear Family	111	74.0
	Extended Family	39	26.0
Growth percentiles	Underweight	23	15.3
	Normal weight	112	74.7
	Overweight	10	6.7
	Obesity	5	3.3
Socio-economic status scale (SESS)	Low	73	48.7
	Middle	77	51.3
	High	0	0.0
Total		150	100

Table (1) shows the socio-demographic characteristics of the study sample. The study results indicate that the highest percentage of the study adolescent's age was at ≥ 15 years old (51.3%). Regarding their gender, the study results reveal the majority (58%) were males. Most of them (84.7%) were from urban residential area; Most of their education (46%) was primary school. Concerning fathers' education, (26%) of them were also primary school graduates. Regarding mothers' education, the study indicates that (38.7%) of mothers were only reading and writing. About father's occupation, (70%) were unskilled workers, while mother's occupation was that (92%) of them were housewives. Concerning to family type, (74%) of the study sample were nuclear families. As for the growth percentiles, (74.4%) of them had normal weight. Regarding socio-economic status, the majority of the study sample (51.3%) was with moderate socio-economic status.

Table (2): Statistical Distribution of the Patient's Studied Sample According to their Clinical Data.

Demographic data		Frequency	Percent
duration of disease (Years)	≤ 2	41	27.3
	3 – 10	100	66.7
	11 and more	9	6.0
	Mean \pm SD	4.98 \pm 3.60	

Type of treatment	Oral Hypoglycemia	1	0.7
	Injection	148	98.7
	Diet	0	0.0
	All of them	1	0.7
number of insulin injection	Once \ Day	15	10.0
	Twice \ Day	97	64.7
	Three or More Time \ Day	38	25.3
number of hypoglycemia	Never	22	14.7
	Once	13	8.7
	Twice	59	39.3
	Three or More Times	56	37.3
number of hyperglycemia	Never	3	2.0
	Once	3	2.0
	Twice	31	20.7
	Three or More Times	113	75.3
number of hospital admission	Never	46	30.7
	Once	61	40.7
	Twice	21	14.0
	Three or More Times	22	14.7
HbA1c	<6.5	29	19.3
	>6.5	121	80.7
Complication	No complications	74	49.3
	Cardiovascular disease	1	0.7
	Renal disease	7	4.7
	Eye problem and disease	27	18.0
	Diabetic foot	0	0.0
	Others	16	10.7
	Renal disease+ others	3	2.0
	Eye problem and disease + others	8	5.3
	Renal disease +eye problem and disease	12	8.0

	Renal disease +eye problem and disease +others	2	1.3
Total		150	100

Table (2) shows that a highest percentage of the disease was (3-10) years which as (66.7%). According to the treatment, (98.7%) of the adolescents were treated by insulin injection. Concerning the number of insulin injections, the study results revealed that (64.7%) of adolescents had twice a day of insulin injections. According to the hypoglycemia attacks about (39.3%) of adolescents have two attacks occurring in the last three months, while (75.3%) of the adolescents had ≥ 3 attacks of hyperglycemia in the last three months. Concerning the number of hospital admission, the study reveals that (40.7%) of the study sample were admitted just one time in the last six months. Relative to the HbA1c measurement was >6.5 (80.7%). Finally, this table shows that (49.3%) of the diabetic adolescents had no complications.

Table (3): Statistical Distribution of Overall Adolescents QOL

Overall Domain	Rating	Frequency	Percent	M.S	Assessment
Overall adolescents' quality of life	Always	14	9.3	2.22	Moderate
	Sometime	89	59.3		
	Never	47	31.3		

M.S: Mean of score, (mean of score ≤ 1.6 : Good, mean of score: 1.7-2.3: Moderate, mean of score 2.4 and more: Poor)

Table (3) expresses the overall subjects' responses to the quality of life domain, which were moderate, M.S (2.22).

Table (4): Relationship between Quality of Life for Patients and their Demographic Data

Demographic data	Chi-square (X^2)	DF	P-value (Sig.)
Age groups (years)	1.069	2	0.586 (NS)
Gender	9.071	2	0.011 (S)
Residence	1.287	2	0.526 (NS)
level education of adolescent	17.543	8	0.025 (NS)
Father education	19.663	12	0.074 (NS)
Mother education	8.216	12	0.768 (NS)
Father occupation	0.345	2	0.84 (NS)
Mother occupation	1.087	4	0.896 (NS)
type of family	0.256	2	0.880 (NS)
Growth percentiles	3.969	6	0.681 (NS)
Socio-economic status scale (SESS)	1.850	2	0.40 (NS)

duration of disease (Years)	1.676	4	0.795 (NS)
number of insulin injection	2.866	4	0.581 (NS)
number of hypoglycemia	4.677	6	0.586 (NS)
number of hyperglycemia	10.691	6	0.10 (NS)
number of hospital admission	9.661	6	0.140 (NS)
type of treatment	1.389	4	0.846 (NS)
HbA1c	1.112	4	0.892 (NS)
Complication	26.222	16	0.049 (S)

NS: Non-significant, HS: High significant, DF: degree of freedom.

Table (4) shows that there were non-significant relationship between the quality of life and all the adolescents demographic data at (p-value > 0.05), except the gender and complications which were significant at (p-value <0.05).

DISCUSSION:

PART. I: Discussion of Socio-Demographic Characteristics of the Study Sample.

According to patients' age, the study shows that more patients (51.3%) were >15 years old. (AL-Hayek, *et al.*, 2015) strengthened the outcome who concluded that age domain was (≥ 15 years old). The risk for DM increases with the increase of age of the patients, which will participate, in raising the incidence of diabetes mellitus in adolescents with advanced age ⁽¹⁷⁾. Regarding the patients gender, the present study shows that the majority of the sample was adolescent males (58%). This agrees with the results of (Hassan, *et al.*, 2017) who mentioned that males were the dominant gender for adolescents with type 1 diabetes mellitus. This will lead to the fact that the diabetes mellitus more happen in boys than girls ⁽¹⁸⁾. Concerning residency, the results show that most adolescents (84.7%) were from urban areas. This result agrees with (Hassan, *et al.*, 2017) results who found that most of adolescents were from urban areas (72%) ⁽¹⁸⁾. These results might originate because diabetes mellitus is a modern scourge of the industrialized society. Therefore, the diabetes mellitus occurrence rises in people who live in urban area, than those in rural areas. In addition, those persons in rural residential area frequently practice daily physical exercises if compared with those in urban areas. Therefore, they are in less danger for diabetes than urban residents are. Besides, the rural residents lived in a good environment regarding noises, pollution, and psychological stresses. They are less susceptible to develop diabetes mellitus.

PART. II: Discussion the Diabetic Adolescents Clinical Data.

Regarding the duration of disease, the higher percentage (66.7%) was for diabetic adolescents type 1 who were suffering from the disease for about (3-10 years). This agrees with Al-Hadi, *et al.*, (2005) result which found that about (51.3%) of adolescents have duration of disease > 5 years ⁽¹⁹⁾. According to the type of treatment, this result shows that (98.7%) of the study sample had injected medication. This result approved the study of (Özyazıcıoğlu, *et al.*, 2017) which found that the majority of their sample treated by injected medication ⁽²⁰⁾. About (64.7%) of adolescents had twice a day of insulin injection, as (Monazea, *et al.*, 2012) which reported that adolescents had twice per day insulin injection ⁽²¹⁾.

Concerning the numbers of hypoglycemia attacks through the last three months prior to the study; the results found that (39.3%) had double attacks of hypoglycemia. This agrees with (Monazea, *et al.*, 2012) result which mentioned that the highest percentage of the adolescents had two attacks of hypoglycemia in the last three months ⁽²¹⁾. Regarding the number of hyperglycemia, this study reveals that (75.3%) of adolescents had three or more times of attacks last three months. This agrees (Monazea, *et al.*, 2012) which stated that the highest percentage of hyperglycemia attack were three or more times in the last three months ⁽²¹⁾.

CONCLUSION:

Based on the study results and discussion, the following are the main conclusions:

Overall, the adolescents assessed in this study viewed their quality of life as moderate. Most adolescents have elevated HbA1c that occurs because they did not follow the doctor orders concerning monitoring eating regimen levels, and because they refused the frequency blood glucose monitoring. The male gender and late adolescent age were majority adolescents with T1DM. Most of the adolescents with T1DM are using insulin injection. There are higher number of adolescents with T1DM had no complications. Finally, there is a non-significant relationship between all socio-demographic and clinical data of the study sample with the quality of life domain except for complication and gender which showed significant relationships.

RECOMMENDATIONS:

Based on the study conclusions, the study recommends the following:

1. Instruction and educational sessions must take place thoroughly for the adolescents with Type I Diabetes Mellitus to improve their quality of life.
2. Carbohydrate intake monitored, by carbohydrate calculating or estimating on experience-based. This is a key strategy for achieving glycemic control.
3. Caregivers and schools teachers should be knowledgeable about how to administer insulin based on the doctor orders in case the adolescent is incapable of personal achievement.
4. Further studies carried out on a large population to assess the adolescents' quality of life.

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