

KNOWLEDGE OF DIABETIC PATIENTS ABOUT HYPOGLYCEMIA⁺

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Abstract

Objectives: To assess the diabetic patient's knowledge about symptoms of hypoglycemia and the variables that may be associated with their knowledge.

Methods: A cross-sectional study of 100 diabetic patients registered in Al-Hadher Primary Health Care Center (PHCC) and Al-Entifadha Public Clinic in Al- Daura region in Baghdad. The tool of data collection was a structured questionnaire. The parameters of the study were the knowledge about hypoglycemic symptoms measured as awareness of the patients regarding the symptoms of hypoglycemia and the proportions of patients with good and poor knowledge score.

Results: The frequency of yes responses regarding the symptoms of hypoglycemia was ranged from 8-61% for different symptoms. Slightly less than the half of cases (49%) had a poor knowledge score. The only variable significantly associated with poor knowledge score was the education level (P=0.001). Lack of knowledge about the correct level of blood sugar to diagnose hypoglycemia found to be 50%.

Conclusion: There is a need for health education as hypoglycemia causes severe morbidity and mortality and we suggest using different ways of communication as mass media, communication with health workers and curriculums.

المستخلص:

يهدف البحث إلى دراسة معلومات مرضى السكري حول أعراض نقص السكر لديهم. و البحث هو دراسة مقطعية لعينة غير عشوائية من مرضى السكري في منطقة الدورة في بغداد المراجعين للمؤسسات الصحية الحكومية في تلك المنطقة وهي مركز الحضر للرعاية الصحية الأولية وعيادة الانتفاضة الشعبية في تلك المنطقة. مدة الدراسة كانت للفترة من بداية شهر كانون الأول ٢٠٠٦ ولنهاية شهر تموز ٢٠٠٧ .

⁺Received on 1/8/2007 , Accepted on 3/2/2009

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وقد تم جمع المعلومات عن طريق ملئ استبيان اعد لذلك مسبقا. محاور الدراسة تتركز في محورين أولهما معرفة مرضى السكري بأعراض هبوط السكر لديهم والثاني النقاط التي جمعها كل مريض عند إجابته ونسب الذين كانت إجاباتهم ضعيفة.

ومن أهم نتائج البحث إن نسب الإجابات الخاطئة لأعراض هبوط السكر تراوحت بين ٨% - ٤٧% لمختلف الأعراض، وإن نسبة الذين كانت إجاباتهم ضعيفة بلغ ٤٩% أي حوالي نصف العينة وقد ثبت بالتحليل الإحصائي وجود علاقة قوية بين المستوى التعليمي والإجابة الضعيفة ($P=0.001$). كما اظهر البحث إن نصف العينة (٥٠%) لا يعرفون درجة السكر في الدم لتشخيص هبوط السكر.

يستنتج الباحثون وجود ضرورة ملحة للتثقيف الصحي لمرضى السكري حول أعراض هبوط السكر في الدم، ويقترحون إن يكون ذلك باستخدام مختلف وسائل كالإعلام، العاملين الصحيين والمناهج الدراسية.

Introduction

Diabetes Mellitus is a world wide in distribution. It is estimated that, in the year 2000, 150 million people world-wide had diabetes, and this is expected to double by 2010. This global pandemic principally involves type 2 diabetes [1]. It is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin or its functions. Diabetes mellitus divided into two types, Insulin Dependent Diabetes Mellitus (IDDM), and Non-insulin Dependent Diabetes Mellitus (NIDDM) [2].

Hypoglycemia is an acute syndrome that occurs when the blood glucose level falls to below (0.55) g/L (3.0 $\mu\text{mol/L}$) and which may endanger patient's life as well as other person's live's. It is a common emergency in hospital practice [3] also occurs when the blood glucose (blood sugar) level drops too low to provide enough energy for the body activities. In adults or children older than 10 year hypoglycemia is uncommon except as a side effect of diabetes treatment, but it can result from other medications or disease hormone or enzyme deficiencies or (tumors) insulin – secreting tumor of the pancreas, liver disease or as a response to the ingestion of alcohol, and it affects approximately one out of every 1000 people [4]. Also the brain is dependent on the blood glucose for energy necessary for its activity; permanent brain damage may result from prolonged hypoglycemia which should be prevented from recurring by prompt reduction of the dose of insulin or of sulphonylureas [5]. A part from directly leading to death, one of the indirect hazards of hypoglycemia is that it may endanger the life of a diabetic and other people, during motorcar driving [6]. There is considerable proportion of patients who by lack of health education, may not recognize all the symptoms (e.g dizziness, palpitation, sweating, nausea and vomiting, lack of concentration, visual impairment, abdominal discomfort, tremor, intense, hunger, speech disabilities) [7,8,9], and hence their proper management may be delayed. For this reason patients knowledge and perception of hypoglycemic symptoms needs to be assessed [10]. The problem of lack of knowledge about hypoglycemia is a common one even among medical staff [11]. The problem of poor hypoglycemia knowledge score can be partially explained by the fact that the major proportion of sample is composed by subjects with low education level. But equally important would be the problem of lack of health education and doctor-patient communication difficulties [12].

Aim of the Study

The aim of the study is to assess the knowledge of adult diabetic patients about symptoms of hypoglycemia and the variables that may be associated with this knowledge.

Methods

This study was conducted at Al-Hadher Primary Health Care Center (PHCC), and Al-Entifadha Public Clinic in Al-Daura region in Baghdad. It is a descriptive cross-sectional study to determine the knowledge of adult diabetic patients about hypoglycemia. The period of the study extended from the beginning of December 2006 to the end of July 2007. The target populations were diabetic patients attending the out patient clinics in Al-Daura region in Baghdad.

The inclusion criteria included: diabetic patients (15 years of age or more) according to Elzubier classification(3), who had a confirmed diagnosis of diabetes mellitus for the last one year, and are registered in the diabetic registries of the (PHCC) and public clinic in Al-Duara region in Baghdad .A convenient sampling technique has been applied..The Sample size was one hundred adult diabetic patients.

Data collection was done by a previously structured questionnaire filled by direct interview with the patient. The questionnaire included socio-demographic data, in the form of age, gender and educational level. Education level was categorized as illiterate, read and write, Primary school, intermediate school, secondary school, college and higher education, besides the clinical information about the signs and symptoms of hypoglycemia, information regarding duration of diabetes mellitus and self reported compliance with treatment.

Diabetes mellitus was classified according into type 1 and 2 according to the patient's age (being less than (35) years or more than that), and whether he/she was being treated with insulin or oral hypoglycemic drugs [3], then the result of the last fasting blood glucose was recorded for each patient.

The patients were asked whether they know what is meant by hypoglycemia (blood glucose level below 0.55g/l or 3.0 μ mol/l). They were also asked about the symptoms of hypoglycemia, whether correct or incorrect and assigned as (1) or (0) a scoring symptom was used (3), whereby correct knowledge of (0-3) symptoms, and that of three and more symptoms, was considered as "poor" or "good" knowledge respectively. The main parameters of the study were first: lack of knowledge about hypoglycemia and its symptoms measured as knowledge of individual symptoms; and second: the proportions of patient with poor knowledge score.

Statistical Analysis: All data were arranged and tabulated in frequency and percentage, mean and SD, association between different variables was measured by using Chi-square test $P < 0.05$ considered as significant.

RESULTS

The patients were divided into three groups, (15-34) years formed 12%, (35-54) years and ≥ 55 years constituted (44%) for each (Table 1).

It was found that females constituted 53% and males 47%, (Table2).

Table (3) shows that the mean age was 50.81 ± 13.39 years, the minimum age was 15.00 years, maximum age 79.00 years, and the mean fasting blood sugar was 180.3820 ± 83.8885 mg/dl, and the minimum fasting level was 55.00mg/dl, and maximum fasting level was 530.00mg/dl.

Table (4) shows that 15% were illiterate, 10% read and write only, while those with primary and intermediate schooling were 27%, secondary schooling 21%, and those with high education 27%.

Table (5) This table shows that more than half of the sample could correctly mention sweating (61%), palpitation (54%), while other symptoms only mentioned correctly by less than the half of patients, dizziness, visual impairment, abdominal discomfort and feeling hunger were mentioned by 47% of patients for each, followed by loss of consciousness 39%, then lack of consciousness 28% and least frequency was for nausea and vomiting 8%.

The scoring of knowledge of hypoglycemia, shows that those with good knowledge of symptoms of hypoglycemia formed 51% while those with poor knowledge formed 49% (Table-6)

Table (7) shows that 50% of the sample does not know the correct level of blood sugar to diagnose hypoglycemia.

Table (8) reveals the distribution of the studied sample according to the age group and gender in relation to the score of knowledge of hypoglycemia. It was found that there is no significant relationship between the age group, gender and the knowledge of hypoglycemia ($P = 0.208$) for age, and ($P = 0.416$) for gender.

Table (9) shows the education level variables associated with the score of knowledge of hypoglycemia. It was found that the highest frequency of poor score 13% was for the illiterate group, followed by the primary education level 11%, then the high education level 8%, then 7% for the intermediate education, 6% for the secondary education, and least frequency for the read & write education level 4%, and there was significant association between educational level and knowledge of hypoglycemia ($P=0.001$)

Table (10) shows the variables associated with knowledge of hypoglycemia. Patients with type 2 diabetes mellitus constituted 82% of the sample, those with type 1

diabetes mellitus formed 18%, and shows that those who have had diabetes for (1-4) years were 39% and those for (5-9) years were 26% and those for 10 years and more 35%. This table also shows that 98% of the sample were compliant to the drugs and those who are non compliant to drugs were 2% only.

Table (1): Distribution of the studied sample by age groups.

Age (years)	Frequency	Percent
15 – 34	12	12%
35 - 54	44	44%
55+	44	44%

Total	100	100%
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Table (2): Distribution of studied sample by gender.

Gender	Frequency	Percent
Male	47	47%
Female	53	53%
Total	100	100%

Table (3): Descriptive Statistics.

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	15.00	79.00	50.8100	13.3966
F.B.S(mg/dl)	100	55.00	530.00	180.3820	83.8885

Table (4): Distribution of the studied sample by education level.

Education level	Frequency	Percent
Illiterate	15	15%
Read and Write	10	10%
Primary school	17	17%
Intermediate school	10	10%
Secondary school	21	21%
Higher education	27	27%
Total	100	100%

Table (5): Frequency and percentage distribution, of the studied sample, according to the correct knowledge of individual symptoms of hypoglycemia.

Symptom	Yes No. (%)
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Sweating	61 (61)
Palpitation	54 (54)
Dizziness	47 (47)
Visual impairment	47 (47)
Abdominal discomfort and feeling hunger	47 (47)
Lack of consciousness	39 (39)
Loss of concentration	28 (28)
Nausea and vomiting	8 (8)

Table (6): Knowledge score of hypoglycemia.

Score	Frequency	Percent
Good (≥ 4)	51	51%
Poor (0-3)	49	49%
Total	100	100%

Table (7): Distribution of the studied sample, according to their knowledge of meaning of hypoglycemia.

Knowledge	Frequency	Percent
Yes	50	50%
No	50	50%
Total	100	100%

Table (8): Distribution of studied sample by age, gender, and knowledge score of hypoglycemia

Variables	Score		Total	Comparison sig.
	Good	Poor		
Age 15 – 34	9	3	12	NS P=.208 df=2

35 – 54	21	23	44	X²=3.143
≥ 55	21	23	44	
Total	51	49	100	
Gender				NS P=.416 df=1 X²=.170
Male	25	22	47	
Female	26	27	53	
Total	51	49	100	

Table (9): Distribution of studied sample by education level and knowledge score of hypoglycemia.

Variables	Score		Total	Comparison significance
	Good	Poor		
Education level				Sig. P=.001 df=5 X²=19.844
Illiterate	2	13	15	
Read and write	6	4	10	
Primary school	6	11	17	
Intermediate school	3	7	10	
Secondary school	15	6	21	
Higher education	19	8	27	
Total	51	49	100	

Table (10): Disease related variables associated with knowledge score of hypoglycemia.

Variables	Score		Total	Comparison significance
	Good	Poor		
Type of diabetes				NS P=.113

Type 1	12	6	18	Df=1
Type 2	39	43	82	X²=2.156
Total	51	49	100	
Duration of diabetes (years)				NS
1 – 4	23	16	39	Df=2
5 – 9	12	14	26	X²=1.628
≥10	16	19	35	
Total	51	49	100	

Discussion:

The percentage of patients with type 2 diabetes mellitus in the present study(82%)is much larger than the type 1(18%),similar results were found in Europe and north America a ratio of 7:3 of type 2 to type 1 diabetes mellitus[2].

The majority of patients in the sample involved in this study were middle and old age group this goes with the finding in Britain of over 70% of cases occurring after the age of 50 years[2] and that of Elzubier [3] in Saudi Arabia, the majority were beyond middle age.

More than half of the sample was of female gender; this is different from that of Elzubier study [3] with predominance of males, which could possibly be due to sampling error, or inadequacy of registration.

Hypoglycemia causes many symptoms like dizziness, palpitation, sweating, nausea and vomiting, lack of concentration, loss of consciousness, abdominal discomfort, and intense hunger. In the present study the symptoms that are answered correctly by more than half of the patients were palpitation and sweating this result does not differ much from the results of Elzubier[3], Service & John [7], Baomer & Elboshra [8], and Belefet & Reis [9].

Age, type and duration of diabetes, as well as compliance did not show any significant association with hypoglycemic knowledge score, this coincide with the finding of Elzubier[3] except for compliance, which was significant indicating the need for health education for even of those who are compliant, and goes with the finding that the problem of lack of knowledge about hypoglycemia is a common one even among medical staff, so it needs to be assessed [10, 11]. About half of the patients have had a poor knowledge score for symptoms of hypoglycemia, with a significant association of this with the education level, this coincide with the findings of Elzubier [3], and that of Gillian& Raffin [12].

The researchers **conclude** that, half of the studied sample does not know what does hypoglycemia mean, about half of the studied sample has poor knowledge about symptoms of hypoglycemia, and there is a significant association between the level of education and the degree of knowledge about hypoglycemia. So there is a great need to educate diabetic patients about symptoms of hypoglycemia through health education to enable them to deal with it in an effective way. Health education may be through communication with health workers, mass media facilities, and the scientific curriculum at different levels of education.

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