Knowledge, Attitude, and Practice among Care Providers of Children and Adolescents with Type 1 Diabetes at Endocrine Clinic-Tripoli Children Hospital, 2015

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ABSTRACT

Type 1 diabetes mellitus (DM) is a chronic disease, knowledge about DM, appropriate attitude and practices are vital to reduce the incidence and morbidity associated with Diabetes Mellitus. The study aimed to explore knowledge, attitude and practice (KAP) among care providers of type 1 diabetic children.

The study was cross sectional survey conducted among 150 randomly chosen home care providers attending the Endocrine clinic in Tripoli children hospital from 1 November to 1 December 2015. Data was collected through a structured questionnaire focused on knowledge, attitude and practices of home care providers concerning their children disease and management. Data was analyzed using SPSS version 16, descriptive statistics including mean, standard deviation, frequencies, and percentages were obtained for all variables as appropriate.

A total of 150 care providers of type 1 diabetic children contributed. Altogether, 25.3% of the participants had good knowledge score, 61.3% of them had average knowledge score, and 13.4% had poor knowledge score about diabetes mellitus. 84% of care providers of type 1 diabetic child had positive attitude about diabetes, only 16% of them had negative attitude. The overall score of participants' practice was strongly positive 99.3%, only 0.7% had negative practice score.

The study showed satisfactory level of knowledge about diabetes but the attitude and practice levels towards diabetes were impressive in this Endocrine Clinic at Tripoli Children Hospital.

Key words- *Knowledge; Attitude; Practices; Type 1 Diabetes.*

INTRODUCTION

The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014.[1] In 2015, an estimated 1.6 million deaths were directly caused by diabetes. Another 2.2 million deaths were attributable to high blood glucose in 2012.[2] In almost all high-income countries, diabetes is a leading cause of cardiovascular disease, blindness, kidney failure, and lower limb amputation.[3] Diabetes self-management education (DSME) is considered an integral component of care and is recommended at diagnosis and thereafter. DSME helps people with diabetes initiate effective self-care when first diagnosed and also help people maintain effective self-management as diabetes presents new challenges and as treatment advances became available. In children, education must take in to account that younger children will require adult supervision. As children mature, it is expected that they take on more responsibility for their own monitoring and care. An issue in this transition is adherence to insulin and diet regimens.[4] Proper knowledge regarding various aspects of health education program can improve the knowledge of patients and change their attitude.[5] Many studies conducted elsewhere in the world

have shown that the knowledge and awareness about the disease can have positive influence on attitude and practices of patients that could lead to better management of diabetes and eventually good quality of life.

A patient when involved in self-management of disease through guidance, education and awareness programs becomes more compliant toward life style changes and drug therapy which help both the practitioner and patient to achieve the treatment goals.[6] Many researches in other parts of the world-addressed this issue. A study from Pakistan has explored several aspects of diabetes related KAP of family physicians. It has identified the need for improvement in physician's practices for treating and educating diabetics. It is thus recommended that awareness and education programs are necessary to update the physicians on screening, effective treatment of diabetes and prevention of the complications.[7] A study from Malaysia show good knowledge, attitude and practices of diabetic patients in this region.[8] This study was conducted to know the level of knowledge, attitude and practices of care providers of type 1 diabetic children and adolescents attended to Endocrine unit-Tripoli Children Hospital, Tripoli- Libya to aid in future development of effective education programs.

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MATERALS AND METHODS

The study was a Cross sectional descriptive study, conducted in the period from the beginning of November to the beginning of December 2015. A random sample of 150 home care providers (mother, father, sister, brother, others) of type 1 diabetic children attending endocrine clinic was chosen. Clinics ran by physicians who are mainly specialized consultants and endocrinologists; there are 5 clinics/week, every clinic offering quality care to about 30 children. Data was collected through a structured questionnaire. Every sitting of interview took 10-20 minutes. The questionnaire was divided into 4 main sections, each section focused on different aspects. The variables in first section related to demographic characteristics of participants as: age, sex, occupation, educational status and source of information about diabetes. The second section discussed questions of knowledge like: What is diabetes, nature of disease, symptoms of diabetes, symptoms of hypoglycemia, symptoms of diabetic ketoacidosis, long term complication, the control of diabetes, treatment of hypoglycemia, diabetes monitoring, sick day management. The third section includes care giver's attitude: insulin injections, following dietary advice, replacement of insulin injections by other modality (herbal) and possibility of self-diabetic care by child. The fourth section of questionnaire was about practice: Storage of insulin, Injection of insulin in correct way, changing the site of insulin injection, regular follow, using of glucometer in blood sugar monitoring at home and doing HbA1C every three months for the child.

Data management: The questionnaire had 50 questions (knowledge (40), attitude (4) and practice (6) questions). Each correct knowledge answer was given a score of 'half to one' and each wrong or don't know answer was given a score of 'zero'. For attitude questions, each answer represent positive attitude was given a score of two and each answer represent negative attitude was given a score of one, zero score was given for each undecided answer. One score was given for each correct answer for practice questions. Considered a score of 25-35 'Good Knowledge'; a score of 20-24 'Average Knowledge' and 1-19 'Poor Knowledge'. Attitudes were elicited using Likert scales with 0=undecided, 1=agree (which represent negative attitude in first three questions) and disagree for last question as it represent a negative attitude, and 2 =disagree (which represent positive attitude in first three questions) and agree for last question as it represent positive attitude. Participants' responses were summarized and a score of 6-8 was considered 'positive attitude' and a score of 1-5 a 'negative attitude'. Similar Likert scales were used to assess participants' practice where a score of < 4 was considered 'Negative Practice' while a score of 4-6 was considered 'Positive Practice'.

Statistical analysis: Collected data was coded and SPSS-version 16 was used for statistical analysis. Descriptive statistics including mean, standard deviation, frequencies, and percentages were obtained for all variables as appropriate.

Ethical approval: All authors declare that verbal informed consent was obtained from all participants during their follow up at clinic and data confidentiality was maintained throughout the study and any resulting publication anonymously.

RESULTS

One third of the participants were in age group of 41-50 years, 75.3% was female, and 75.7 % of them were had secondary educational level or more. One third of the cases were housewives and 24.7% were semiprofessional. Medical staff and mass media were the commonest source of information (Table 1).

Table 1: Socio-demographic characteristic of study population.

Characteristic	No.	(%)
Gender		
Male	37	(24.7)
Female	113	(75.3)
Age (years)		
10 years old	1	0.7
11- 20 years	37	24.7
21- 30 years	21	14
31- 40 years	36	24
41- 50 years	50	33.3
51- 60 years	5	3.3
Educational status		
Illiterate	1	0.7
Primary school	11	7.3
Preparatory school	24	16
Secondary school	61	40.70
Graduate and above	53	35.30
Occupation		
Professional	6	4
Semiprofessional	37	24.7
Worker	1	0.7
Business	15	10
House wife	50	33.3
Student	41	27.3
Source of information		
Medical staff (Doctor, Nurse, educator)	150	100
Family and friends	83	55.3
TV and Radio	104	69.3

Majority of participants (94%) knew what diabetes is. It is absence or decrease of insulin hormone secretion and 84.7% of them knew that it is increase in the blood sugar level. About the nature of disease, only one third of them knew that diabetes is not curative disease and 32.7% of them knew that some time there are no symptoms of diabetes. Most of participants knew the symptoms of hypoglycemia. About 67.3% of participants knew that vomiting is a symptom of diabetic ketoacidosis (Table 2).

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Table 2: Distribution of correct knowledge about diabetes among participants attending Endocrine Clinic, 2015.

Knowledge	No. of participants	(%)
What is diabetes		
Increase blood sugar level	127	84.7%
Increase sugar in the urine	112	74.7%
Decrease or no insulin hormone secretion	141	94%
Nature of disease		
Diabetes is curative disease	75	50%
Diabetes is temporary or permanent disease	99	66%
Symptom of diabetes		
Thirst	146	97.3%
Frequent urination	147	98%
Decrease in weight	137	91.3%
Constipation	67	44.7%
No symptom	49	32.7%
Symptom of hypoglycemia		
Sense of hunger	121	80.7%
Sweating	138	92%
Abnormal behaviors	119	79.3%
Frequent urination	114	76%
Pallor	135	90%
Symptoms of ketoacidosis		
Vomiting	101	67.3%
Abdominal pain	100	66.7%
Constipation	45	30%
Blurring vision	19	12.7%
Numbness	26	17.3%

Table 3: Distribution of correct knowledge of participants about complications and management of diabetes at Endocrine Clinic, 2015.

Knowledge	No.	%
Long term complication		
Heart attack	97	64.7%
Renal failure	145	96.7%
Blindness	142	94.7%
Stroke	80	53.3%
Control of diabetes		
Importance of regular exercise	145	96.7%
Importance of diet modification (healthy diet)	148	98.7%
Avoidance of insulin injection once diabetes is controlled	119	79.3%
Treatment of hypoglycemia		
Sweet substance (juice, honey, dates)	129	86%
Chocolate	71	47.3%
Frequent measure of blood sugar	142	94.7%
Usual insulin dose	126	84%
Carbohydrate (taken after sweet substance)	122	81.3%
Diabetes monitoring		
Frequent measure of blood sugar	149	99.3%
Regular diabetic clinic visit	148	98.7%
Checking injection sites	149	99.3%
Importance role of HbA1c	150	100%
Sick day management		
Skip insulin dose	125	83.3%
Testing blood sugar level	129	86%
Usual insulin dose, frequent measure of blood sugar, doctor consultation	147	98%
Insulin types are all the same	123	82%

Long term complications of diabetes as renal failure, heart attack and blindness were well known for 96.7%, 64.7% and 94.7% of participants, respectively. Importance of regular exercise in control of diabetes was well known among 96.7% of care givers. Most of participants (81.3%) know the importance of simple carbohydrate (15 grams of sugar mixed in a glass of water, juice, honey, dates) in the management of hypoglycemia. Almost all the participants know how to monitor diabetes through the measurement of HbA1C, frequent blood sugar measurement and regular diabetic clinic visit (Table 3).

Positive attitude of diabetes was detected among 76.7% of care providers for following dietary advice with compliance to insulin injections. About half of participants had positive attitude toward insulin injections as its impact on child's life. 85.3% of participants had strong positive attitude toward the importance of insulin as a unique medication for treatment of diabetes which cannot be replaced by any other treatment modality (herbal). Only 44% of participants had positive attitude about the ability of their children to be responsible for self-diabetic care (Table 4).

Table 4: Distribution of participant's attitude toward diabetes, Endocrine Clinic 2015.

Participants attitude toward diabetes	Agree No.%	Disagree No. %	Undecided No. %
By insulin injections, no need to follow dietary advice.	34 22.7	115 76.7	1 0.7
Insulin injections means the child has a major problem in his/her life.	78 52	70 46.7	2 1.3
Is possible to replace insulin injections by other treatment modality.	20 13.3	128 85.3	2 1.3
Is possible for your child to take responsibility for self-diabetic care.(by age>10 years)	66 44	84 56	0 0

All the participants adhered to the use of glucometer to check blood sugar level. Almost all of them (99.3%) admitted to do HBA1C every three months and 99.3% of participants adhered to changing the sites of insulin injections periodically. The majority (98.7%) had reported regular routine follow up. About 56% of participants store insulin pens or ampoules in correct way (Table 5).

Table 5: Distribution of participants' practice toward diabetes, Endocrine Clinic 2015.

Participants practice toward diabetes	No. of participants	(%)
Insulin storage on the correct way	84	56
Inject insulin on the correct way	117	78
Change Sites of injection	149	99.3
Regular fallow up	148	98.7
Glucometer usage	150	100
Periodic HBA1C measurement	149	99.3

Evaluation of knowledge, attitude and practice outcomes of care givers revealed that 25.3% had good knowledge, and 61.3% had average knowledge. The majority of participants (84%) had a positive attitude towards diabetes. Impressively

99.3% had positive practice. The knowledge score had a of 22.9± 2.9, attitude 6.5± 1.1 and Practice 5.3± 0.7 (Table 6).

Table 6: Distribution of participants' knowledge, attitude and practice score, Endocrine Clinic, 2015.

Score	NO.	%	Mean ± SD
Knowledge:			
Good	38	(25.3%)	22.9± 2.9
Average	92	(61.3%)	
Poor	20	(13.4%)	
Attitude:			
Positive	126	(84%)	6.5± 1.1
Negative	24	(16%)	
Practice :			
Positive	149	(99.3%)	5.3± 0.7
Negative	1	(0.7%)	

DISCUSSION

The diabetes mellitus is one of the most challenging public health problems in this century. Patient education is always considered an essential element of DM management; evidences suggest that patients, who are knowledgeable about DM self-care, have better long term glycemic control, low risk for complications associated with diabetes. Thus it is indispensable to ensure that patient's knowledge, attitudes and practices are adequate.[9] In present study, a high proportion of participants showed good basic knowledge on diabetes, for example majority of participants (94%) had correct answer about what diabetes is, most of them knew the classical symptoms of disease and 80% knew the symptoms of hypoglycemia and how to treat it. While the Upadhyay et al, In Nepal[10] study reported only 37.9% of the participants were aware of it and 36.26% are aware of the management of hypoglycemia.

About 67% of care providers were knowledgeable about symptoms of DKA and 95% had correct answers about renal failure and blindness as a long term complications of diabetes, this result was similar to Roaeid *et al* study.[11] An important finding of this study was that, knowledge of almost all participants about diabetes monitoring, through frequent blood sugar monitoring, periodic HbA1c measurement and regular diabetic clinical visit were very good, comparing to a study conducted at JIPMER diabetic clinic where the patients found it difficult to regularly attend the clinic, monitor their blood glucose and take their daily dose of insulin.[12] Current study showed that 77% of home care providers had positive attitude about the conjoint role of healthy diet with insulin injection in treatment plan of diabetes, almost the same result was obtained in a study done in south India hospital where 66% of patients were positively thinking about the importance of food control in addition to drug use.[13] Vast majority (85.3%) of participants believed that insulin is the basic treatment of diabetes, and there are no other treatment modalities compared to Omani study where approximately half of patients never used herbs to control their diabetes.[14] Half of participants

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had negative attitude about insulin injection, 56% were disagreed about allowing their children to be responsible on their disease management, comparing to Schmidt C study which showed that children demonstrated higher levels of self-care ability to manage disease as they aged 6-18 years.[15] Majority of participants had good practice, all of them using glucometer, almost all checking HbA1c every 3 months, rotatory changing the sites of insulin injection, majority of them (98.7%) had reported regular routine follow up, and comparing this to an Indian study where 70% of participants had never used glucometer, most of female subjects were less aware of HbA1c as a monitoring tool, 32% failed to rotate sites of insulin injection.[16] The responses to the practice questions regarding diabetes indicated that the study participants were aware of the importance of glucose monitoring and regular follow up which may lead to decrease risk of complications. Over all, the present KAP study showed that the care providers had an average knowledge and very good attitude and practice to ward diabetes which in accordance with a study from Malaysia identified a good KAP score[17] and contradicted to Bolly et al study which found that the attitudes and practices scores were low.[18] The difference in the findings among different studies may be due to differences in the Literacy of study patients, the training received by them and availability of information on diabetes.

CONCLUSIONS

The study showed satisfactory of knowledge about diabetes but the attitude and practice levels toward diabetes were impressive. The current study emphasizes the need for improvement in knowledge and awareness on diabetes mellitus among patients and health care providers in order to have healthy people with less complication.

RECOMMENDATIONS

Other studies recommended in Libya to compare the current study results with other centers and to find the correlation between these results with the outcome of diabetes mellitus management in terms of number of hospital admissions with acute complications, HbA1c level and presence of long term complications.

REFERENCES

1. Mathers CD and Loncar D (2006) Projections of global mortality and burden of disease from 2002 to 2030, *PLoS Med* **3**(11), e442.

2. World Health Organization (2013) Diabetes: Fact sheet No 312. 2013. *Available at: http://www.who.int/mediacentre/factsheets/fs312/en/index.html.*

3. International Diabetes Federation (2015) IDF Diabetes Atlas. 7th ed. Brussels: IDF; 2015. Available at: https://www.idf.org/e-library/diabetes-atlas/13-diabetes-atlas-seventh-edition.html.

4. Kaliyaperumal K (2004) Guideline for conducting a knowledge, attitude and practice (KAP) study, *AECS Illumination***4**(1), 7-9.

5. Mehta RS, Karki P and Sharma SK (2006) Risk factors, associated health problems, reasons for admission and knowledge profile of diabetes patients admitted in BPKIHS, *Kath Univ Med J* **4**, 11-13.

6. Serrano GM and Jacob S (2010) Engaging and empowering patients to manage their type 2 diabetes, part I: knowledge, attitude and practice gap? Adv, *Ther* **27**(6), 321-333.

7. Shera AS, Jawad F and Basit A (2002) Diabetes related knowledge, attitude and practices of family physicians in Pakistan, *J Pakistan Medical Association* **52**(10), 465-470.

8. Ambigapathy R, Ambigapathy S and Ling HM (2003) A knowledge, attitude and practice (KAP) study of diabetes mellitus among patients attending Klinik Kesihatan Seri Manjung, *NCD Malaysia* **2**(2), 6-16.

9. Konduru S, Ranjan A, Karthik, Muddada S, Shaik S and Vkkaptta L (2017) Assessment of diabetes related knowledge, attitude and practice among diabetics and non-diabetics using self-prepared questionnaire for awareness of health promotion, *Indian Journal of Pharmacy Practice***10**(1), 32-38.

10. Upadhyay DK, Palaian S, Shankar PR, Mishra P and Pokhara N (2008) Knowledge, attitude and practice about diabetes among diabetes patients in Western Nepal, *Rawal Med J.* **33**(1), 8-1.

11. Roaeid RB and Kablan AHA (2007) Profile of diabetes health care at Benghazi Diabetes Centre, *Libyan Arab Jamahiriya* **13**(1), 168-176.

12. Vimalavathini R, Agarwal SM and Gitanjali B (2008) Educational program for patients with type-1 diabetes mellitus receiving free monthly supplies of insulin improves knowledge and attitude, but not adherence, *Int J Diabetes Dev Ctries.* **28**(3), 86.

13. Santhanakrishnan I, Lakshminarayanan S and Kar SS (2014). Factors affecting compliance to management of diabetes in Urban Health Center of a tertiary care teaching hospital of South India. *J Nat Sci Biol Med.* **5**(2), 365.

14. Al Bimani ZS, Khan SA and David P (2015) Evaluation of T2DM related knowledge and practices of Omani patients, *Saudi Pharm J.* **23**(1), 22-27.

15. Schmidt C (2007) Self-care in children with type 1 diabetes: A Survey of Mothers, *MCN Am J MaternNurs.* **32**(4), 223-229.

16. Choudhury S, Das SK and Hazra A (2014) Survey of knowledge-attitude-practice concerning insulin use in adult diabetic patients in eastern India, *Indian J Pharmacol* **46**(4), 425.

17. Ng S, Chan K, Lian Z, Chuah Y, Waseem A and Kadirvelu A (2012). Reality vs Illusion: Knowledge, Attitude and Practice among Diabetic patients, *International Journal of Collaborative Research on Internal Medicine and Public Health* **4**(5). 709-718.

18. Bollu M, Koushik K, Prakash A, Lohith M and Venkataramarao NN (2015) Study of knowledge, attitude, and practice of general population of Guntur toward silent killer diseases: hypertension and diabetes, *Asian Journal of Pharmaceutical and Clinical Research* **8**(4), 74-78.