

Clinical Audit for Adult Type II Diabetes Mellitus and Patients Satisfaction at Primary Healthcare Services Facilities in Dubai

Othman Z. J.¹, Hussein H.^{2, *}, Al Faisal W.², Wasfy A.³

¹Health Centers Department, Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE

²School and Educational Institutions Health Unit, Health Affairs Department, Primary Health Care Services Sector, Dubai Health Authority, Dubai, UAE

³Research and Statistics Department, Ministry of Health, Dubai, UAE

Abstract

Background: Type II diabetes represents a real challenge to the health planners in United Arab Emirates due to its high prevalence and increased economic cost. A recent survey done in (1999- 2000) found a prevalence of over 20%. **Objectives:** To study the importance of clinical audit among Diabetic patients at primary health care facilities and its relation with patient satisfaction. **Methodology:** A cross sectional study among adult diabetic patients attending Primary Health Care centers in Dubai Health Authority. Data were collected by using a standardized satisfaction questionnaire to assess diabetic patient satisfaction regarding the services provided in primary health care centers where they are being managed. Random cluster sample technique was used with proper allocation of 540 patients with diabetes. **Results:** As regards the process of care, the blood pressure was measured in every visit in all cases, the LDL was measured in the last 12 months in 98.9%, 93.5% had foot examination in the last 12 months, 83.5% had eye examination in the last 12 months and only 60.7% had their HbA1c measured every 3 months. For the outcome of care indicators, it can be noted that 60.2% had their blood pressure at target controlled as compared to 53.1% for LDL and only 44.1% for HbA1c. As regards the outcome of care, the LDL and the blood pressure kept at target controlled, showed association with overall satisfaction and this was statistically significant ($Z = 2.32, P = 0.021$, $Z = 2.20, P = 0.028$ respectively). the most significant predictors of patient satisfaction are age, level of education and LDL being controlled at target. The most likely age group of being less satisfied is the <45 years old (OR = 4.90). The university educated patients are the most likely group to be less satisfied (OR = 5.94). Those patients with LDL not controlled at target are more likely to be less satisfied (OR = 1.59). **Conclusions:** The study concluded that clinical auditing is extremely vital tool for both Diabetes mellitus diseases management and patient satisfactions. **Recommendations:** Developing clinical Auding tool that linking auditing to diabetes mellitus diseases management outcomes and patients with DM satisfactions.

Keywords

Clinical Audit, Diabetes, Satisfaction, Primary Healthcare

Received: June 19, 2015 / Accepted: June 28, 2015 / Published online: July 17, 2015

© 2015 The Authors. Published by American Institute of Science. This Open Access article is under the CC BY-NC license.

<http://creativecommons.org/licenses/by-nc/4.0/>

1. Introduction

United Arab Emirates is currently undergoing rapid socioeconomic development with the progressive lifestyle changes of increasing use of fast foods and increasingly

sedentary life, leading to health problems such as increasing rates of obesity and type 2 diabetes, which has emerged as an epidemic problem in this region. Type 2 diabetes represents a real challenge to the health planners in UAE due to its high prevalence and increased economic cost. (1)

* Corresponding author

E-mail address: hyhussain@dha.gov.ae (Hussein H.)

The prevalence of diabetes mellitus was 6% in a survey performed in 1989–1990 on adults in the UAE (2). A more recent survey done in (1999- 2000) found a much higher prevalence of over 20% making the prevalence of DM in the UAE the second highest in the world after Narau and the prevalence is expected to double by the year 2025. (3,4) While the prevalence of diabetes complications in a recent study in the UAE showed that 19% of diabetic patients suffered from DM retinopathy, 35% from DM neuropathy, 12% from peripheral vascular disease, 14% from coronary artery disease, 4% from cerebrovascular disease, 35% from hypertension and 31% from dyslipidaemia. (5, 6) It is well known that Primary Health Care Setting is the cornerstone of all other health services.

In 1977, The World Health Assembly recognized that the main goal of the World Health Organization (WHO) should be to ensure that all peoples achieve a level of health that permits them to lead socially and economically productive lives. The Alma Ata conference (1978) defined primary health care as; the key to achieving Health for All 2000. (7) Donabedian has developed a model to identify three dimensions within quality of health care: structure, process, and outcome. (8) This theory comprises three quality measuring elements: structure, process and outcome.

Structure denotes the attributes of setting in which the care occur. This includes the attributes of material resources (such as facilities, policies, consultation time, equipment's and money) human resources (such as number and qualification personal) and organizational structure (such as medical staff organization, peer review method and method of reimbursements. a patient's current and future health status that can be attributed to the antecedent care. Although all three dimensions contribute to the perceived quality of care, it was indicated that consumers of care (patients) are more concerned with the process quality of health care than with the outcome of care or technical competencies of health care personnel. One explanation for this may be that patients are incapable of evaluating technical quality of care due to a lack of medical knowledge, and are more critically aware of the manner of providing care. Another explanation may be that patients are reserved in expressing critical comments with respect to the abilities of doctors. (9)

2. Objectives

To study the importance of clinical audit among Diabetic patients at primary health care facilities and its relation with patient satisfaction

3. Methodology

Descriptive cross sectional study was conducted at the primary health care centers (PHC) Dubai Health Authority (DHA). The Study was conducted from July 2010 to January 2011. All adult patients with type 2 diabetes mellitus who are attending the selected PHC centers are enrolled in the study. The total number of diabetic patients following in the primary health care setting is 540. The sample size was calculated by using computer program EPI-Info version "6.04". Minimum sample size was 538 and our sample size was 540 patients. Random cluster sampling technique was used. First PHC centers are divided according to the geographic distribution into two regions; Three centers were selected from each region randomly; total six centers were included in the study. Proportional allocation of the patients from the chosen centers was carried All patients who attended the chosen PHC center were included until the completion of the study. Structured interview questionnaire was used for data collection; It was implemented by one researcher. The Questionnaire was used in North American and European survey by other authors including Donabedian. (9) It was translated into Arabic. The questionnaire consists of 39 questions in the following domain: accessibility (7 items), continuity (6 items), humanness of the staff (8 items), comprehensiveness (5 items), provision of health education (5 items), effectiveness of health services (8 items). data was collected through face to face interview.

4. Results

Table 1. Quality of care measures for diabetic patients attending Primary Healthcare Centers at Dubai Health Authority, 2010.

Quality of care measures	Yes	No
Process of care measures		
Blood pressure measured every visit	540	100.0
Hemoglobin A1c measured every 3 months	328	60.7
Low density lipoprotein measured in the last 12 months	534	98.9
Foot examination in the last 12 months	505	93.5
Eye examination in the last 12 months	451	83.5
Outcome of care measures		
Hb A1c at target controlled	238	44.1
LDL at target controlled	287	53.1
Blood pressure at target controlled	325	60.2

Table (1) shows the quality of care measures provided to diabetic patients. As regards the process of care, the blood pressure was measured in every visit in all cases, the LDL was measured in the last 12 months in 98.9%, 93.5% had foot examination in the last 12 months, 83.5% had eye examination in the last 12 months and only 60.7% had their HbA1c measured every 3 months. For the outcome of care indicators, it can be noted that 60.2% had their blood pressure at target controlled as compared to 53.1% for LDL

and only 44.1% for HbA1c.

Table 2 revealed the association between the process and outcome of care measures and satisfaction. As regards the outcome of care the LDL and the blood pressure kept at

target controlled, showed association with overall satisfaction and this was statistically significant ($Z = 2.32$, $P = 0.021$, $Z = 2.20$, $P = 0.028$ respectively).

Table 2. Quality of care measures and satisfaction of diabetic patients attending Primary Healthcare Centers at Dubai Health Authority, 2010.

Variable	Overall satisfaction			Z	P
	No.	Mean	SD		
Process of care measures					
Blood pressure measured every visit	Yes	540	90.31	2.38	-
	No	-	-	-	-
Hemoglobin A1c measured every 3 months	Yes	328	90.27	2.28	0.93
	No	212	90.36	2.54	0.353
Low density lipoprotein measured in the last 12 months	Yes	534	90.31	2.39	0.36
	No	6	90.26	1.21	0.722
Foot examination in the last 12 months	Yes	505	90.33	2.38	0.77
	No	35	90.04	2.41	0.442
Eye examination in the last 12 months	Yes	451	90.32	2.41	0.44
	No	89	90.26	2.26	0.663
Outcome of care measures					
Hb A1c at target controlled	Yes	238	90.42	2.35	0.84
	No	302	90.22	2.41	0.399
LDL at target controlled	Yes	287	90.50	2.37	2.32
	No	253	90.09	2.38	0.021
Blood pressure at target controlled	Yes	325	90.13	2.37	2.20
	No	215	90.57	2.39	0.028

Table 3. Results of stepwise logistic regression analysis of factors affecting satisfaction of diabetic patients.

Variable	P	Adjusted OR	95% CI		
			Lower	Upper	
Age (years)	< 45	0.001	4.90	1.85	12.97
	45-	0.015	3.21	1.26	8.19
	55-	0.371	1.53	0.61	3.85
	65+		1.00		
Education	Illiterate		1.00		
	Primary	0.029	2.08	1.08	4.00
	Secondary	0.000	3.48	1.75	6.92
LDL at target controlled	University	0.000	5.94	2.93	12.03
	Yes		1.00		
	No	0.018	1.59	1.08	2.34

As shown in table 3, the most significant predictors of patient satisfaction are age, level of education and LDL being controlled at target. The most likely age group of being less satisfied are the <45 years old (OR = 4.90), followed by the age group 45-<55 years (OR = 3.21) in contrast to the group 65 years or more. In comparison to illiterate, the university educated patients are the most likely group to be less satisfied (OR = 5.94), followed by the secondary educated (OR = 3.48), then the preparatory education group (OR = 2.08). Those patients with LDL not controlled at target are more likely to be less satisfied (OR = 1.59).

5. Discussion

The retrospective study of the records of adult diabetic patients is reflecting how strict both process and outcome of

care management indicators for diabetic patients in primary health care setting in Dubai were followed. Blood pressure was documented in all diabetic patients on each visit (100%) this can be explained as it is a routine procedure that's done and documented by the practicing nurses. Furthermore, this result reflect the strict rules and regulations that have been implemented by DHA as a part of continuous quality improvement program for diabetes care in family practice setting.

Assessment of glycosylated hemoglobin levels is an objective measure of metabolic control of diabetes. This study showed that, 60.7% of the patients had HbA1c performed four times/year which was lower than the figure detected in USA (97.4%) (10), HbA1c was performed once a year in other study. The international guidelines necessitate that, HbA1c should done twice/year for controlled patients

and 4 times/year for uncontrolled patients. Concerning LDL measuring for diabetic patients, our findings revealed a high performance rate (98.9%) in comparison with 75% in Bosnia (11) and 87.6% in USA (10).

Funduscopy referral in our study was high (83.5%) as compared to other studies where it was 66% in USA (12) Feet examination was performed in approximately 93% of the patient which was high compared with other studies in Bosnia, (53.4%) (11) and in England (70.4%). (13) The implementation of treatment goals for diabetes is challenging, however, it has been suboptimal in most clinical settings (14). However our study showed the following: Regarding the intermediate outcome of care measures; the study showed that the proportion of patients with good glycaemic control (HbA1c < 7%, according to the ADA guidelines) were 44.1% which was nearly the same compared to a study done in USA (44%) (15), while a higher percent was reported in Australia (57%). (16) Hypercholesterolemia is major treatable cardiovascular risk factor in diabetic patients. The current study revealed that 53.1% of the diabetic patients reached the ADA target of controlling LDL (LDL < 100 mg/dL), this finding is in agreement with other studies done in USA (10) and Australia (16) which reported percentages of 46.1% and 52.8 % respectively. The present study showed that the proportion of patients achieving the target of ADA for controlling the blood pressure (<130/80mmHg) were 60.2% as compared to 33% in another study. (12)

There are multiple barriers to reach BP goals in primary care including, patient factors (social, economic, physiological, and treatment-related factors), provider factors (clinical inertia, polypharmacy, and time constraints), and system factors (insurance coverage, medication co-payments, access to primary care, self-management programs, and reimbursement schemes). Additionally, the recommended changes to diet and lifestyle are challenging for patients, and the lack of knowledge about health outcomes from poorly controlled hypertension can be a barrier to achieve the recommended goal. (17) The relation between satisfaction and outcome of care measures is complex and there is growing evidence linking patient satisfaction with better medical outcome of care. These outcomes include better compliance, and adherence to medical regimes. (18) However, it is equally true that people who receive both good process and good outcome of care are likely to be more satisfied (19). The current study result showed no significant association or relation between the control of diabetes (HbA1c<7) and satisfaction, while control of LDL (LDL<100) was associated with increased satisfaction Controlling of blood pressure (BP<130/80) was associated with decreased satisfaction. Other studies which had been conducted in this field showed that there is an association

between satisfaction and the outcome of care determined by HbA1c, where increased patient satisfaction usually lead to an improvement in the outcome of diabetes in term of HbA1c and vice versa. Alazri *et al.*, (2003) (20) and Redekop *et al.*, (2002) (21) found that poorly controlled diabetic patients were being less satisfied. Ultimately, we can conclude that among the diabetic patients in the current study, the overall satisfaction was fairly good except with aspects continuity of the care that brought out some shortcomings. Quality of care measures as well showed relatively good adherence to the ADA guidelines that was also expressed in better satisfaction among diabetic patients. Based on these findings some recommendations will be raised.

6. Conclusion

The study concluded that clinical auditing is extremely vital tool for both Diabetes mellitus diseases management and patient satisfactions.

Recommendations

Developing clinical Auding tool that linking auditing to diabetes mellitus diseases management outcomes and patients with DM satisfactions.

References

- [1] Alwan A. Non-communicable diseases: a major challenge to public health in the region. *Eastern Mediterranean health journal.* 1997; 3(1): 6–16.
- [2] El Mugamer IT, Ali Zayat AS, Hossain MM, Pugh RN. Diabetes, obesity and hypertension in urban and rural people of bedouin origin in the United Arab Emirates. *J Trop Med Hyg.* 1995; 98: 407–415.
- [3] Saadi H, Carruthers SG, Nagelkerke N, Al-Maskari F, Afandi B, Reed R, Lukic M, Nicholls MG, Kazam E, Algawi K, Al-Kaabi J, Leduc C, Sabri S, El-Sadig M, Elkhumaidi S, garwal M, Benedict. Prevalence of diabetes mellitus and its complications in a population-based sample in Al Ain, United Arab Emirates. *Diabetes Res Clin Pract.* 2007; 78(3): 369-77.
- [4] International diabetic federation, diabetes Atlas, third ed., 2006.
- [5] Al-Maskari F, El-Sadig M, Nelson NJ. The Prevalence of Macro vascular complications among diabetic Patients in Al-Ain District, United Arab Emirates. *Cardiovas Diabetol.* 2007; 6 (1): 24-33.
- [6] Al-Maskari F, El-Sadig M: Prevalence of Diabetic Retinopathy in the United Arab Emirates: A Cross-Sectional Survey. *BMC Ophthalmology.* 2007; 7: 11-19.
- [7] Department of Economic Development, Government of Dubai. Dubai's drive for quality. Dubai Quality Award Health Care Edition. Dubai, UAE, Quality Award Secretariat, 2004 (Accessed 2nd may 2010). Available from: <http://www.dqa.ae/DQA>,

- [8] Donabedian A. Explorations in Quality Assessment and Monitoring. Health Administration Press. 1980; 19: 5-6.
- [9] Hall J, Dornan M. What patients like about their medical care and how often they are asked: a meta-analysis of the satisfaction literature. *Soc Sci Med*. 1998;27:935-939
- [10] Grant R, Buse J, Meigs J. Quality of Diabetes Care in U.S. Academic Medical Centers Low rates of medical regimen change. *Diabetes Care*. 2005; 28 (2): 337-442.
- [11] Novo A, Jokic I. medical audit of diabetes mellitus in bosnia and herzegovina. *Croat Med J*. 2008; 49: 757-62
- [12] Gill JM. Impact of provider continuity on quality of care for person with diabetes mellitus. *Annals of family medicine*. 2003; 1:162-70
- [13] Hunt K, Ganguli S, Baker R, Lowy A. Features of primary care associated with variations in process and outcome of care of people with diabetes. *Br J Gen Pract*. 2001; 51: 356- 60.
- [14] Krentz AJ. Lipoprotein abnormalities and their consequences for patients with type 2 diabetes. *Diabetes Obes Metab*.2003; 5 (1): 19-27.
- [15] Saydah SH, Fradkin J, Cowie CC. Poor control of risk factors for vascular disease among adults with previously diagnosed diabetes. *Journal of American medical association*, 2994; 291(3): 335- 42.
- [16] Kemp T, Barr E, Zimmet P, Cameron A, Welborn T, Colagiuri S, Phillips P, Shaw J. Glucose, lipid, and blood pressure control in Australian adults with type 2 diabetes: the 1999-2000 Aus Diab. *Diabetes care*. 2005; 28:1490-2.
- [17] Turner BJ, Hollenbeak C, Weiner MG, Ten Have T, Roberts C. Barriers to adherence and hypertension control in a racially diverse representative sample of elderly primary care patients. *Pharmacoepidemiol Drug Saf*. 2009; 18: 672-681.
- [18] Williams B. Patient satisfaction: a valid concept. *Soc Sci Med* 1994; 38: 509-516.
- [19] Hall JA, Milburn MA, Roter DL, Daltroy LH. Why are sicker patients less satisfied with their medical care? Tests of two explanatory models. *Health Psycho*. 1998; 17: 70-75.
- [20] Alazri MH, Neal RD. The association between satisfaction with services provided in primary care and outcomes in Type 2 diabetes mellitus. *Diabet Med*. 2003; 20: 486-490.
- [21] Redekop WK, Koopmanschap MA, Stolk RP, Rutten GE, Wolffenbuttel BH, Niessen LW. Health-related quality of life and treatment satisfaction in Dutch patients with type-2 diabetes. *Diabetes Care*. 2002; 25: 458-463.