

Patients' Satisfaction with Type 2 Diabetes Care and its Relation to their Glycaemic Control-Primary Health Care Setting, Port Said, Egypt

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Abstract

Background: Research has identified a clear link between clinical outcomes and patient satisfaction especially in chronic diseases like diabetes, where a wide range of needs and expectations exists. Satisfaction affects the timely, efficient, and patient-centred delivery of quality health care. **Aim:** To assess patients' satisfaction with type 2 diabetes care and its relation to their glycaemic control. **Patients and Methods:** Analytic cross sectional study with a total of 72 patients ≥ 18 years old with type 2 diabetes who attend Port Fouad urban family health centre, Port Said city, Egypt were invited to complete 18 items, Patient Satisfaction Questionnaire (PSQ-18) to determine their satisfaction and its relation to the degree of HbA1c control. The questionnaire contained 7 domains to identify patients, doctors and practice determinants of satisfaction. **Results:** 60% of type 2 diabetic patients were satisfied with the provided health care services. Doctor's communication ranked the highest satisfaction level among other factors followed by satisfaction with consultation time and appropriateness of consultation room. Meanwhile, the study revealed a proportional relationship between overall patients' satisfaction and controlled HbA1c. **Conclusion:** There was a clear link between patients' satisfaction with type 2 diabetes care and improvement of their glycaemic control.

Keywords: Type II diabetes, HbA1c, patient's satisfaction, primary care

Introduction

Patient satisfaction is an important and commonly used indicator for measuring the quality in health care. Patient satisfaction affects clinical outcomes, patient retention, and medical malpractice claims. It affects the timely, efficient, and patient-centred delivery of quality health care. There was no homogeneous definition of patient satisfaction, since satisfaction concerns different aspects of care or set-

tings, as well as care given by various professions⁽¹⁾. Thus, the interpretation of patients' satisfaction as an overall score is often difficult, but comparisons over defined dimensions of care being more appropriate⁽²⁾. Many studies have focused on the main components including patients', physicians' and practices' characteristics, which influenced patients' ratings of satisfactions⁽³⁾. However, previous studies have not identified those factors that are most important. Moreover, in re-

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cent years, the characteristics of the external environment have been also considered as additional factors influencing individual evaluation⁽⁴⁾. Improving the quality-of-care for patients with chronic conditions like diabetes mellitus became an important focus of the health-care system and policy. The focus on diabetes mellitus is increasing because it becomes a major public health problem with a wide range of needs and expectations⁽⁵⁾. In 2013 about 382 million people were estimated to have diabetes with a global prevalence of 8.3%. North America and the Caribbean are the regions with higher prevalence, 36,755 people with diabetes (11%) followed by the Middle East and North Africa with 34,571 people with diabetes (9.2%). There were 7.5 million cases of diabetes in Egypt in 2013⁽⁶⁾. Diabetes mellitus is a complex, chronic illness requiring continuous medical care with multifactorial risk reduction strategies beyond glycemic control. Ongoing patient self-management, education and support are critical to preventing acute complications and reducing the risk of long-term complications. Significant evidence exists that supports a range of interventions to improve diabetes outcomes⁽⁷⁾. Diabetes is associated with serious long-term complications including microvascular and macrovascular disease, which impose an additional socio-economic burden and account for substantial healthcare costs. Improved glycemic control in people with diabetes reduces the risk of long-term complications⁽⁸⁾. The quality of diabetes care is widely sub-optimal and most of the interventions depend on active involvement and participation of patients. Thus working through patient satisfaction may be an important way of improving diabetes care⁽⁹⁾. Some studies have highlighted that satisfaction strongly increases when care is provided in accordance with the clinical standard procedures⁽¹⁰⁾. Different

psychosocial and behavioral hypotheses have been proposed to explain the association between patients' satisfaction and medical outcomes. Empirical findings typically suggest a positive relationship between health outcomes and satisfaction with care. An alternative theory suggested that patient satisfaction may be both a consequence and a determinant of health status⁽¹¹⁾. The present study was carried out to identify factors that influence satisfaction with type 2 diabetes care in Egypt's current health care system where 72 percent of all healthcare costs are covered out of pocket despite that more than half of the population has access to some form of health insurance⁽¹²⁾. As well, to find any relation between this satisfaction and the extent of glycemic control.

Patients and Methods

A cross-sectional study was performed in one of two urban primary health care centres. Port Fouad district, Port Said city, Egypt. This centre provides a package of primary care services including diabetes care, 8 hours daily, 5 days a week to about 34000 individuals. This centre holds a diabetic clinic, which provides comprehensive diabetes care running by qualified family physicians. For inclusion in the study, 72 men and women aged 18 years or above with known type2 diabetes who attended the health centre for diabetes follow up were selected. This age group represents the majority of type 2 diabetics attending the centre. The representative sample was selected by simple randomization using simple randomization table after enlisting type 2 diabetic patients who attended the Port Fouad primary health care centre for follow up visits. Patients with type 1 diabetes, insulin dependent type 2 diabetics, mental retardation, Alzheimer's disease, those attending for concomitant acute illness and patients

who refused participation in the study were excluded.

Measurement of patient satisfaction: Patient satisfaction was assessed using 18 items structured, interviewer-administered Patient Satisfaction Questionnaire (PSQ-18)⁽¹⁴⁾, which has undergone a series of successful validations. The PSQ-18 questionnaire has one total score that measures overall satisfaction and separate scores for each of six different subscales (technical Quality, interpersonal Manner, communication, financial aspects, time spent with doctor, accessibility and convenience). Some PSQ-18 items were worded so that agreement reflects satisfaction with medical care, whereas other items are worded so that agreement reflects dissatisfaction with medical care. All items were scored so that high scores reflect satisfaction with medical care. After item scoring, items within the same subscale have been averaged together to create the 7 subscale scores. Cut-offs for the total scores were decided by the researcher as <60% = “not satisfied”; 60-80% as “moderately satisfied” and >80 as “highly satisfied”. The questionnaire was translated from English to Arabic by a translator in a private office. Three doctors including one of the researchers have been trained on using the questionnaire to avoid interpersonal bias. As well, a pilot study (10 patients) has been conducted to test the wording and reliability of the questionnaire.

Measurement of diabetes control: Control of blood glucose was assessed by measuring HbA1c, the same day of interviewing the patient. Mindray enzymatic on BS-200 analyzer was used and 6.5–7.0% was considered the normal range of glycemic control⁽¹⁵⁾

Study design: Data were collected from patients attending their diabetes follow-up over a 3-months period (January-March 2016) after a verbal informed consent. Pa-

tients were interviewed face to face by three family physicians working at Port Fouad primary health care center.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS version 16.0) was used for data analysis. Descriptive statistics and appropriate significance tests were used according to types of variables. Chi-square test was used to test the significance of difference between the categorical variables e.g. sex. Pearson's correlation analysis was used to test the significance of linear association between HbA1c and total patient satisfaction questionnaire (PSQ-18) scores. Multiple linear regression was used to detect the predictors of the patients' satisfaction among the study group.

Results

Patients' socio-demographics

The study included 72 type 2 diabetic patients from an urban area (Port Fouad). Their age ranged from 34-76 years with mean equal to 54.3 ± 11.3 . There were more females (59.7%) than males (40.3%) and most females were housewives (59.7%). Most the study people were educated with intermediate education ranked first (25%), followed by primary school (23.6%) and higher education (18.1%). There were four socioeconomic categories that included very low (6.9%), low (36.1%), middle (52.8%) and high category (4.2%).

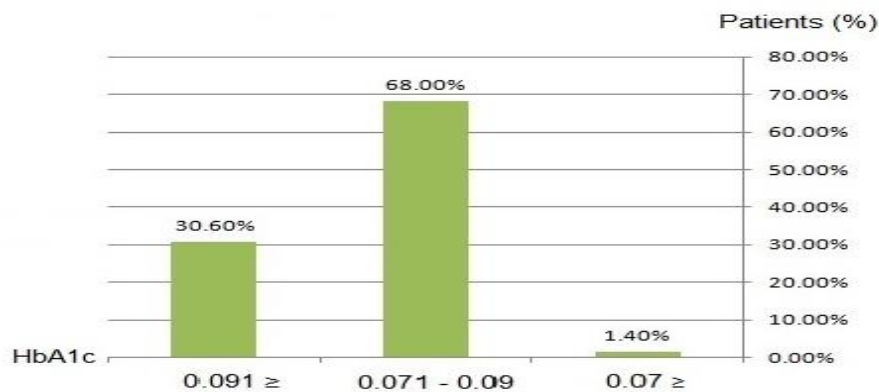
HbA1c control levels of the study group: As shown in Figure 1, the minority of the studied patients were controlled (1.4%) as defined level of HbA1c below 7%.

Overall patients' satisfaction of diabetes care: The study revealed that 60 % of patients were satisfied with the provided diabetes care but with variation in their degree of satisfaction as shown in Figure 2

Table 1: Baseline Characteristics of the Study Group (n= 72)

| Characteristics | No. | % |
|--------------------------------|------------|------|
| Age (mean± SD) | 54.3± 11.3 | |
| Sex | | |
| • Male | 29 | 40.3 |
| • Female | 43 | 59.7 |
| Educational level | | |
| • Illiterate | 9 | 12.5 |
| • Read and write | 18 | 25 |
| • Primary school | 17 | 23.6 |
| • preparatory | 4 | 5.6 |
| • Secondary | 11 | 15.3 |
| • University/higher education | 13 | 18.1 |
| Occupation | | |
| • Nonworking/housewife | 43 | 59.7 |
| • Unskilled manual worker | 3 | 4.2 |
| • Skilled manual worker/farmer | 4 | 5.6 |
| • Trades/business | 6 | 8.3 |
| • Semi-professional/clerk | 16 | 22.2 |

SD: standard deviation No: number

**Figure 1:** Frequency distribution of HbA1c among study group

Satisfaction with different domains of PSQ18: About 47% of patients were moderately satisfied with technical quality while 43% of patients were not satisfied. Nearly 43% of patients were highly satisfied of interpersonal manner. More than half of patients (57%) were moderately satisfied with communication. There were about 48.6% of patients moderately satisfied with financial aspects, whereas 34.7% were not satisfied. Regarding time spent with doctor, about 57% of patients were

moderately satisfied while 39% were not satisfied. Approximately 55.6% of patients were moderately satisfied and 30.6% were highly satisfied with accessibility and convenience of health care services. In all patients' satisfaction domains, there was no significant difference between males and females (Table 2).

Predictors of glycemic control: Multiple regression analysis was conducted between glycosylated Hb (HbA1c) as dependant variable and the following independent

variables: General satisfaction, Technical quality, Interpersonal manner, Communication, Time spent with doctor, Financial aspects and Accessibility and Convenience. The results of regression analysis revealed that technical quality domain of

Patient Satisfaction Questionnaire (PSQ), Accessibility and Convenience of health care were the only significant predictors of HbA_{1c} with negative linear association. (Table 3).

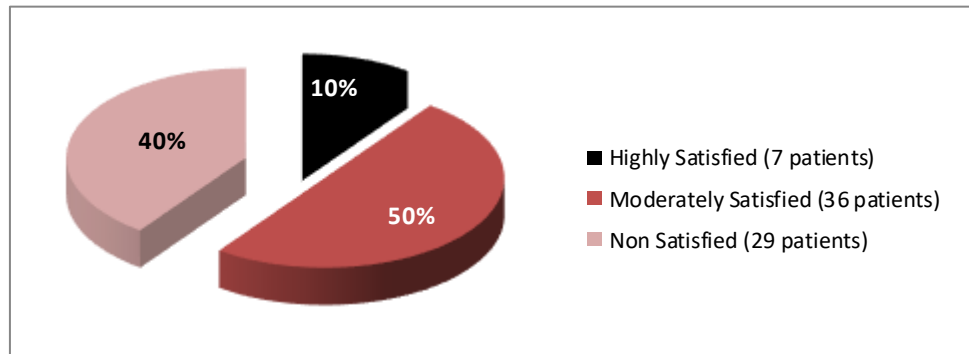


Figure 2: Categories of satisfaction with diabetes 2 care

Table 2: Frequency Distribution of Patients' Satisfaction regarding different domains

| | Males | | | Females | | | χ^2 value | P |
|---------------------------------|---------------------|----------------------------|------------------------|---------------------|----------------------------|------------------------|----------------|--------|
| | Non-satisfied N (%) | Moderately satisfied N (%) | Highly satisfied N (%) | Non-satisfied N (%) | Moderately satisfied N (%) | Highly satisfied N (%) | | |
| - Technical Quality | 15 (48.4) | 12 (35.3) | 2 (28.6) | 16 (51.6) | 22 (64.7) | 5 (71.4) | 1.545 | 0.499* |
| - Interpersonal manner | 8 (47.1) | 8 (33.3) | 13 (41.9) | 9 (52.9) | 16 (66.7) | 18 (58.1) | 0.842 | 0.645 |
| - Communication | 11 (45.8) | 14 (34.1) | 4 (57.1) | 13 (54.2) | 27 (65.9) | 3 (42.9) | 1.847 | 0.427* |
| - Financial aspects | 8 (32.0) | 15 (42.9) | 6 (50.0) | 17 (68.0) | 20 (57.1) | 6 (50.0) | 1.280 | 0.529 |
| - Time spent with doctors | 11 (39.3) | 17 (41.5) | 1 (33.3) | 17 (60.7) | 24 (58.5) | 2 (66.7) | 0.232 | 1.000* |
| - Accessibility and Convenience | 3 (30.0) | 18 (45.0) | 8 (36.4) | 7 (70.0) | 22 (55.0) | 14 (63.6) | 0.911 | 0.666* |

χ^2 = Chi- square; *= Fisher's test

Table 3: Multiple regression analysis: Predictors of glycemic control among study group

| Constant | B (regression coefficient) | SE | 95% CI | T | P |
|---------------------------------|----------------------------|-------|--------------|--------|-------|
| • General Satisfaction | 13.190 | 1.758 | -0.44 --0.30 | 30.061 | 0.000 |
| • Technical Quality | -0.004 | 0.840 | -0.55--7.27 | -0.695 | 0.489 |
| • Interpersonal Manner | -0.017 | 1.354 | -2.87--0.39 | -2.557 | 0.013 |
| • Communication | -0.008 | 0.795 | -0.28--4.24 | -1.775 | 0.081 |
| • Time spent with doctor | -0.008 | 1.693 | -1.43--0.10 | -1.456 | 0.150 |
| • Financial Aspects | 0.001 | 0.643 | -0.29--3.71 | 0.137 | 0.892 |
| • Accessibility and Convenience | 0.000 | 0.892 | -0.15--2.86 | -0.095 | 0.925 |

Dependent Variable: HbA_{1c}

Relation between level of satisfaction and degree of glycemic control: Scheffe (Post Hoc Test) was conducted to determine the significance of difference between satisfaction categories regarding glycosyl-

ated hemoglobin (HbA1c). The results revealed that non-satisfied category was significantly different from each of the other two categories (highly and moderately satisfied categories) (Table-4).

Table 4: One way analysis of ANOVA the significance of difference between different satisfaction categories regarding levels of glycated haemoglobin (HbA1c)

| Satisfaction Category | N | Mean | SD |
|-----------------------|----|--------|---------|
| Highly Satisfied | 7 | 7.6143 | 0.75151 |
| Moderately Satisfied | 36 | 8.0056 | 0.60093 |
| Non-Satisfied | 29 | 9.4517 | 0.67221 |

$F = 48.575$

Discussion

This cross-sectional study was conducted to identify patients' satisfaction with type 2 diabetes care, factors that might influence this satisfaction and association between this satisfaction and the degree of glycemic control as measured by HbA1c. About 60% of the respondents showed overall satisfaction with the provided diabetes care although their glycemic control as measured by HA1C was only 1.4%. This unexpected result might be due to expressing their satisfaction in relation to the process of care not to the level of HbA1c as an outcome measure of care and glycemic control. Another explanation might be a deficiency in health education provided to these patients and lack of their awareness towards the meaning of HbA1C control as one of the outcome measures that reflect quality of care. The degree of satisfaction was clearly different regarding various domains. The study revealed that 57% of patients were satisfied with technical quality domain, approximately 65.3% were satisfied with service cost, while 86% of patients were satisfied with accessibility and convenience of the provided services. In Kuwait, Al-Dousari et al. (2008) reported that patients' satisfaction ranged from 75.2% to 78.4% as low satisfaction was scored for

some physicians' services particularly for physicians' medical skills and poor satisfaction with buildings while pharmacy services scored the highest satisfaction score⁽¹⁶⁾ Ramirez et al. (2005) noted that every ten patients considered that their medical consultation problems were solved and that the health-care provider quality was satisfactory⁽¹⁷⁾. In Mexico, Doubova et al. (2009) found that only half of diabetic patients were satisfied with their provided primary health care services⁽¹⁸⁾ Kamien et al. (1995) found that 90% of diabetic patients reported their satisfaction toward primary care in Australia⁽¹⁹⁾. This wide range of difference in overall patients' satisfaction among the previous studies may reflect differences in economic status, culture, and people's expectations. In the present study females (59.7%) constituted the majority of the studied population compared to males (40.3%). This might be due to more utilization of a wider package of health services provided to ladies and their kids through primary health care centers. In addition, the morning working hours of the primary health care centers might be more suitable visiting hours as most of the ladies in this particular district were house wives. But there was no significant difference between both genders regarding overall satisfaction. This result is in accordance

with that reported by Moemen (2008) who found no association between patients' satisfaction and gender regarding provided health care⁽²⁰⁾. However, Al-Dousari *et al.* in Kuwait found that female patients experienced higher satisfaction than males,⁽¹⁶⁾ while Al-Eisa *et al.* (2005) reported that males had significantly higher satisfaction than females⁽²¹⁾ Thiedke (2007) pointed out that there was a controversy regarding the relation between patient's gender and his/her satisfaction. As she explained, this might be due to differences in gender-roles within societies⁽²²⁾. In Egypt, there is a shared socioeconomic responsibility between males and females towards their family which might explain the absence of relationship between gender and patients' satisfaction. The present study revealed a negative linear relationship between socioeconomic status and patients' satisfaction. This might be explained as diabetic patients with higher socioeconomic level have wider choices to obtain better private health care services other than primary health care. The present study also showed a negative linear relationship between educational level of the respondents and their satisfaction with type 2 diabetes services provided in primary health care. This finding is in agreement with several studies⁽²³⁻²⁵⁾. This may be explained by that the highly educated diabetics are more demanding, have higher expectations and are more aware of their rights than the less educated patients who may be less demanding and less aware of high quality health care available in their community. On the other hand Thiedke noted that unemployed individuals and those with lower socioeconomic status tended to be less satisfied with their health care⁽²²⁾. The results illustrated that about 57% of patients were moderately satisfied and 9.7% were highly satisfied with the physicians' communication skills. Nearly

51% of patients were satisfied with their doctors' interest in what the patients told them. While about 40% of patients were dissatisfied with provision of little information about the reason for medical tests by the doctors. However, Al Shahrani *et al.* noted that Communication skills ranked the highest satisfaction level among other aspects of care in both diabetic and Family Medicine clinics (86.4% and 90%) respectively⁽¹¹⁾. Moreover, in Kuwait, Al-Doghather *et al.* (2005) reported that PHC physician's communication skills were strong and important correlates of patient's satisfaction⁽²⁵⁾. The presence of communication gaps between diabetic patients and their family physician leads to their dissatisfaction. When patients are well-informed and participate in treatment decisions, their anxiety decreases and their therapeutic adherence improves, thus increasing the chances of getting better health outcomes^(17,26). In a study by Acharya & Acharya (2003), 82.8 % of the respondents showed that the approach of the doctor is personal⁽²⁷⁾, while in the present study about 43% of patients were highly satisfied and 33.3% were moderately satisfied with the interpersonal manner of their physicians. The results showed that approximately 65% of the respondents expressed that their doctors treated them in a very friendly and courteous manner. Nearly 57% of patients were satisfied (i.e., 47% were moderately satisfied and 10% were highly satisfied) with technical quality of diabetes care. Although about 61% of patients were satisfied with the ability of doctors who treated them, about 62% showed that their doctor's office was inappropriate to provide complete medical care. Several studies have looked at patients' assessment of their physician's technical skills and the effect on satisfaction, but the findings were contradictory⁽²⁵⁾. Gouveia *et al.* (2005) mentioned that 30–40% of health care users' satisfaction is

explained by the physicians' diagnostic and therapeutic skill and 40–50% by the physician-patient relationship⁽²⁹⁾. This may be due to sick people like diabetics being more concerned with the outcome of the consultation that greatly depends on the clinical and prescribing competencies of the treating physician. Regarding service fees, more than half of the patients were satisfied (i.e., 48.6% were moderately satisfied and 16.7% were highly satisfied) with service cost. Due to many factors, many Egyptian patients are obliged to pay out of their pocket to get the medical care and this might explain the dissatisfaction of 34.7% in this study, especially where 52.8% of the respondents were of middle socioeconomic level and 36.1% were of low socioeconomic level. Regarding the time spent with doctor in the present study, about 57% of patients were moderately satisfied while 39% were not satisfied. This may be explained by the fact that the PHC has only one clinic for patients with chronic illness leading to overcrowding. Joshi K. *et al.* (2013) illustrated that in 75% of patients the time devoted by the doctor for consultation was only less than 5 minutes⁽³⁰⁾. Abdelwahid *et al.* (2012) in their study on quality of type-2 diabetics' consultations illustrated that more attention should be given to the consultation length as patients' enablement correlates best with the duration of consultation⁽³¹⁾. Accessibility is considered one of the pillars of primary care. The findings in our study showed that about 55.6% of respondents were moderately satisfied and 30.6% were highly satisfied with accessibility and convenience of health care services. Approximately 54.2% expressed that they had easy access to the medical specialist they needed and about 64% found it was not hard to get an appointment for medical care. Rao *et al.* (2006) in their cross-sectional study on the assessments of quality of primary care; reported

that the majority of patients expressed moderate satisfaction regarding accessibility (65.3%)⁽³²⁾. The study revealed that technical quality, accessibility and convenience of health care services were the significant predictors of HbA1c which is similar to several studies. Little *et al.* (2003) illustrated that if doctors don't provide a positive, patient centered approach, patients will be less satisfied, less enabled, and may have greater symptom burden and use more health service resources⁽³³⁾. The results of the present study showed a negative linear relationship between patients' satisfaction and HbA1c as a measure of glycemic control. This result is in accordance with that shown by Doubova *et al.* who emphasized that patient's satisfaction can greatly influence their contribution to disease management, which is important for better control of their conditions⁽¹⁸⁾. Diabetics on the other hand, Alsharani *et al.* (2014) did not show any correlation between satisfaction and the degree of glycemic control⁽¹¹⁾.

Limitations of the study

Although sample size was justified according to sample size formula, a bigger sample size may give more accurate results. This study population shared nearly similar sociodemographic status. Therefore, results can only be generalized on a population with the same characteristics.

Conclusion

The present study concluded that many factors influence patient satisfaction with type 2 diabetes care with a clear proportional link between this satisfaction and the degree of glycemic control

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