

Services satisfaction of type 2 diabetic patients attending Arar's diabetic center, Saudi Arabia

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ABSTRACT

الأهداف: تحديد مدى رضا مرضى السكري من النوع 2 عن الخدمات التي يقدمها مركز السكري في مدينة عرعر بالمملكة العربية السعودية ، وتقييم العلاقة بين رضا المرضى ومراقبة السكري لديهم .

الطريقة: تم إجراء دراسة مقطعية مستعرضة في الفترة من 1 يناير إلى 30 أبريل 2018 في مركز عرعر لمرضى السكري على 322 مريض . تم تطبيق تقنية عشوائية منتظمة لأخذ العينات لتشمل كل ثاني من مرضى السكري من النوع الثاني الذين يحضرون المركز . أجرى الباحثون مقابلات مع مرضى السكري من النوع 2 باستخدام استبيان تم اختياره مسبقاً للتحقق من صلاحيته وموثوقيته .

النتائج: كان متوسط عمر السكان المدروسين 48.5 ± 13.05 . كان معدل الرضا العام 65.8% . كان هناك ارتباط كبير بين رضا المريض إلى الحالة الصحية المبلغ عنها ذاتياً ($p=0.001$) وطريقة العلاج ($p=0.02$) . فيما يتعلق بالعوامل ذات الصلة بالخدمة: 78% من المرضى كانوا راضين عن الوقت الذي يقضونه خلال التشاور ؛ 58.7% راضون عن المعلومات المقدمة حول المرض . 58.7% كانوا غير راضين عن النصيحة الغذائية . و44.7% كانوا غير راضين عن المعلومات المقدمة فيما يتعلق بالأدوية . تم التحكم في الهيموغلوبين A1c (HbA1c) في 64% من المرضى . كان هناك ارتباط ذو دلالة إحصائية بين استياء المرضى وضعف التحكم في السكري .

الخلاصة: ثلثي المرضى راضين عن الخدمة المقدمة لهم في مركز السكر بمدينة عرعر . ويمكن رفع هذه النسبة عن طريق التأكيد على أهمية تثقيف المرضى فذلك كله يحسن من درجة رضاهم وسيطرتهم على هذا المرض المزمن

Objectives: To determine type 2 diabetic patients' satisfaction with the services provided by the Diabetic Center, Arar, Saudi Arabia, and to assess the relationship between patients' satisfaction and their diabetic control.

Methods: An observational cross-sectional study, carried out in 322 patients at the Arar Diabetic Center, Arar, Kingdom of Saudi Arabia between January and April 2018. A systematic random sampling technique was

applied to include every second type 2 diabetic patient attending the center. We interviewed the type 2 diabetic patients using a predesigned questionnaire tested for validity and reliability.

Results: The mean age of the studied population was 48.5 ± 13.05 . The overall satisfaction rate was 65.8%. There was a significant association between patient satisfaction to both self-reported health status ($p=0.001$) and mode of treatment ($p=0.02$). Regarding service related factors: 78% of patients were satisfied with the time spent during consultation; 58.7% were satisfied with information given regarding the disease; 58.7% were dissatisfied with dietary advice; and 44.7% were dissatisfied with information given regarding medications. Hemoglobin A1c (HbA1c) was controlled in 64% of patients. There was a statistically significant association between patients' dissatisfaction and poor diabetic control.

Conclusion: Two-thirds of the patients were satisfied with the services provided by the Diabetic Centres of Arar city, Saudi Arabia. The study recommends emphasis on patient education and addressing patient needs and worries.

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Diabetes mellitus (DM) is a common chronic illness that requires continuous and comprehensive medical care using different strategies.¹ The World Health Organization (WHO) stated that Kingdom of Saudi Arabia (KSA) is the second highest in the Middle East and seventh in the world for number of diabetes cases. Diabetes has increased prevalence of a 10-fold in the past 3 years in KSA.² The prevalence reached 30%.³ Diabetes mellitus leads to poor general health and a lower quality of life with high mortality.² Patient's satisfaction is a cornerstone of the medical care quality and an important goal of health care providers. Patients' relationships and satisfaction with health care providers are necessary for follow-up and management of the case.⁴ Diabetic patients are more easily dissatisfied with continuous follow-up visits for the rest of their lives. Dissatisfactory treatment and care of diabetic patients compromise the quality of their lives.⁵ Literature reviews showed a strong association between diabetic patient satisfaction and optimal care outcomes. Patient's satisfaction is affected by many factors, including the patient, providers, and health care system.^{6,7} Demographic characteristics (namely, female gender), clinical factors (namely, diabetes complications), treatment factors (namely, type of medication), adherence factors (namely, difficulty attending follow-up or taking medications), and service related factors were associated with lower levels of satisfaction for treatment.⁸ There is a need for studies about patient's satisfaction and the quality of diabetic care in the Northern Borders regions.

The objective of this study is to determine type 2 diabetic patients' satisfaction with the services provided by the Diabetic Center, Arar, KSA, and to assess the relationship between patients' satisfaction and their diabetic control.

Methods. An observational cross-sectional study was conducted using a questionnaire to measure patients' satisfaction. The study was carried out between January and April 2018 at the Arar Diabetic Center, Arar, KSA. The sample size was calculated using the following formula:⁹

$$n = p*(1-p)*(z\alpha/d)^2$$

The estimated proportion of service satisfaction of type 2 diabetic patients (p) was considered to be 70% according to the study conducted in Riyadh, KSA.¹⁰ A

sample of 322 type 2 diabetic patients was included in this study. Type 2 diabetic patient above 18 years old and diagnosed since more than one year were included in the study. Diabetics with psychiatric disorders, limited intellectual capabilities, serious vascular complications were excluded from the study. A systematic random sampling technique was applied. We collected the data by interviewing patients. About 20 patients attended the diabetic center per day. We visited the center 3 times per week during 4 months.

The questionnaire included modifications of the Diabetes Clinic Satisfaction Questionnaire (DCSQ), Diabetes Treatment Satisfaction Questionnaire, and General Practice Assessment Survey.^{3,11} It was translated into Arabic and translated back into English. The designed questionnaire was tested for reliability and validity by a panel of experts. A pilot study was carried out on 50 diabetic patients with no modifications to the questionnaire. The questionnaire contained: 1) questions on patient characteristics, comorbidities, treatment and duration of diabetes; 2) assessment of practice related factors as access and continuity of care, waiting times, and appointment systems of follow-up visits; 3) assessment of doctors' competence, technical aspects of care, referral to and coordination with specialized care and communication skills. Every item was scored from 1-6, with a probable total of 60. Participants with a score of $\geq 90\%$ (54+) were considered excellent, participants with a score of 60-89% (36-53) were considered good, and a score of $<60\%$ (<36) were considered poor.

We assessed patients' satisfaction regarding the diabetes care they received as patient, education on medication, lifestyle modification, and foot care. The overall levels of satisfaction concerning diabetes care were calculated according to a 5-point Likert scale (5: very satisfied, 4: satisfied, 3: neither satisfied nor dissatisfied, 2: dissatisfied and 1: strongly dissatisfied). Satisfaction items about doctors and their medical practice were scored using a 6-point Likert scale (very poor, poor, fair, good, very good and excellent). Measurement of diabetes control via HbA1c levels that was obtained from the patients' files with at least one HbA1c reading within the last 3 months.

The reference value of HbA1c was based on the American Diabetic Association (2017).¹ For statistical analysis, we utilized the Statistical Package for Social Sciences, Version 16 (SPSS Inc., Chicago, IL, USA) to analyze the data. The results were displayed as numbers and percentages. The Chi-square was used as a test of significance, and a $p \leq 0.05$ was considered significant. Ethical approval and official permission was obtained

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from the Local Research Ethical Committee of the Northern Border Health Affairs (Number 39/9) and from the Arar Diabetic Centre Administration. Before starting the interviews, informed verbal consent was obtained from the participants. Their information were dealt with confidentiality.

Results. Table 1 illustrates the service satisfaction of type 2 diabetic patients in relation to their sociodemographic characteristics and smoking habits. The mean age of the studied population was 48.5 ± 13.05 years. The overall satisfaction rate was 65.8%. Out of all participants, 50.3% were females and 49.7% were males. Approximately one third (31.4%) of the studied patients were illiterate. Twenty-seven percent of patients were smokers. There was no significant association between patient satisfaction and age, gender, marital status, educational level or smoking status.

Table 2 shows 47.5% of patients had other chronic diseases. Approximately 44.1% of studied patients had been diabetic for more than 5 years. There was a significant association between patient satisfaction

Table 1 - Service satisfaction of type 2 diabetic patients attending the Arar Diabetic Centre in relation to sociodemographic characteristics, and smoking habits.

| Characteristics | Satisfied | Dissatisfied n (%) | Total | P-value |
|--------------------------|-----------------------------|----------------------------|----------------------------|---------|
| Total | 212 (65.8) | 110 (34.2) | 322 (100.0) | |
| <i>Age (years)</i> | | | | |
| Mean \pm SD (range) | 48.5 \pm 13.05 (19-85) | 48.9 \pm 12.7 (22-81) | 48.7 \pm 12.9 (19-85) | 0.8 |
| <i>Age (years)</i> | | | | |
| <30 | 15 (75.0) | 5 (25.0) | 20 (6.2) | 0.9 |
| 30-39 | 35 (66.0) | 18 (34.0) | 53 (16.5) | |
| 40-49 | 58 (63.0) | 34 (37.0) | 92 (28.6) | |
| 50-59 | 55 (66.3) | 28 (33.7) | 83 (25.8) | |
| >60 | 49 (66.2) | 25 (33.8) | 74 (23.0) | |
| <i>Gender</i> | | | | |
| Male | 100 (62.5) | 60 (37.5) | 160 (49.7) | 0.2 |
| Female | 112 (69.1) | 50 (30.9) | 162 (50.3) | |
| <i>Marital status</i> | | | | |
| Single | 16 (69.6) | 7 (30.4) | 23 (7.1) | 0.9 |
| Married | 151 (64.5) | 83 (35.5) | 234 (72.7) | |
| Divorced | 13 (68.4) | 6 (31.9) | 19 (5.9) | |
| Widowed | 32 (69.6) | 14 (30.4) | 46 (14.3) | |
| <i>Education level</i> | | | | |
| Illiterate | 59 (58.4) | 42 (41.6) | 101 (31.4) | 0.4 |
| Primary | 19 (76.0) | 6 (24.0) | 25 (7.8) | |
| Intermediate | 28 (65.1) | 15 (34.9) | 43 (13.4) | |
| Secondary | 59 (69.4) | 26 (30.6) | 85 (26.4) | |
| University* | 47 (69.1) | 21 (30.9) | 68 (21.1) | |
| <i>Smoking status</i> | | | | |
| Smoker | 54 (62.1) | 33 (37.9) | 87 (27.0) | 0.4 |
| Non-smoker | 158 (67.2) | 77 (32.8) | 235 (73.0) | |

*University and postgraduate

($p=0.001$) and their health status and mode of treatment ($p=0.02$).

Table 3 shows service satisfaction of type 2 diabetic patients in relation to their practice related factors. The appointment system was rated good by 78.9% of patients, 16.1% rated it fair and 5% rated it bad. Most of the studied patients (70.8%) have less than 5 visits per year to a service center. Regarding the ratings of waiting time: 83.5% of patients rated it good.

Table 4 shows that 26.7% patients that rated the doctor excellent, 69.9% as good and only 3.4% as poor. Hemoglobin A1c was controlled in 64% of patients and uncontrolled in 36%. There was a significant association between service satisfaction of type 2 diabetic patients and both doctors' scores and HbA1c rates.

Table 5 shows the doctors' clinical competence and communication evaluation scale. Patients rated the doctors' performance excellent or good, except in relation to shared decision making (14.9%), addressing patients' questions and worries (13.7%), and listening (13.7%), which were rated as poor.

Table 6 shows that 58.7% of patients were dissatisfied with the dietary advice provided and 44.7% were dissatisfied with information regarding medication (including side effects).

Discussion. Patient satisfaction is the key indicator of quality medical care. Patient satisfaction with the doctor-patient interaction is directly attributed to the level of a doctor's competence and success in service provision.¹² This is an observational cross-sectional study conducted on 322 type 2 diabetic patients attending Arar Diabetic centre in Kingdom Saudi Arabia. This study aims to determine the satisfaction of type 2 diabetic patients with the services provided by the diabetic centres of Arar city, KSA, and to assess the relationship between patient satisfaction and their diabetic control. The study found that 65.8% of diabetic patients were satisfied and 43.2% were dissatisfied. There was no statistically significant association between patient satisfaction and their sociodemographic characteristics. Service and providers related factors were the main influences on patient satisfaction. This is in agreement with many articles published about patient satisfaction; for example, in Riyadh, KSA, 30% of patients were dissatisfied with their diabetic care and there was no association between patient satisfaction and patient characteristics or HbA1c.³

In Abha city, KSA, 13% of patients were dissatisfied; however, demographic data (age, education, income, job) has no affection on patient satisfaction.¹³ In Riyadh, KSA, 35.8% were dissatisfied. Continuity,

Table 2 - Service satisfaction of type 2 diabetic patients attending the Arar diabetic centre in relation to health status, comorbidity, disease duration and treatment.

| Characteristics | Satisfied (n=212) | Dissatisfied (n=110) | Total (n=322) | P-value |
|--------------------------------------------|----------------------|-------------------------|------------------|--------------------|
| <i>Self-reported health status</i> | | | | |
| Good | 157 (69.2) | 70 (30.8) | 227 (70.5) | 0.001 [‡] |
| Fair | 51 (66.2) | 26 (33.8) | 77 (23.9) | |
| Bad | 4 (22.2) | 14 (77.8) | 18 (5.6) | |
| <i>Presence of other chronic illnesses</i> | | | | |
| Present | 96 (62.7) | 57 (37.3) | 153 (47.5) | 0.3 |
| Absent | 116 (68.6) | 53 (31.4) | 169 (52.5) | |
| <i>Duration of diabetes (years)</i> | | | | |
| <5 | 118 (56.6) | 62 (34.4) | 180 (55.9) | 0.9 |
| >5 | 94 (66.2) | 48 (33.8) | 142 (44.1) | |
| <i>Mode of treatment</i> | | | | |
| Diet | 6 (85.7) | 1 (14.3) | 7 (2.2) | 0.03 [*] |
| Oral | 96 (67.6) | 46 (32.4) | 142 (44.1) | |
| Insulin | 34 (81.0) | 8 (19.0) | 42 (13.0) | |
| More than one | 76 (58.0) | 55 (42.0) | 131 (40.7) | |

Values are presented as number and percentage (%).
*significant at $p \leq 0.05$. [‡]significant at $p \leq 0.001$.

Table 3 - Service satisfaction of type 2 diabetic patients attending the Arar diabetic centre in relation to practice related factors.

| Practice related factor | Satisfied | Dissatisfied | Total | P-value |
|-------------------------------------------------|------------|--------------|------------|--------------------|
| <i>Appointment system rated</i> | | | | |
| Bad | 4 (25.0) | 12 (75.0) | 16 (5.0) | 0.001 [‡] |
| Fair | 24 (46.2) | 28 (53.8) | 52 (16.1) | |
| Good | 184 (72.4) | 70 (27.6) | 254 (78.9) | |
| <i>Telephone access rating</i> | | | | |
| Bad | 23 (41.1) | 33 (58.9) | 56 (17.4) | 0.001 [‡] |
| Fair | 82 (60.7) | 53 (39.3) | 135 (41.9) | |
| Good | 107 (81.7) | 24 (18.3) | 131 (40.7) | |
| <i>Frequency of follow-up visits (per year)</i> | | | | |
| <5 | 150 (65.8) | 78 (34.2) | 228 (70.8) | 0.10 |
| >5 | 62 (66.0) | 32 (34.0) | 94 (29.2) | |
| <i>Waiting time rating</i> | | | | |
| Bad | 1 (10.0) | 9 (90.0) | 10 (3.1) | 0.001 [‡] |
| Fair | 27 (62.8) | 16 (37.2) | 43 (13.4) | |
| Good | 184 (68.4) | 85 (31.6) | 269 (83.5) | |

Values are presented as number and percentage (%).
*Significant at $p \leq 0.05$. [‡]Significant at $p \leq 0.001$.

reception, communication and accessibility of care were the main factors affecting patient satisfaction.¹³ In Egypt, 32.7% of the diabetic patients were frustrated with the management plan in the primary health care centre (PHC), and there was an association between satisfaction and level of education, income and job.⁴ In Dubai, United Arab Emirates, type 2 diabetic patient satisfaction with the care they received is affected mainly by age and education levels.¹⁴ Kamien et al,¹⁵ found that 90% of diabetic patients reported satisfaction with primary care in Australia. In Kuwait, Al-Dousari

et al,¹⁶ reported that patient satisfaction ranged from 75.2-78.4%. In Mexico, Doubova et al,¹⁷ reported that half of the diabetic patients were dissatisfied with their provided PHC services. Ramirez et al,¹⁸ stated that the proportion of diabetic patients' satisfaction ranged from 64.8-88%.

The satisfaction of type 2 diabetic patients is affected by many factors. It can be affected by patient related factors, service related factors, treatment adherence and clinical factors. Levels of satisfaction differ greatly between different settings. Regarding gender and

Table 4 - Service satisfaction of type 2 diabetic patients attending the Arar diabetic centre in relation to the evaluation of clinical competence, communication skills of doctors and HbA1c.

| Characteristics | Satisfied | Dissatisfied | Total | P-value |
|-----------------------|------------|--------------|------------|--------------------|
| <i>Doctor's score</i> | | | | |
| Poor (<36) | 1 (9.1) | 10 (90.9) | 11 (3.4) | 0.001 [‡] |
| Good (36–53) | 133 (59.1) | 92 (40.9) | 225 (69.9) | |
| Excellent (54+) | 78 (90.7) | 8 (9.3) | 86 (26.7) | |
| <i>HbA1c</i> | | | | |
| Controlled | 144 (69.9) | 62 (30.1) | 206 (64.0) | 0.05* |
| Uncontrolled | 68 (58.6) | 48 (41.4) | 116 (36.0) | |

Values are presented as number and percentage (%).
HbA1c - hemoglobin A1c. *significant at $p \leq 0.05$.
[‡]significant at $p \leq 0.001$.

Table 5 - Doctors' clinical competence and communication evaluation scale.

| Doctors' characteristics | Evaluation scale | | |
|---------------------------------------------|------------------|------------|------------|
| | Poor | Good | Excellent |
| Providing medical information | 10 (3.1) | 105 (32.6) | 207 (64.3) |
| Thorough physical examination | 10 (3.1) | 194 (60.2) | 118 (36.6) |
| Requesting lab investigation | 9 (2.8) | 214 (66.5) | 99 (30.7) |
| Prescribing proper treatment | 24 (7.5) | 237 (73.6) | 61 (18.9) |
| Taking good medical history | 37 (11.5) | 217 (67.4) | 68 (21.1) |
| Attention and listening | 44 (13.7) | 209 (64.9) | 69 (21.4) |
| Proper explanation of disease and treatment | 41 (12.7) | 206 (64.0) | 75 (23.3) |
| Shared decision making | 48 (14.9) | 194 (60.2) | 80 (24.8) |
| Address patients' questions or worries | 44 (13.7) | 198 (61.5) | 80 (24.8) |

Values are presented as number and percentage (%).

satisfaction, this study reported that 62.5% of male patients were satisfied and 69.1% of females were satisfied, and this was statistically non-significant. This is in agreement with Al-Dousari et al,¹⁶ who found that female patients in Kuwait reported higher levels of satisfaction compared to male patients. While in contrast, a study in Pakistan found that the percentage of dissatisfaction among female diabetic patients was 7.6% while among males was 20%.¹² The same study also found a significant association of patient satisfaction with doctor competence, interpersonal aspects, communication, spending enough time with the patient besides access to and availability of services.¹² Al-Eisa et al,¹⁹ reported that male patients had significantly higher satisfaction than female patients regarding the provided health care services. Regarding the relationship of patient satisfaction and diabetic control, this study found that there is a significant association between the control of diabetes and satisfaction levels ($p=0.05$). Diabetic control (controlled HbA1c) occurred in

Table 6 - The diabetic care evaluation scale.

| Characteristics | Satisfied | Dissatisfied |
|----------------------------------------------------------------------------------|------------|--------------|
| Total | 212 (65.8) | 110 (34.2) |
| Amount of time spent during consultation | 251 (78.0) | 71 (22.0) |
| Information given regarding the disease (Rx, complications) | 189 (58.7) | 133 (41.3) |
| Information given regarding lab results | 165 (51.2) | 167 (48.8) |
| Appropriate dietary advice | 133 (41.3) | 189 (58.7) |
| Information given about amount and type of exercise to control diabetes mellitus | 127 (39.4) | 195 (60.6) |
| Diabetes education (pamphlets, videos) | 132 (41.0) | 190 (59.0) |
| Information given regarding medication (including side effects) | 178 (55.3) | 144 (44.7) |
| Satisfaction with current treatment | 184 (57.1) | 138 (42.9) |
| Advised to continue current treatment | 185 (57.5) | 137 (42.5) |
| Lab services | 194 (60.2) | 128 (39.8) |
| Periodic physical exam for DM complications (feet, retina, etc.) | 197 (61.2) | 125 (38.8) |

Values are presented as number and percentage (%).

69.9% of satisfied patients. This differs from a study in Dubai, United Arab Emirates, that showed no significant association or relation between the control of diabetes (HbA1c<7) and patient satisfaction.¹⁴ Other studies conducted in this field showed that there was an association between satisfaction and the outcome of care determined by HbA1c. Increased patient satisfaction usually improves the outcome of diabetes in terms of HbA1c.¹⁴ Alazri and Neal,²⁰ and Redekop et al,²¹ found that poorly controlled diabetic patients were less satisfied. In a study in Nigeria, diabetic treatment satisfaction was significantly associated with better medication adherence and good glycemic control.²² It is obvious that higher levels of diabetic patients satisfaction is associated with better outcomes.

Study limitations. The response rate was 98%; however, the study did not include the assessment of patients' compliance or other clinical factors affecting service satisfaction. Also, generalization of the results is limited to this diabetic center.

In conclusion, only two-thirds of type 2 diabetic patients are satisfied with the services provided by the diabetic centre of Arar city, KSA. There was a significant association between low patient satisfaction and poor diabetic control. Family physicians should adopt strategies to improve satisfaction levels and address patient needs and worries of type 2 diabetic patients through improvement of counselling especially dietary advice and drugs. Further research to assess other factors affecting the outcome of type 2 diabetic care especially in uncontrolled patients is needed. The study recommends also intervention research to assess the effect of health

education, dietary advice, and drug information on the outcome of diabetic care.

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