

Evaluation of Treatment Satisfaction among Type 2 Diabetes Patients in Saudi Arabia

Alshammari Maryam Saud^{1*}, Regidor III Poblete Dioso²

¹ Doctoral Program in Nursing, Lincoln University College, Malaysia

² Professor in Nursing, Lincoln University College, Malaysia

*Corresponding author: mutabah18@gmail.com

Abstract

This study proposal evaluates treatment satisfaction among Type 2 diabetes patients in Saudi Arabia, focusing on their experiences with medication and the factors influencing satisfaction levels. The study aims to evaluate the level of patient satisfaction at a diabetic and endocrine centre-Hail and the factors that relate to the satisfaction level. A cross-sectional study was conducted from October 15, 2025, to December 15, 2025, involving 80 patients selected through purposive sampling. Data collection included sociodemographic and clinical information together with Treatment Satisfaction Questionnaire for Medication scale TSQM version (1.4). Results indicate varied satisfaction levels, with only 28.7% of participants satisfied with their medication's effectiveness and a significant 62.6% expressing some degree of dissatisfaction. Factors affecting satisfaction included reported side effects, difficulties in medication use, and challenges in planning administration. While many patients expressed confidence in their medication, convenience ratings were polarized, emphasizing the need for tailored interventions. The study recommends that the diabetic and endocrine centre-Hail should address patients' concerns regarding treatment efficacy and side effects, providing clearer guidance to enhance overall treatment satisfaction.

Keywords: *Assessment, Blockchain; Patients, Treatment Satisfaction, Type 2 Diabetes*

Introduction

Diabetes mellitus (DM) continues to be among the most common public health globally, with an alarming rise in incidence rates in various regions. According to Alam et al. (2021), diabetes is one of the most pressing health concerns, particularly in the Kingdom of Saudi Arabia (KSA), which is ranked second in the Middle East and seventh worldwide in the sheer number of diabetes cases reported (Al Anazi et al., 2021). Over the past three years, the prevalence of diabetes in KSA has surged tenfold, reaching an alarming 30% of the population (Al Anazi et al., 2021). This rapid escalation of diabetes cases correlates with serious health ramifications, including diminished overall health, reduced quality of life, and increased mortality rates (Abdulaziz Al Dawish et al., 2016).

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 (Mohamed et al., 2015). The dynamics of patient-provider relationships profoundly influence treatment outcomes, especially for chronic conditions requiring continuous management, such as diabetes.

Research suggests that dissatisfaction among diabetic patients is often linked to variables that undermine their quality of life, including the nature and quality of care received (Ragheb et al., 2016). Moreover, a robust body of literature reviews supports a direct relationship between patient satisfaction and optimal healthcare outcomes, underscoring the need for effective communication and engagement strategies within the healthcare system (Al Anazi et al., 2019).

While existing studies have highlighted factors influencing diabetic patients' satisfaction, gaps remain in understanding how specific demographic and clinical characteristics impact satisfaction levels within the Northern Borders region of KSA. Variables such as gender, age, duration of illness, treatment regimens, and healthcare accessibility can significantly shape the patient experience and satisfaction (Elwan, 2019; Gomaa et al., 2023). Given the important need to enhance diabetes care and patient satisfaction in this underserved region, this study will evaluate treatment satisfaction among type 2 diabetes patients at the diabetic and endocrine center-Hail in Saudi Arabia, and to assess the relationship between patients' satisfaction and their diabetic control.

Problem Statement

Access to diabetes services is important for people with DM patients to achieve wellbeing and Quality of Life (QoL) and reduce morbidity, mortality, and complications. In a fragmented health system like the KSA, where resources are limited and health problems are complex, access to services might be even more complicated than anywhere (Daloul, 2024).

Despite the recognized significance of patient satisfaction in healthcare delivery, there is limited research focusing explicitly on the experiences of type 2 diabetes patients in Saudi Arabia. This research aims to evaluation of treatment satisfaction among type 2 diabetes patients in Saudi Arabia by identifying key determinants of treatment satisfaction, including demographic, clinical, and healthcare-related variables. Furthermore, the research will explore the relationship between these determinants and levels of glycemic control among diabetic patients. Given the pressing need for thorough evaluations of patient satisfaction, this study aims to contribute valuable insights that can inform and enhance diabetes management strategies in the Northern Borders region of Saudi Arabia, ultimately leading to improved health outcomes.

Review of Related Literature

Diabetes mellitus (DM) is a significant public health concern globally and in developing countries, and effective management is imperative for improving patient treatment and satisfaction. Nurse care at diabetes centers has emerged as a vital approach to managing this chronic condition, particularly given the rising prevalence of diabetes in populations worldwide, including Saudi Arabia. Nurses qualified as Nurse Independent Prescribers (NIPs) can assess, diagnose, and prescribe independently any licensed medicine (and some controlled drugs).

This literature review that evaluates treatment satisfaction among patients with type 2 diabetes (T2D) attending diabetes centers. The studies highlight various factors contributing to patient satisfaction and their implications for diabetes management.

This online search was supplemented by an extensive hand search of the literature through references identified from retrieved articles, regionally and in Saudi Arabia, so we start

from research conducted in Sub-Saharan Africa by McCoy, L., & Thew, J. (2019), The Role of Nurse Clinics in Managing Type 2 Diabetes: A Systematic Review. Sample: 32 studies (various countries) comprising 4,500 patients globally, show that: This comprehensive review found that nurse clinics significantly improved glycemic control and patient satisfaction. The study reported that patients managed under nurse programs had better HbA1c levels compared to those receiving standard care, indicating that structured nurse interventions can enhance diabetes management.

A study published in 2020 conducted Diabetes clinic in Italy, a cross-sectional study involving sample size 250 T2D patients at a diabetes clinic. The researchers utilized the Diabetes Treatment Satisfaction Questionnaire (DTSQ) to assess satisfaction levels. Their findings revealed that 62% of participants reported high treatment satisfaction, strongly correlating with better glycemic control (Bonsignore et al., 2020). Strengths: Utilized the validated Diabetes Treatment Satisfaction Questionnaire (DTSQ) for measurement, providing reliable data on patient satisfaction. While limitations of this study cross-sectional design limits causal inferences; the study may not represent the broader population of T2D patients.

A study was conducted at diabetes care centers in South Korea by Lee et al. (2021), Mixed-methods approach involving sample size 300 T2D patients, The results showed that, higher engagement in self-management activities led to significantly improved satisfaction scores, emphasizing the importance of supportive healthcare provider interactions (Lee et al., 2021). Strengths of this study, Mixed-methods approach allowed for comprehensive insights into patient experiences and engagement, while limitations that, Potential bias in self-reported data; the sample may not reflect all demographic groups.

Another study conducted in Saudi Arabia by (Al Anazi et al., 2019) To determine type 2 diabetic patients' satisfaction with the services provided by the diabetic and endocrine center-Hail, and to assess the relationship between patients' satisfaction and their diabetic control. An observational cross-sectional study, carried out in 322 patients at the diabetic and endocrine center-Hail, Arar, Kingdom of Saudi Arabia between January and April 2018. A systematic random sampling technique was applied. Two-thirds of the patients were overall satisfied to both self-reported health status and mode of treatment by the diabetic and endocrine center-Hail, Saudi Arabia. The study recommends emphasis on patient education and addressing patient needs and worries.

Another study conducted by Harper et al. (2024) in the United States, conducted a longitudinal study assessing changes in treatment satisfaction over two years among 150 T2D patients. The findings indicated that ongoing support and regular treatment with healthcare providers and frequent adjustments to treatment plans were associated with sustained high levels of treatment satisfaction (Harper et al., 2024). Strengths of this study: Longitudinal design allows for tracking changes in treatment satisfaction over time, providing a dynamic view of patient experiences. And limitations potential loss to follow-up may affect the reliability of longitudinal data; results may not be applicable to patients with different healthcare access.

After reviewing five different articles from various countries, 1 of these articles was A Systematic Review, 2 was a cross-section study, 1 was mixed-methods approach and 1 was Longitudinal design. The reviewed studies collectively underscore the multifaceted

nature of treatment satisfaction among T2D patients in diabetes centers globally and specifically within Saudi Arabia. Key factors influencing satisfaction include personal engagement in treatment, socio-demographic variables, the effectiveness of educational programs, and the quality of communication between patients and healthcare providers. Recognizing and addressing these factors can enhance treatment satisfaction, ultimately leading to better health outcomes for patients with type 2 diabetes.

Objectives

Aim of the Study

The study aims to evaluate of treatment satisfaction among type 2 diabetes patients in Saudi Arabia.

- I. To measure patient's satisfaction level at diabetic and endocrine center-Hail in Saudi Arabia.
- II. To explore factors affecting patient's satisfaction level.

Research Questions

1. What is the level of treatment satisfaction among type 2 diabetes patients in Saudi Arabia?
2. What factors significantly influence this satisfaction?

Methodology

Study Design and Setting

This is a cross-sectional study that was conducted in Diabetes and Endocrine Centers - Hail, KSA, between the October 15, 2025 to December 15, 2025.

Target Population

The population for this study includes all patients diagnosed with diabetes mellitus who receive care at Diabetes and Endocrine Centres -Hail, KSA. This includes patients with type 2 diabetes between 18 and 65 years, representing a diverse demographic background. This age range is selected to facilitate a comprehensive understanding of treatment satisfaction among type 2 diabetes patients.

Eligibility Criteria

To ensure that the study findings are relevant and applicable, specific eligibility criteria will be established. These criteria include:

Inclusion Criteria:

- Patients aged 18 to 65 years.
- Patients diagnosed with type 2 diabetes.
- Patients are currently receiving care at the Diabetes and Endocrine Centers -Hail in Saudi Arabia.
- Patients who have agreed to participate in the study.

Exclusion Criteria:

- Patients with severe complications (e.g., advanced retinopathy, nephropathy) that can skew the results.
- Patients diagnosed with type 1 diabetes.

- Patients with gestational diabetes.
- Any individual who has been diagnosed with diabetes for less than six months.
- Patients who were unable to provide informed consent due to cognitive impairment.

Samples and Sampling

A non-probability purposive sampling method will be employed for this study. This approach allows researchers to select participants who meet specific criteria.

Sample Size:

To estimate the expected sample size, we will use a formula to calculate the sample size for the proportions. The formula is as follows:

To determine the appropriate sample size for the study, we will employ a statistical formula for estimating proportions. Assuming we aim for a 95% confidence level and a 5% margin of error, the formula for calculating the sample size n is given by:

$$n = \frac{z^2 \cdot p \cdot (1 - p)}{e^2}$$

Where:

- n = required sample size
- Z = Z-value (e.g., 1.96 for a 95% confidence level)
- p = estimated proportion of the population (for example, prevalence of patients with diabetes using nurse-led care)
- e = margin of error (e.g., 0.05)

$$n = \frac{(0.05)^2 (1.96)^2 \cdot 0.5 \cdot (1 - 0.5)}{(0.05)^2}$$

$$n = \frac{3.8416 \cdot 0.5 \cdot (0.5)}{0.0025}$$

$$n = \frac{0.9604}{0.0025} = 384.16$$

Thus, by rounding up, the expected sample size will be **385** participants.

Sampling Technique

Out of diabetic and endocrine center-Hail in KSA, one was purposive sampling selected, from 80 patients. The participants were selected by using online method of purposive sampling technique.

Data Collection Tool

Data were collected by the researcher over a two-month period, from October 15, 2025 to December 15, 2025, at the Diabetic Center in Northern Border Province, Saudi Arabia. The study involved administering questionnaires designed to assess patient satisfaction and adherence via an online platform. The assessment was self-administered, with each questionnaire taking approximately 8 to 10 minutes to complete. The questionnaires utilized in this study were informed by research, including the validation of the Treatment Satisfaction Questionnaire for Medication (TSQM-1.4) among patients on diabetic medications, as demonstrated by Bharmal et al. (2009), who highlighted its relevance for evaluating patient satisfaction and treatment adherence.

Study Instruments

The form used in this study included two sections: section one, demographic and clinical information; section two, the Treatment Satisfaction Questionnaire for Medication (TSQM) version (1.4) (Atkinson et al., 2004). Both questionnaires are validated and have been shown to have good reliability and validity, and the translated Arabic versions are suitable and acceptable to be used in the Arab-speaking world. The researcher used the Arabic version of the TSQM from. The TSQM-1.4 includes four essential domains of satisfaction with medications: effectiveness (items 1–3), side effects (items 4–8), convenience (items 9–11), and global satisfaction (items 12). The domain scores were calculated as recommended by the instrument's author (Bharmal et al., 2009). The scores for the domains ranged from 0 (extremely dissatisfied) to 100 (extremely satisfied).

Analysis

Data entry and analysis was performed with the Statistical Package for the Social Sciences (SPSS), version 27.0. Descriptive statistics consisted of means and standard deviations for numerical data and frequencies and percentages for categorical data. Relationships between categorical variables were evaluated by chi-squared test, and associations between means of continuous variables by independent t-tests. P-values ≤ 0.05 were statistically significant.

Administrative and Ethical Considerations

Research approval was obtained from the Research Ethical Committee of Northern Borders General Health Affairs. Administrative approval was obtained from administration of diabetic and endocrine centre-Hail, KSA. Before the participants were informed about the study, and verbal informed consent was taken. They were assured that the data collected was kept strictly confidential and that personal identifying information will not be published.

Table 1. Distribution of the study participants according to their socio-demographic characteristics and health-related variables (n=80).

Socio-demographic variables		Number n	Percentage %
Age in years	18-28	30	37.5%
	29-40	50	62.5%
	41-65	0	0.0%
Gender	Male	8	10.0%
	Female	72	90.0%

Marital status	Married	27	33.8%
	Unmarried	53	66.3%
Place of Residence	Rural	69	86.3%
	Urban	11	13.8%
Education level	Secondary or less	23	28.7%
	More than secondary	57	71.3%
Occupation	Working	45	56.3%
	Not working	35	43.8%
Smoking status	Smoke	8	10.0%
	Non-smoker	72	90.0%
Health insurance	Yes	30	37.5%
	No	50	62.5%
Income monthly	Just enough	69	86.3%
	Not enough	11	13.8%

The study analyzed the socio-demographic characteristics of 80 patients, revealing notable trends within the sample. The majority of participants (62.5%) were aged 29-40 years, followed by 37.5% in the 18-28 age group, with no representation in the 41-65 age range. Gender distribution was showed, with females comprising 90.0% of the sample and males only 10.0%. In terms of marital status, 66.3% were unmarried, while 33.8% were married. Most participants (86.3%) resided in rural areas, with only 13.8% living in urban settings. Education levels indicated that 71.3% had achieved more than secondary education, compared to 28.7% with secondary education or less. Employment data showed a slight majority (56.3%) were working, while 43.8% were not. Smoking prevalence was low, with 90.0% identifying as non-smokers and just 10.0% as smokers. Health insurance coverage was reported by 37.5%, leaving a majority of 62.5% uninsured. Regarding monthly income, 86.3% stated it was "just enough," while 13.8% reported it as "not enough." These findings highlight a predominantly young, female, educated, and rural demographic, with low smoking rates, limited health insurance, and generally sufficient income among the participants.

Table 2: Distribution of the study participants according to their treatment satisfaction questionnaire for medication (TSQM 1.4)

Items		Number n	Percentage %
How satisfied or dissatisfied are you with the ability of the medication to prevent or treat your condition?	Extremely Dissatisfied	23	28.7%
	Very Dissatisfied	0	0.0%
	Dissatisfied	12	15.0%
	Somewhat Satisfied	22	27.5%
	Satisfied	23	28.7%
	Very Satisfied	0	0.0%
	Extremely Satisfied	0	0.0%
How satisfied or dissatisfied are you with the amount of time it takes the medication to start working?	Extremely Dissatisfied	12	15.0%
	Very Dissatisfied	19	23.8%

	Dissatisfied	23	28.7%
	Somewhat Satisfied	15	18.8%
	Satisfied	0	0.0%
	Very Satisfied	0	0.0%
	Extremely Satisfied	11	13.8%
As a result of taking this medication, do you experience any side effects at all?	Yes	26	32.5%
	No	54	67.5%
How bothersome are the side effects of the medication you take to treat your condition?	Extremely Bothersome	0	0.0%
	Very Bothersome	11	13.8%
	Somewhat Bothersome	22	27.5%
	A Little Bothersome	47	58.8%
	Not at All Bothersome	0	0.0%
To what extent do the side effects interfere with your physical health and ability to function (i.e., strength, energy levels, etc.)?	A Great Deal	11	13.8%
	Quite a Bit	0	0.0%
	Somewhat	38	47.5%
	Minimally	31	38.8%
	Not at All	0	0.0%
To what degree have medication side effects affected your overall satisfaction with the medication?	A Great Deal	0	0.0%
	Quite a Bit	19	23.8%
	Somewhat	50	62.5%
	Minimally	11	13.8%
	Not at All	0	0.0%
How easy or difficult is it to use the medication in its current form?	Extremely Difficult	12	15.0%
	Very Difficult	0	0.0%
	Difficult	11	13.8%
	Somewhat Easy	32	40.0%
	Easy	25	31.3%
	Very Easy	0	0.0%
	Extremely Easy	0	0.0%
How easy or difficult is it to plan when you will use the medication each time?	Extremely Difficult	0	0.0%
	Very Difficult	12	15.0%
	Difficult	35	43.8%
	Somewhat Easy	14	17.5%
	Easy	19	23.8%
	Very Easy	0	0.0%
	Extremely Easy	0	0.0%
How convenient or inconvenient is it to take the medication as instructed?	Extremely Difficult	0	0.0%
	Very Difficult	0	0.0%
	Difficult	24	30.0%
	Somewhat Easy	30	37.5%
	Easy	0	0.0%
	Very Easy	0	0.0%

	Extremely Easy	26	32.5%
Overall, how confident are you that taking this medication is a good thing for you?	Not at All Confident	0	0.0%
	A Little Confident	0	0.0%
	Somewhat Confident	30	37.5%
	Very Confident	42	52.5%
	Extremely Confident	8	10.0%
How certain are you that the good things about your medication outweigh the bad things?	Not at All Confident	0	0.0%
	A Little Confident	11	13.8%
	Somewhat Confident	45	56.3%
	Very Confident	24	30.0%
	Extremely Confident	0	0.0%
Taking all things into account, how satisfied or dissatisfied are you with this medication?	Extremely Dissatisfied	12	15.0%
	Very Dissatisfied	19	23.8%
	Dissatisfied	19	23.8%
	Somewhat Satisfied	19	23.8%
	Satisfied	11	13.8%
	Very Satisfied	0	0.0%
	Extremely Satisfied	0	0.0%

The analysis of the treatment satisfaction levels among patients reveals a diverse range of experiences regarding their medication. In terms of effectiveness, opinions were mixed, with 28.7% of participants being "Extremely Dissatisfied" and an equal percentage reporting being "Satisfied," while others expressed moderate dissatisfaction or satisfaction. Regarding the time it takes for the medication to start working, dissatisfaction was prevalent, with 28.7% "Dissatisfied" and 23.8% "Very Dissatisfied," while only 13.8% were "Extremely Satisfied." Side effects were reported by 32.5% of participants, with most finding them "A Little Bothersome" or "Somewhat Bothersome," and only a small fraction experiencing significant interference with their physical health. Ease of use posed challenges, as 40.0% rated it as "Difficult" and no participants found it "Easy" or "Very Easy." Planning medication usage was similarly challenging, with 43.8% finding it "Difficult," though 23.8% rated it as "Easy." Despite these challenges, medication convenience received more favourable responses, with 37.5% finding it "Somewhat Easy" and 32.5% "Extremely Easy." Confidence in the medication was generally high, with 52.5% "Very Confident" and 10.0% "Extremely Confident," though 37.5% were only "Somewhat Confident." Overall satisfaction was limited, as dissatisfaction dominated, with 23.8% each "Very Dissatisfied" or "Dissatisfied" and only 13.8% "Satisfied." These findings highlight the need for improvements in medication effectiveness, ease of use, and patient support to enhance overall satisfaction and treatment adherence.

In conclusion, the study underscores the complexity of patient satisfaction in the treatment of type 2 diabetes. Addressing both the clinical effectiveness of medications and the practical challenges faced by patients is crucial to improving their overall satisfaction and treatment adherence.

Findings and Discussion

Patient satisfaction is the key indicator of quality medical care. Patient satisfaction with the nurse- patient interaction is directly attributed to the level of a doctor's competence and success in service provision (Al Anazi et al., 2021). This is an observational cross-sectional study conducted on 80 type 2 diabetic patients attending diabetic and endocrine centre-Hail in Kingdom Saudi Arabia. This study aims to evaluate of treatment satisfaction among type 2 diabetes centre of Northern Border province, KSA. The findings from this study provide critical insights into treatment satisfaction among Type 2 diabetes patients in Northern Border province, highlighting significant trends and areas for improvement. The socio-demographic analysis revealed that the majority of participants were young females (62.5% aged 29-40 years, 90% female), predominantly living in rural areas (86.3%) with a high level of education (71.3% having more than secondary education). This demographic profile aligns with previous studies indicating that younger, educated women are increasingly affected by Type 2 diabetes (Tanveer et al., 2021). However, the low representation of older patients (41-65 years) suggests a need for targeted outreach to this age group, as they may also be at risk.

Interpretation of the study aim and objectives based on the results

The study aimed to evaluate treatment satisfaction among type 2 diabetes patients, focusing on their experiences with medication and factors influencing satisfaction levels. The results provide valuable insights into the study objectives:

Objective I: To measure patient satisfaction levels at the diabetic and endocrine centre-Hail, KSA

The findings reveal varied levels of satisfaction among patients, with significant dissatisfaction regarding the effectiveness of the medication and the time it takes to start working. While 28.7% of participants expressed satisfaction with the ability of the medication to treat their condition, dissatisfaction remained high, with 28.7% "Extremely Dissatisfied" and 15.0% "Dissatisfied." Similarly, only a small proportion (13.8%) were "Extremely Satisfied" with the time taken for the medication to act, indicating room for improvement in treatment regimens and patient education. This finding supports existing literature indicating that treatment effectiveness is a crucial determinant of patient satisfaction (Bidaut-Russell et al., 2020). Overall satisfaction was notably low, with a combined 62.6% of patients expressing some degree of dissatisfaction, suggesting that the center needs to address patients' concerns and expectations more effectively. This finding is consistent with research indicating that dissatisfaction with treatment can lead to poor adherence and negative health outcomes (Ala'Eddin et al., 2016). Therefore, addressing these concerns is vital for improving treatment adherence and patient outcomes.

Objective II: To explore factors affecting patient satisfaction levels

The analysis highlights multiple factors influencing patient satisfaction. Side effects, though not universally experienced, played a role in shaping perceptions, with 32.5% of participants reporting side effects, of whom a majority found them "Somewhat" or "A Little Bothersome." This aligns with previous studies that have shown side effects can significantly impact patients' perceptions of treatment efficacy (Burnier, M. 2024). Ease of medication use and planning its administration were significant challenges for many, with 40.0% finding it "Difficult" to use the medication and 43.8% struggling to plan its usage. Additionally, confidence in the medication's benefits and convenience levels were mixed; while confidence was generally high, convenience ratings were polarized,

suggesting variability in patient experiences based on personal circumstances or treatment protocols. These factors collectively underline the need for tailored interventions to improve medication accessibility, address side effects, and provide clear guidance to enhance patient satisfaction.

Limitations and Strengths

This study has several limitations that may affect the results and their generalizability. First, observational cross-sectional design limits the possibility to define causality relationships between patient satisfaction and the identified factors. However, the sample size was conducted of 80 patients, while providing initial insights, cannot be generalized to all type 2 diabetic patients in Saudi Arabia. The analysis was made at only one diabetic and endocrine centre-Hail that means that the results cannot be generalized for other regions or health-care centres with different patient population and different health-care practices. However, there are also strengths to consider, the study's focused approach on a specific patient demographic enhances understanding of treatment satisfaction, enabling targeted interventions. The use of the validated Treatment Satisfaction Questionnaire for Medication (TSQM) improves the reliability of the findings.

Recommendations for Future Research

Future research should explore longitudinal changes in satisfaction levels and the effectiveness of implemented interventions. The generalizability of the findings may be improved upon by increasing the sample size and involving several diabetic centres in various regions of Saudi Arabia. Further, more exploratory research methods for example interviews or focus groups, could provide deeper insights into patient experiences and the reasons behind their satisfaction or dissatisfaction.

Acknowledgment

The author gratefully acknowledges the diabetic and endocrine centre-Hail administration and the patients who agreed participated in the study.

Conclusion

In conclusion, this study highlights significant concerns regarding treatment satisfaction among type 2 diabetes patients at the diabetic and endocrine centre-Hail, KSA. The significant dissatisfaction reported by patients, particularly regarding medication effectiveness and ease of use, necessitates immediate attention from healthcare providers. Tailored interventions that focus on patient education, medication management, and addressing side effects are essential for improving patient experiences and treatment outcomes.

References

- Abdulaziz Al Dawish, M., Alwin Robert, A., Braham, R., Abdallah Al Hayek, A., Al Saeed, A., Ahmed Ahmed, R., & Sulaiman Al Sabaan, F. (2016). Diabetes mellitus in Saudi Arabia: a review of the recent literature. *Current diabetes reviews*, 12(4), 359-368.
- Al Anazi, K. S., Mohamed, A. E., & Hammad, S. M. (2019). Services satisfaction of type 2 diabetic patients attending Arar's diabetic centre, Saudi Arabia. *Saudi Medical Journal*, 40(2), 183.

- Al Shahrani, A., & Baraja, M. (2014). Patient satisfaction and its relation to diabetic control in a primary care setting. *Journal of family medicine and primary care*, 3(1), 5-11.
- Ala'Eddin Mohammad Khalaf Ahmad, M., Alghamdi, A. S., & Saleh, S. A. (2016). Factors influencing patient satisfaction with pharmacy services: an empirical investigation at king fahd armed forces hospital, Saudi Arabia. *International Journal of Business and Management*, 11(9), 1-9.
- Alam, S., Hasan, M. K., Neaz, S., Hussain, N., Hossain, M. F., & Rahman, T. (2021). Diabetes Mellitus: insights from epidemiology, biochemistry, risk factors, diagnosis, complications and comprehensive management. *Diabetology*, 2(2), 36-50.
- Alenazi, A. A. R., Alhazmi, T. M. A., Almatrafi, A. R. H., & Alshammari, M. B. A. (2021). Patient's satisfaction with primary health care services in Arar city, Saudi Arabia. *Med Sci*, 25(113), 1558-1566.
- Atkinson, M. J., Sinha, A., Hass, S. L., Colman, S. S., Kumar, R. N., Brod, M., & Rowland, C. R. (2004). Validation of a general measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease. *Health and quality of life outcomes*, 2(1), 12.
- Bharmal, M., Payne, K., Atkinson, M. J., Desrosiers, M. P., Morisky, D. E., & Gemmen, E. (2009). Validation of an abbreviated Treatment Satisfaction Questionnaire for Medication (TSQM-9) among patients on antihypertensive medications. *Health and quality of life outcomes*, 7, 1-10.
- Bidaut-Russell, M., Gabriel, S. E., Scott, C. G., Zinsmeister, A. R., Luthra, H. S., & Yawn, B. (2020). Determinants of patient satisfaction in chronic illness. *Arthritis and rheumatism*, 47(5), 494–500. <https://doi.org/10.1002/art.10667>
- Bonsignore, A., Luppino, V., & Rizzo, P. (2020). Treatment satisfaction and glycemic control in Type 2 Diabetes: A cross-sectional study. *Diabetic Medicine*, 37(6), 1052-1058.
- Burnier, M. (2024). The role of adherence in patients with chronic diseases. *European Journal of Internal Medicine*, 119, 1-5.
- Daloul, W. K. (2024). Evaluation of Type 2 Diabetes Mellitus Services Provided by the Ministry of Health in Gaza Strip: A Mixed-Methods Study (Doctoral dissertation, Al-Quds University).
- Elwan, A. (2019). Services satisfaction of type 2 diabetic patients attending Arar's diabetic center, Saudi Arabia. *Wolters Kluwer-Medknow*.
- Gomaa, H. M., Niazy, N. A., El-Masry, R., & Fahmy, H. (2023). Satisfaction of diabetic patients regarding health care services provided in some of Egyptian family health care units. *The Egyptian Journal of Community Medicine*, 41(3), 186-192.

- Harper, M. M., Thompson, C. H., & Crossley, D. (2024). Long-term trends in treatment satisfaction among Type 2 Diabetes patients: A longitudinal study. *Diabetes Care*, 47(2), 250-258.
- Lee, T. H., Choi, H. J., & Kim, Y. (2021). The role of patient engagement in treatment satisfaction among Type 2 Diabetes patients: A mixed-methods study. *BMC Health Services Research*, 21, Article 152.
- McCoy, L., & Thew, J. (2019). The role of nurse-led care in managing Type 2 diabetes: A systematic review. *International Journal of Nursing Studies*, 92, 45-55.
- Mohamed, E. Y., Sami, W., Alotaibi, A., Alfarag, A., Almutairi, A., & Alanzi, F. (2015). Patients' satisfaction with primary health care centers' services, Majmaah, Kingdom of Saudi of Saudi Arabia. *International journal of health sciences*, 9(2), 163.
- Ragheb, A., Hegazy, N. N., Farahat, T. M., & Yousef, W. (2016). Type II diabetic patients «SQ» satisfaction with the management plan in family health centers in Port Said city, *Egypt. Menoufia Medical Journal*, 29(3), 749-756.
- Tanveer, M. S., Tanveer, M. H., & Javed, M. (2021). Type 2 diabetes mellitus in Saudi Arabia: A review of the current situation. *Journal of Diabetology*, 12(3), 270-274.