Shared Healthcare Decision-Making and Medication Adherence Among Patients with Type 2 Diabetes Mellitus in Saudi Arabia: Cross-sectional study

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ABSTRACT

Type 2 diabetes mellitus (T2DM) is a leading cause of morbidity and mortality worldwide, necessitating lifelong management through pharmacological therapy, behavioral modification, and lifestyle interventions. This study aims to assess the association between shared healthcare decision-making and medication adherence among patients with type 2 diabetes mellitus in Saudi Arabia. This cross-sectional study was conducted on 300 adult diabetic type 2 patients in Jeddah, Saudi Arabia. Volunteer sampling was employed, and data were collected through an online questionnaire developed using Google Forms. The questionnaire comprised questions of the Shared Decision-Making Questionnaire (SDM-Q-9) and General Medication Adherence Scale (GMAS). The study showed that shared healthcare decision-making is associated with good medication adherence among patients with type 2 diabetes mellitus. Gender and glycemic control, as per the last HbA1c, were statistically significant factors associated with Medication Adherence. Diabetic type 2 patients in Saudi Arabia generally exhibited overall high medication adherence, which is associated with being shared in their healthcare decisions.

Keywords: Diabetes mellitus, Shared healthcare decision-making, Medication adherence, Patient engagement, Patient-centred care, Saudi Arabia

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a leading cause of morbidity and mortality worldwide, necessitating lifelong management through pharmacological therapy, behavioral modification, and lifestyle interventions[1]. Effective diabetes management extends beyond biomedical considerations to include patients' values, preferences, and life circumstances, which play a critical role in treatment adherence and outcomes[2]. Values reflect patients' attitudes and perceptions regarding healthcare options, while preferences represent their choices based on those values[3].

Shared decision-making (SDM) is a collaborative process in which patients and clinicians jointly participate in making informed clinical decisions[4]. SDM enhances patient engagement, respects individual autonomy, and aligns treatment strategies with patients' priorities. Evidence suggests that SDM can improve adherence by reducing decisional conflict and fostering a sense of control over treatment[5]. Medication adherence refers to the degree to which a person's behavior corresponds to agreed-upon recommendations from a healthcare provider[6]. Non-adherence in diabetes is a persistent global challenge, leading to disease progression, complications, and increased healthcare costs[7].

Several barriers contribute to poor adherence, including forgetfulness, perceived inefficacy of medications, and treatment fatigue[8]. Interventions to overcome these barriers require personalized approaches that address patient-specific concerns and facilitate behavioral change. SDM has been identified as an effective strategy to address such barriers, improving adherence and health outcomes[9].

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In Saudi Arabia, few studies have examined the SDM among patients with T2DM. AlHaqwi et al. found that SDM was the most commonly reported decision-making style among patients in Riyadh, particularly among highly educated males[10]. Jarrar et al., in their study in Dammam reported that while shared decision-making (SDM) enhances patient-reported outcomes, its impact on clinical outcomes such as HbA1c was not statistically significant[11]. Aljaffary et al. observed a positive association between SDM awareness and medication adherence[12].

Despite these findings, evidence linking SDM and medication adherence in the Saudi context remains limited. Therefore, this study aims to assess the association between SDM and medication adherence, as well as the potential factors affecting medication adherence among patients with T2DM in Saudi Arabia.

METHODS

Study design, setting, and participants: This cross-sectional study was conducted among diabetic type 2 patients in Jeddah, Saudi Arabia, between March 1 and September 30, 2025. Inclusion criteria were being adult patients (≥18 years) diagnosed with type II diabetes mellitus, both sexes, and receiving care in either private or public healthcare settings in Jeddah, Saudi Arabia. Exclusion criteria were those with gestational diabetes and diabetic patients with a medical or healthcare background, as prior professional knowledge may influence their medication safety practices.

Sample size and design: The sample size was calculated by the Epi-info software (version 3.01; Centers for Disease Control and Prevention, USA), at a 95% confidence level and an alpha error of 5% based on a previously reported SDM prevalence among diabetic patients in Buraydah[13]. The study included 300 type 2 diabetic patients. A volunteer sampling technique was used, with no incentives provided to the eligible diabetic patients attending outpatient clinics in both private and public healthcare settings in Jeddah, Saudi Arabia.

Data collection tool and procedure: The questionnaire was distributed electronically using Google Form to the diabetic patients attending the private or public outpatient clinics in Jeddah, Saudi Arabia. Upon elucidating the study's objective, guaranteeing data confidentiality, and affirming that participation was wholly voluntary, eligible participants were assigned a unique code to complete the questionnaire.

Individuals who accessed the link were provided with study information and eligibility criteria before participation. Those who consented proceeded to complete the questionnaire. Responses were screened for completeness, and only fully completed surveys were included in the final analysis. As the survey link was openly accessible, the total number of individuals who viewed the invitation could not be determined, and therefore a response rate could not be calculated. Data collection using this technique continued until the required sample size was achieved.

The questionnaire included the following four sections:

First: questions related to the general characteristics of the participants, including age, sex, marital status, highest educational level, occupation, and co-morbidities.

Second: questions related to Diabetes mellitus-related information, including duration of diabetes, following a specific regimen (diet or exercise), taking oral hypoglycaemic medication, taking insulin injections, glycaemic control based on the latest HbA1c, and the type of healthcare provider.

Third: the validated Arabic version of the 9-item Shared Decision-Making Questionnaire (SDM-Q-9), which is a validated tool designed to assess the extent to which patients perceive their involvement in the shared decision-making process during medical consultations[14]. Each item is rated on a 6-point Likert scale ranging from 0 ("completely disagree") to 5 ("completely agree"). The total score ranges from 0 to 45, with higher scores indicating greater perceived involvement in shared decision-making[15].

Fourth: the validated Arabic version of the 11-item General Medication Adherence Scale (GMAS), which is a validated tool designed to assess medication adherence among patients with chronic diseases, including diabetes[16]. The scale evaluates adherence behaviors across three domains: (1) patient behavior-related non-adherence (questions 1–5), (2) comorbidity and pill burden-related non-adherence (questions 6–9), and (3) cost-related non-adherence (questions 10–11). Each item is scored on a 4-point Likert scale: always, mostly, sometimes and never (ranging from 0 to 3), producing a total score between 0 and 33, with higher scores reflecting better medication adherence. The interpretation of total scores is as follows: ≤10 indicates poor adherence, 11–16 low adherence, 17–26 partial adherence, 27–29 good adherence, and 30–33 high adherence[17]. HbA1c values were extracted from medical records.

Ethical considerations: The Institutional Review Board of Fakeeh College of Medical Sciences, Jeddah, approved the study (No.141/IRB/2020). Upon elucidating the study's objective, guaranteeing data confidentiality, and affirming that participation was wholly voluntary, eligible participants were assigned a unique code to complete the questionnaire. They were notified that they might withdraw at any moment without repercussions, and all responses would be kept anonymous, coded, and utilized exclusively for research reasons. The research employed a written consent procedure at the outset of the self-administered questionnaire.

The anticipated duration to finish the questionnaire was approximately 10 to 15 minutes. No awards were offered for participation. Before distribution, the authors evaluated the technical functionality and usability of the electronic questionnaire. By selecting a Google Forms option, participants were informed that their response had already been submitted, preventing duplicate entries. Participants independently completed the questionnaire in a private environment following eligibility verification.

Data management and analysis: Data analyses were performed using IBM SPSS software (version 25). Only complete responses were analyzed. Descriptive statistics were presented by frequencies and percentages for qualitative data. Pearson correlation was conducted to assess the association between the shared healthcare decision score and the general medication adherence score. The multivariate regression analysis was used to assess the factors affecting scores of general medication adherence. P-value <0.05 was considered statistically significant based on the level of confidence of 95%.

RESULTS

The mean age of the participants was 52 ± 12 years (range: 25–72), the majority were female (59.4%), and over half held at least a high school degree or higher (70.2%), and most participants were married (61.4%). Regarding occupation, 43.6% were employed, and slightly more than half of the participants (51.5%) reported having one or more co-morbidities (Table 1).

The duration of diabetes varied, with 27.7% of participants living with the condition for more than 10 years. More than half of the participants (54.5%) reported not following any specific regimen, such as diet or

Table 1. General characteristics of the studied participants.

General characteristics		
Age	Mean ±SD	52±12
	Median (min-max)	54(25-72)
Sex	Male	122 (40.6)
	Female	178 (59.4)
Education	Secondary	60 (19.9)
	High school	72 (23.8)
	Diploma	48 (15.8)
	Bachelor's degree	93 (30.7)
	Postgraduate studies	30 (9.9)
Marital status	Single	42 (13.9)
	Married	184 (61.4)
	Divorced	42 (13.9)
	Widowed	32 (10.9)
Occupation	Employed	131 (43.6)
	Students	3 (1)
	Retired	65 (21.8)
	Housewife/ Unemployed	101 (33.7)
Co-morbidities	Present	155 (51.5)
	Absent	145 (48.5)

Frequency (%)

Table 2. Diabetes mellitus-related information among the studied participants

Diabetes mellitus-related information		
Duration of being diabetic	<1 y	12 (4)
	1-<3	56 (18.8)
	3-<5	68 (22.8)
	5-<10	27 (26.7)
	>10	83 (27.7)
Following a specific regimen (such as a dietary plan or exercise) to manage diabetes	Yes	137 (45.5)
	No	163 (54.5)
Using oral anti-diabetic medications	Yes	247 (82.2)
	No	53 (17.8)
Using insulin injections	Yes	155 (51.5)
	No	145 (48.5)
Glycaemic control based on the latest HbA1c	Yes	178 (59.4)
	No	122 (40.6)
Type of healthcare providers	Private	113 (37.6)
	Public	101 (33.7)
	Both	86 (28.7)

*Frequency (%)

exercise, to manage their condition. The majority (82.2%) were using oral anti-diabetic medications, while 51.5% were on insulin therapy. Based on their latest HbA1c results, 59.4% had adequate glycaemic control, whereas 40.6% showed poor control. Regarding healthcare access, 37.6% received care in private facilities, 33.7% in public centers, and 28.7% utilized both sectors (Table 2).

Nearly half of the respondents (47%) demonstrated high adherence to their prescribed medications. In contrast, 31% showed partial adherence, while 20% exhibited good adherence (Figure 1).

A good positive correlation was found between the shared healthcare decision score and the general medication adherence score (r= 0.547), which was statistically significant (P-value < 0.05) (Figure 2).

The multivariate regression analysis to assess the factors affecting the shared healthcare decision-making among the studied populations showed that having a higher level of education, being with co-morbidities, and following a specific regimen (such as a dietary plan or exercise) to manage diabetes, positively affect the score while receiving healthcare from both public and private health sectors negatively affects it (P-value <0.05) (Table 3).

On the other hand, the multivariate regression analysis to assess the factors affecting the general medication adherence score showed that being a female and having a high score of shared healthcare decision-making positively affect the score, while being uncontrolled as per the last HbA1c negatively affects it (P-value <0.05) (Table 4).

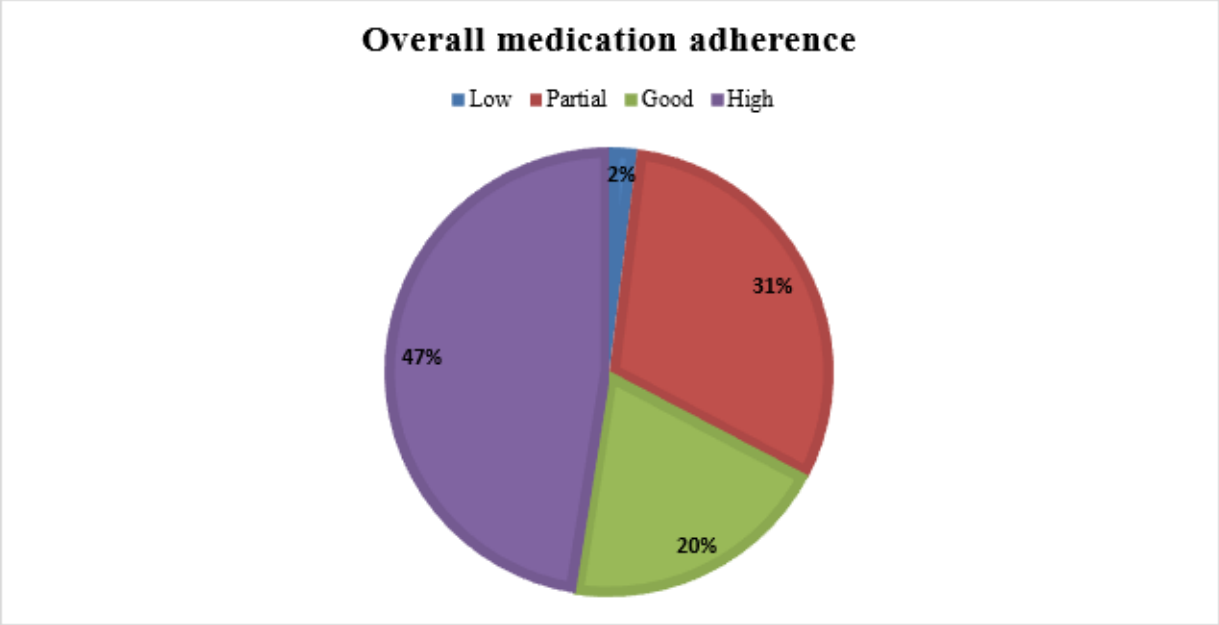

Figure 1. General medication adherence among the studied participants.

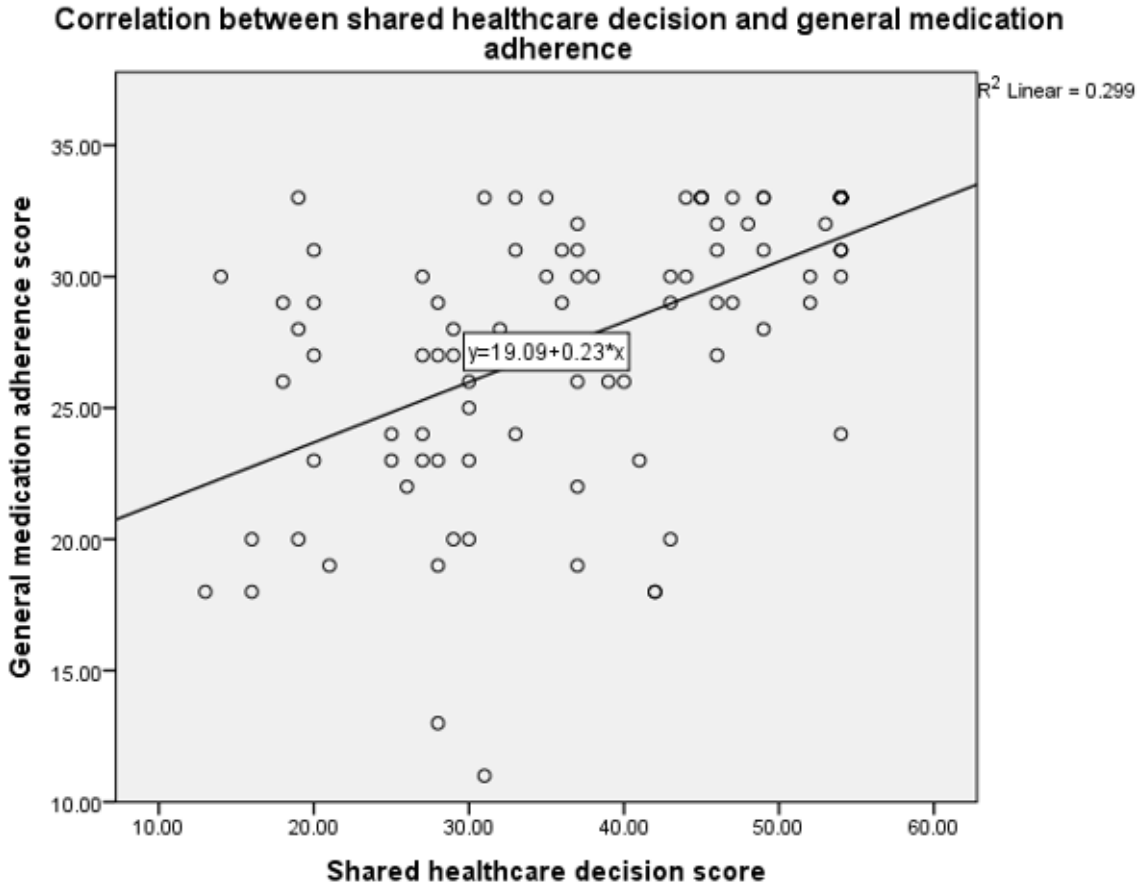

Figure 2. Correlation between shared healthcare decision and general medication adherence among the studied participants.
r= 0.547, good positive association
P-value= 0.0001, statistically significant

Table 3. Multivariate regression analysis for shared healthcare decision-making among the studied participants.

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	P-value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Age	-.128	.126	-.123	-1.022	.309	-.378	.121
Sex	-.518	2.315	-.021	-.224	.824	-5.119	4.083
Education	2.826	.925	.323	3.056	**.003***	4.665	.988
Marital status	1.743	1.501	.117	1.161	.249	-1.240	4.726
Occupation	-.729	.952	-.088	-.766	.446	-2.621	1.163
Co-morbidities	6.252	2.841	.255	2.201	**.03***	.606	11.898
Duration of being diabetic	.855	1.169	.083	.731	.467	-1.469	3.178
Following a specific regimen to manage diabetes	-8.938	2.671	-.364	-3.347	**.001***	-14.246	-3.630
Using oral anti-diabetic medications	-1.286	2.984	-.040	-.431	.668	-7.218	4.646
Using insulin injections	-4.859	2.737	-.199	-1.775	.079	-10.299	.581
Glycaemic control based on the latest HbA1c	-2.641	2.458	-.106	-1.075	.286	-7.526	2.244
Type of healthcare providers	-5.510	1.534	-.366	-3.591	**.001***	-8.560	-2.461

*P-value is statistically significant.

Table 4. Multivariate regression analysis for general medication adherence among the studied participants.

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	t	P-value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Age	-.015	.049	-.034	-.304	.762	-.113	.083
Sex	1.981	.902	.189	2.196	**.031***	.188	3.774
Education	.169	.379	.046	.445	.657	-.585	.923
Marital status	-.075	.589	-.012	-.127	.899	-1.246	1.096
Occupation	-.276	.372	-.080	-.743	.460	-1.016	.463
Co-morbidities	-.574	1.137	-.056	-.505	.615	-2.834	1.686
Duration of being diabetic	.256	.457	.060	.560	.577	-.652	1.164
Following a specific regimen to manage diabetes	.078	1.105	.008	.071	.944	-2.119	2.275
Using oral anti-diabetic medications	.471	1.164	.035	.405	.686	-1.842	2.785
Using insulin injections	.511	1.085	.050	.471	.639	-1.647	2.668
Glycaemic control based on the latest HbA1c	-3.304	.964	-.317	-3.428	**.001***	-5.220	-1.388
Type of healthcare providers	-1.179	.641	-.187	-1.841	.069	-2.452	.094
Shared healthcare decision score	.162	.042	.385	3.871	**.0001***	.079	.245

*P-value is statistically significant.

DISCUSSION

The current study investigated medication adherence and its association with collaborative healthcare decision-making among diabetic patients in Saudi Arabia. Almost half of the studied participants showed a high adherence to their prescribed medications, while almost a third were only partially good at it. This finding shows that even though adherence levels are generally good, a large number of patients still don't fully follow their medication regimen. Previous studies involving diabetic populations in Saudi Arabia and other countries have documented analogous patterns of suboptimal adherence, indicating that attaining consistent medication adherence continues to be a significant challenge in diabetes management[18-21].

The notable positive correlation between shared healthcare decision-making and medication adherence highlights the necessity of engaging patients in their treatment plans. Patients who engage in decision-making are more inclined to comprehend their treatment rationale, recognize enhanced control over their health, and consequently adhere more rigorously to medical recommendations. This finding is consistent with previous studies indicating that shared decision-making enhances patient satisfaction, self-efficacy, and adherence in chronic disease management[3,22-24]. These results underscore the significance of patient-centered communication as a method to improve therapeutic outcomes.

Multivariate analysis indicated that elevated educational attainment, the existence of co-morbidities, and participation in specific regimens, such as diet or exercise, served as independent predictors of increased shared decision-making scores. Patients who are educated are usually better at understanding medical information, asking the right questions, and saying what they want, which makes it easier for them to take an active role in decisions about their health care[25]. Patients with co-morbidities may also see healthcare providers more often, which can help build trust and communication[26]. Adhering to lifestyle regimens signifies an enhanced sense of responsibility regarding disease management, which likely results in greater participation in decision-making processes.

On the other hand, patients who got care from both public and private healthcare sectors had lower scores for shared decision-making. This could be due to broken care, inconsistent communication, or different ways of getting patients involved in their care in different healthcare settings. The absence of continuity among care providers can obstruct the development of a robust therapeutic relationship, consequently restricting opportunities for significant shared decision-making[27]. This finding underscores the significance of coordinated and integrated care pathways, particularly for chronic diseases such as diabetes that necessitate long-term management and continuous follow-up.

In terms of medication adherence, being female and having higher shared decision-making scores were found to be good signs, while uncontrolled glycemic status was a bad sign. The positive correlation with female gender may be attributed to heightened health awareness and more proactive health-seeking behaviors among women, as indicated in previous studies. The effect of shared decision-making on adherence bolsters the idea that patient empowerment increases their dedication to treatment. On the other hand, poor glycemic control could be a sign of either not following the treatment plan or a lack of motivation because the person is tired of the treatment, which shows how adherence problems can be cyclical[28]. Taken together, these findings indicate that promoting patient engagement, ongoing education, and collaborative care models could significantly enhance adherence and health outcomes in diabetic patients.

Limitations

There are limitations with this study that need to be pointed out. First, its cross-sectional design restricts the capacity to determine causality between shared healthcare decision-making and medication adherence. Second, the data were derived from self-reported measures, which may be influenced by recall bias or social desirability bias. Third, the study was limited to one geographic area, which could make it harder to apply the results to other places or groups of people. Moreover, potential confounding variables, including medication complexity, the quality of the physician–patient relationship, and psychological factors, were not examined in depth. Future longitudinal and multicenter studies are necessary to corroborate these findings and investigate the underlying mechanisms more comprehensively.

Recommendations

The study results allow for the making of a number of suggestions. Healthcare providers ought to be motivated to advocate for shared decision-making by involving patients in dialogues regarding their treatment alternatives and integrating their preferences into care strategies. Structured education and counseling programs ought to be instituted to enhance patients' comprehension of diabetes management and the significance of adherence. Efforts should also be made to bring care together across different parts of the healthcare system so that patient engagement stays the same and continues. Additionally, patients with inadequate glycemic control should receive focused attention to identify adherence barriers and implement customized interventions. Subsequent research ought to investigate interventional studies that evaluate strategies to enhance shared decision-making and examine their enduring effects on medication adherence and glycemic outcomes.

CONCLUSION

This study shows that there is a strong positive link between shared healthcare decision-making and medication adherence in people with diabetes. Patients who take a more active role in their treatment choices are more likely to stick to their medication, which could help them control their disease better and have better overall results. Educational attainment, the existence of comorbidities, and compliance with lifestyle regimens were significant predictors of elevated shared decision-making scores, whereas female gender and higher decision-making scores positively affected medication adherence. These results highlight the significance of implementing a patient-centred approach in diabetes management to improve both engagement and adherence.

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Competing Interest: None

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