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The effect of patients' empowerment on satisfaction of diabetic patients attending primary care clinics

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Abstract:

BACKGROUND: Different approaches, especially the patient-centered approach with emphasis on the patient's empowerment, were used with diabetic patients to ensure a better quality of life. The study aimed to evaluate the effects of patient empowerment versus traditional health education models on the satisfaction of diabetic patients.

MATERIALS AND METHODS: A randomized clinical trial was conducted on 130 patients, aged 40–65 years, diagnosed with type 2 diabetes mellitus, and attending a family medicine outpatient clinic. Patients were blinded and randomly allocated into one of the two Groups (A and B) for a health education session with trained family physicians using the empowerment model and the traditional model, respectively. Patient satisfaction was assessed using the consultation satisfaction questionnaire (CSQ). The relations between different qualitative variables were assessed by Chi-square test; differences in various quantitative variables were determined by t-test and ANOVA. Pearson correlation assessed the correlation between age and different domains as well as the total questionnaire scores of both groups.

RESULTS: A highly statistically significant difference was found between Group A ($n = 65$) and Group B ($n = 65$) for the general satisfaction scale, professional care analysis, depth, and length of consultation ($P < 0.001$). In Group A, 61.5% were highly satisfied and 35.4% were moderately satisfied, while in Group B, 41.5% were moderately satisfied and 43.1% were neutral. Regarding physicians' perceptions of the communication process with patients during the health education sessions, 83% in Group A perceived it as good, while 69.2% in Group B perceived it as average.

CONCLUSION: The patient empowerment model of health education was linked to higher rates of patient satisfaction and a better physician perception of the communication process during the consultation. The study was self-funded, and no harm was done to the patients.

Keywords:

Diabetes mellitus, empowerment, health education, satisfaction

Introduction

Type 2 diabetes mellitus (T2DM) and its sequelae have enormously added to the burden of disability and mortality.^[1] Therefore, primary healthcare has become a cornerstone for the management of T2DM.^[2] It is recommended that there should be a focus on selected behavior change techniques to change patients' attitudes toward managing

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diabetes mellitus (DM), and thereby lead to better control of the disease.^[3] The effective management of T2DM relies heavily on personal management, including the self-management decisions and actions taken by patients during their daily routine, which significantly impact their overall health.^[4] Therefore, behavior change is a crucial element for the attainment of a better clinical outcome and a better quality of life. Physicians should endorse this by enabling and empowering patients over their illnesses.^[5]

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Several models of behavior change have been evaluated in the management of chronic diseases. Of these models, the empowerment model has been receiving growing attention.^[6] Patient empowerment is a healthcare philosophy that emphasizes the active involvement of patients in the healthcare process for optimal outcomes.^[7] The World Health Organization defines patient empowerment as a process that enables individuals to take control of decisions and actions that affect their health. This can be achieved by developing skills, accessing information and resources, and modifying risk factors.^[6] This definition highlights the significance of involving individuals in their health decision-making and management.^[7] Patient empowerment focuses on a mutual sharing of responsibility and a partnership between the physician and the patient based on mutual trust and respect.^[8]

Healthcare providers should do their best to ensure that their patients adequately understand diabetes self-management.^[4] Patients' satisfaction is crucial to assessing the quality of healthcare.^[9]

Assessing patient satisfaction in primary healthcare is not just a measure of care quality but also a tool to identify areas for service improvement. Satisfied patients are more likely to have a positive and enduring relationship with the healthcare system, resulting in better compliance, continuity of care, and ultimately, improved health outcomes.^[10] Although several studies have dealt with patients' empowerment in DM, none have been found that merge and link the empowerment model in health education and patients' satisfaction. This study aims to compare the effects of patient empowerment and traditional health education on the satisfaction of T2DM patients. We hypothesize that in patients with T2DM, the empowerment health education model is linked to patient satisfaction and the doctor's perception of the process of communication during consultation.

Materials and Methods

This randomized controlled clinical trial was conducted on 130 T2DM Egyptian patients aged 40–60 years attending family medicine outpatient clinics at Cairo University Hospitals, Egypt from December 2019 to July 2020. Ethical approval was obtained from the Institutional Review Board vide Letter No. MS-181-2019 dated 16/11/2019, and written informed consent was taken from all study participants.

The calculated sample size was 63 participants for each group (intervention and control groups) using the ClinCalc program with a power of 80%, an alpha error of 0.05, and a case-to-control ratio = 1.^[11]

During the research, a sample of 130 subjects was recruited and randomly allocated into two groups. Randomization was achieved by a statistician using an online random number generator, and patient codes were placed into sequentially numbered sealed opaque envelopes by a research assistant who was not involved in the study. A family medicine resident not involved in the study was responsible for allocating to the patients who were blinded and opening of the envelopes ($n = 65$ for each group).

The inclusion criteria involved adult patients of both genders aged 40–65 years old, either newly diagnosed with T2DM or long-term diabetics attending family medicine outpatient clinics, invited, and willing to participate. We excluded patients known to have terminal, severe illness, mental impairment, or psychiatric disorders owing to probable communication difficulties. Eight family physicians matched in age and seniority were allocated to two equal groups.

The intervention group was labeled Group A and assigned an empowerment health education model on patients' empowerment based on the Diabetes Empowerment Scale-Short Form (DES-SF) which the researcher gave a brief session of to the physicians.^[12] It also indicated how to educate patients about DM control and complications. The physicians were provided with a printed leaflet on DM control and complications for use in health education and handed out to their patients.

The control Group B was assigned a traditional health education model, in which the researcher gave a brief session on patients' health education regarding DM control and complications to the physicians. The same printed leaflets given to Group A highlighting the control and complications of DM were given to the physicians in the control group to be handed out to their patients. The physicians who participated in the research were seniors, trained and educated on the empowerment model, and the traditional model of healthcare and updated on the newest guidelines of diabetes management and follow-up.

Physicians for both groups were given their health education messages in separate sessions of the same duration; each group of physicians conducted a different health education model to avoid researcher bias. Patient randomization was conducted using an online random number generator. The patient codes were put in sealed envelopes and numbered by a research assistant not involved in the study.

The health education sessions of equal duration, an average of 12 min, were given to patients in both groups

individually, each patient receiving three sessions with 2-week intervals between sessions. The 1st session was for background knowledge, the 2nd session was for health education and empowerment, and the 3rd session was for follow-up, feedback, and collection of the questionnaires.

In Group A, the physicians conducted the health education session using the empowerment mode. The session started with the physician asking the patient which points of concern DM they wished to discuss with the physician, what their thoughts and knowledge were about DM, and what they wanted the doctor to do in the health education session: Give information on investigations, explain causes and risk factors of the disease, give information on medication, or give advice on what the patient could do to control their disease. Finally, patients were asked to use a five-point scale to rate their health status.

After answering these questions, the physician corrected the misconceptions the patient had about DM and addressed the patient's questions and worries by explaining the contents of the health education leaflet focusing on what the patient does not know and affirming the right behavior and information. The physician's attitude while conducting the session was to affirm the patient to keep control of his disease and show him/her how to manage it. The doctor makes the patient responsible for his fate and ensures them they are there to offer support, knowledge, and guidance in the challenge to manage DM. The main points of the printed leaflet discussed by the doctor were complications of diabetes, prevention, and management of the risk factors and how to control DM.

In Group B, the physicians conducted the health education session to the patient using a traditional model of health education. The session started with the physician's explanation of the information on the disease and its management.

Then, the physician explained the health education leaflet beginning with an explanation of the types of DM and their complications and how to investigate them, how to prevent and reduce risk, and how to control it.

The physicians performing the health education sessions explained the educational leaflet and answered patients' questions. They, however, did not empower the patients or make them responsible for the control of their disease.

At the end of the session for both groups, each patient was asked to give a summary of what he had learned in the session and to follow up regularly, check for any complications, and come back for help at any time if needed.

Patient satisfaction of both groups was assessed after the consultation using the "consultation satisfaction questionnaire (CSQ),"^[13] which had high reliability with a Cronbach's alpha coefficient of 0.91. It consisted of 18 questions starting from Q8 to Q25 in the interview questionnaire, used to produce four scales: general patient satisfaction (Q8, 14, and 24), professional care satisfaction (Q9, 10, 13, 16, 17, 19, and 20), depth of consultation satisfaction (Q11, 21, 22, 15, and 25), and length of consultation satisfaction (Q12, 18, and 23). The CSQ was professionally translated by the University Center for Foreign Languages and Specialized Translations with a maximum score of 90 and a minimum of 18. There are positive questions with direct scores (Q1, 2, 3, 4, 6, 9, 10, 12, 13, 14, and 15) and negative questions with reverse scores (Q5, 7, 8, 11, 16, 17, and 18). The responses were based on a 5-point Likert Scale with 5 as strongly agree and 1 as strongly disagree.

The total score of each patient was calculated and changed into a percentage for statistical categorization into five main domains for easier projection of results. Scores were interpreted as follows: from 0% to 20% (highly dissatisfied), 21%–40% (moderately dissatisfied), 41%–60% (neutral), 61%–80% (moderately satisfied), and 81%–100% (highly satisfied).

This CSQ was filled in the presence of a third person whose role was to clarify any ambiguous points and read the questions for illiterate patients; otherwise, the patients completed the questionnaires themselves. Finally, physicians' perception of the communication process with the patients during the health education sessions was recorded as either good, average, or poor.

The primary aim of the study was to measure patient satisfaction and physicians' perceptions of the communication process and explore gender-wise and education-wise differences in patient satisfaction; however, the exploration of the correlation of patient's age with satisfaction was the secondary objective.

The data collected were analyzed using the Statistical Package for the Social Sciences software version 20.0 (IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY, USA: IBM Corp.). Qualitative data were represented as numbers and percentages, and quantitative data were presented as mean \pm standard deviation was used or quantitative variables and data as well as median with range (for not normally distributed data), and relations between different qualitative variables were detected by the Chi-square test. The independent *t*-test (*t*) was used to expose the differences in various quantitative variables and data of the two groups, while nonparametric

data were evaluated with the Mann–Whitney *U* test. Comparison between quantitative data of more than two variables was done by the ANOVA test (one-way ANOVA for parametric data and Friedman ANOVA for nonparametric data). The Pearson correlation (*r*) was used to assess the correlation between age and different domains as well as the total questionnaire scores of both groups. Parametric and nonparametric variables of the intervention and control groups were compared; the significant probability (*P* value) was considered statistically significant when it was < 0.05.

Results

There were no statistically significant differences between Group A and Group B as regards the sociodemographic characteristics between the studied groups. In addition, the groups did not differ significantly in terms of the duration of illness [Table 1].

There was a significant difference between the two groups in terms of patient satisfaction, including the general satisfaction score, satisfaction with professional care, and satisfaction with the length and depth of consultations (*P* < 0.001) [Figure 1].

A significant difference (*P* < 0.001**) was found between the two groups in terms of the percent of satisfaction of the patients with consultation, with 61.50% of the patients in Group A being highly satisfied, while 43% of patients in Group B were neutral [Figure 2].

There were no variations in gender or education level in the different domains of satisfaction and total score in both groups [Tables 2 and 3]. There was a negative correlation between age and the different domains of satisfaction in the two groups. However, this negative correlation was not significant [Table 4].

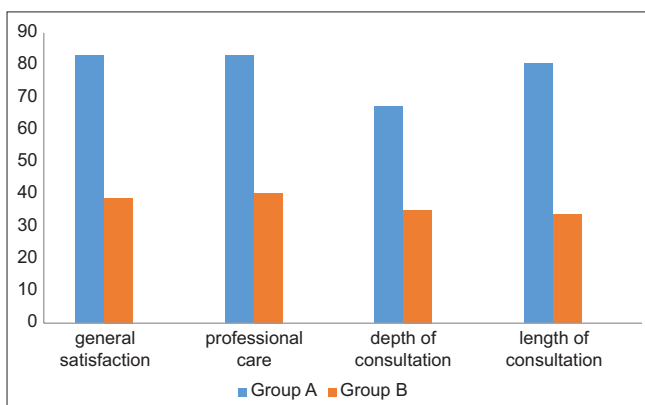


Figure 1: Comparison of the mean scores of patient satisfaction scale (domain-wise) between the groups (Group A *n* = 65) (Group B *n* = 65) (*P* < 0.001 for the four domains). Group A = diabetic patients exposed to the "Patient Empowerment Health Education Model." Group B = Diabetic patients exposed to the "Traditional Health Education Model"

Regarding physician perception of the communication process, a highly statistically significant difference was found between the two groups. Physicians perceived their communication with 83% of patients in Group A as good, 15% of the patients as average, and only 2% as poor, while physicians in Group B perceived their communication with 69.2% of the patients as average, 28% of the patients' communication perceived as poor, and only 3% perceived as good (*P* < 0.001).

A significant correlation between physician perception of communication during the consultation and the level of patient satisfaction was found. With regard to the very satisfied patients, the physician perceived the consultation of Group A as good, while with all the satisfied patients in Group B, their consultations were perceived as average with *P* < 0.001 [Table 5].

Discussion

Empowering and training T2DM patients to self-manage their disease can improve the quality of diabetes care in primary care.^[14] In the current study, the two groups were matched with regard to sociodemographic data (age, gender, and education) and duration of diabetes. This homogeneity of both groups eliminated the possible bias resulting from the variable sociodemographic data. In our study, there was a highly statistically significant difference found between the groups in all aspects of satisfaction and the overall score of satisfaction. Experience and personal skills are inadequate on their own to ensure patient satisfaction. Our study showed that the empowerment group had a significantly higher mean professional care satisfaction score compared to the traditional group (82.96 vs. 40.32, respectively), despite the fact that all the physicians were matched in age, seniority, and expertise. Scientific and patient-centered approaches are recommended to ensure better patient satisfaction, compliance, and better clinical outcomes.

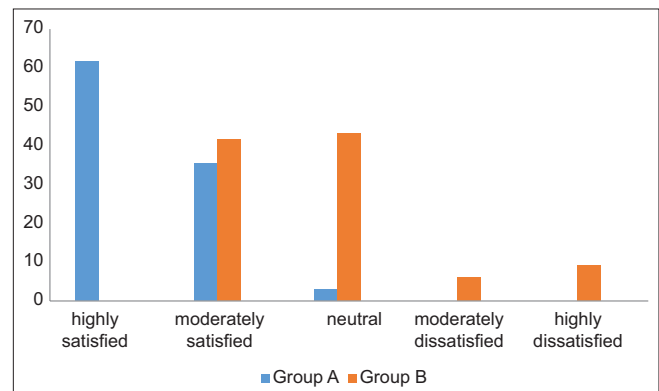


Figure 2: Comparing the degree of satisfaction between the studied groups (*n* = 130). Group A = Diabetic patients exposed to the "Patient Empowerment Health Education Model." Group B = Diabetic patients exposed to the "Traditional Health Education Model"

Table 1: Characteristics of patients with type-2 diabetes mellitus attending primary care clinics in Cairo University Hospitals, Egypt (n=130)

	Group A* (n=65) N (%)	Group B** (n=65) N (%)	P-value
Age (years), mean±SD (minimum–maximum)	53.90±8.17 (41–65)	54.06±6.70 (40–65)	0.92 ^a
Sex			
Female	33 (50.8)	33 (50.8)	1.0 ^b
Male	32 (49.2)	32 (49.2)	
Education			
Illiterate	30 (46.2)	37 (56.9)	0.052 ^b
Read and write	8 (12.3)	16 (24.6)	
Primary	4 (6.2)	1 (1.5)	
Secondary	5 (7.7)	3 (4.6)	
Higher education	18 (27.7)	8 (12.3)	
Duration of diabetes (years), mean±SD	7.10±5.20	8.03±4.80	0.30 ^c

*Group A=Diabetic patients exposed to the “Patient Empowerment Health Education Model,” **Group B=Diabetic patients exposed to the “Traditional Health Education Model,”^aStudent’s *t*-test, ^bChi-square test, ^cMann–Whitney test. SD=Standard deviation

Table 2: Comparison of patient satisfaction scores between two groups by gender

	Group A*			Group B**		
	Male (n=32) Mean±SD	Female (n=33) Mean±SD	P-value	Male (n=32) Mean±SD	Female (n=33) Mean±SD	P-value
General satisfaction	81.80±11.80	84.09±10.50	0.47	43.52±17.76	37.22±20.50	0.19
Professional care	80.90±13.20	79.7±15.00	0.73	36.19±15.78	31.31±19.80	0.27
Depth of consultation	65.60±18.50	68.6±17.50	0.57	37.34±12.76	32.87±17.50	0.24
Length of consultation	82.30±15.20	83.8±11.30	0.59	41.92±17.64	35.85±19.14	0.18
Total score	77.30±13.70	79.09±12.08	0.60	39.74±14.96	34.32±17.92	0.19

*Group A=Diabetic patients exposed to the “Patient Empowerment Health Education Model,” **Group B=Diabetic patients exposed to the “Traditional Health Education Model.” SD=Standard deviation

Table 3: Correlation between age and satisfaction score in both groups

Items	Age			
	Group A*		Group B**	
	r	P-value	r	P-value
General satisfaction	-0.14	0.25	-0.15	0.22
Professional care	-0.01	0.90	-0.07	0.50
Depth of consultation	-0.08	0.40	-0.02	0.84
Length of consultation	-0.17	0.16	-0.11	0.37
Total score	-0.09	0.40	-0.08	0.40

*Group A=Diabetic patients exposed to the “Patient Empowerment Health Education Model,” **Group B=Diabetic patients exposed to the “Traditional Health Education Model”

With regard to satisfaction with the depth of consultation, the empowerment group showed significantly higher scores than the traditional group (mean values: 67.18 vs. 35.07 respectively; $P < 0.001$), which underscores the advantage of the empowerment model to give patients the feeling of being understood and connected with their physicians, being well-treated by an empathetic treating physician so that the feeling of being perceived as just another case rather than a real person is eliminated.

One of the most astonishing things in this study is the satisfaction with the length of consultation. Although the duration of the consultation was almost the same, the empowerment group had a markedly higher mean satisfaction compared to the traditional group (80.38 vs.

33.71, respectively), which signifies that patient satisfaction is affected by the quality of time spent with the doctor not the duration.

All these factors together with the provision of a pleasant and friendly atmosphere result in better patient compliance, clinical outcomes, and more targeted use of health services avoiding waste and misuse on account of dissatisfaction. It would also result in better general patient satisfaction as shown in this study with a mean general satisfaction of 82.94 in the empowerment group compared to the traditional group’s 38.84, which is in accord with a study by Yeh *et al.*, which found significant correlations between patient satisfaction and patient empowerment ($r = 0.64, P < 0.01$).^[15] Moreover, a study by Fleissig *et al.*, which assessed the effects of the help card on patients’ prospects, preparation for and their consultation experience using a postal questionnaire, stated that the case group was more satisfied with their overall visit (88% vs. 81% in the control group).^[16]

Rossi *et al.*, also evaluated empowerment in T2DM with a random sample of 2390 patients using a DES-SF and found better glycemic control, lower diabetes complications, better routine activities of self-care, improved person-centered outcomes, higher satisfaction with diabetes treatment and care organization, as well as higher social support insight

Table 4: Comparison of patient satisfaction scores between two groups by education level

Variables	Groups*	Education level					P-value
		Illiterate Mean±SD	Read and write Mean±SD	Primary Mean±SD	Secondary Mean±SD	Higher education Mean±SD	
General satisfaction	A	80.83±10.70	77.08±23.00	83.33±9.60	91.66±10.20	86.57±12.50	0.29
	B	40.99±19.20	33.33±20.10	33.33	33.33±8.30	42.7±11.30	0.30
Professional care	A	80.59±10.20	82.58±15.20	81.25±11.43	91.42±8.90	85.11±10.83	0.27
	B	41.02±19.70	34.37±20.40	35.72	34.52±8.90	51.7857±15.8	0.13
Depth of consultation	A	62.50±17.10	69.37±19.16	56.66±20.20	76.00±20.40	73.33±16.60	0.16
	B	34.45±14.70	30.6250±15.39	25.00	47.50±16.03	47.50±16.03	0.16
Length of consultation	A	76.94±12.50	78.12±16.60	85.41±12.50	88.33±13.90	83.79±15.25	0.22
	B	35.13±18.22	28.12±17.90	25.00	19.44±9.60	44.79±17.70	0.30
Total score	A	75.21±11.16	76.79±17.05	74.78±14.15	86.85±12.80	82.20±12.69	0.20
	B	37.90±16.70	31.61±18.20	29.76	46.69±13.10	36.99±16.60	0.28

*Group A=Diabetic patients exposed to the "Patient Empowerment Health Education Model," Group B=Diabetic patients exposed to the "Traditional Health Education Model." SD=Standard deviation

Table 5: Relation between physician perception of communication and degree of satisfaction of the patients in two groups

Variables	Good (n=54)	Average (n=10)	Poor (n=1)	P-value
Group A* (n=65)				
Highly satisfied	34 (63.0)	5 (50)	0	<0.001
Moderately satisfied	20 (37.0)	3 (30)	0	
Neutral	0	2 (20)	1 (100)	
Group B** (n=65)				
Moderately satisfied	2 (100)	25 (55.55)	0	<0.001
Neutral	0	18 (40)	10 (55.5)	
Moderately dissatisfied	0	2 (4.4)	2 (11.1)	
Highly dissatisfied	0	0	6 (33.3)	

*Group A=Diabetic patients exposed to the "Patient Empowerment Health Education Model," **Group B=Diabetic patients exposed to the "Traditional Health Education Model"

was associated with higher degrees of empowerment.^[17] Another study on T2DM patients in a primary-care setting done by Wong *et al.*, had the same results.^[14] Furthermore, in the study by Golin *et al.*, patients who desired greater involvement were more satisfied and the key to the prediction of satisfaction was facilitation of participation.^[18]

However, a study done by McCann and Weinman on the benefit of a brief written intervention for patients attending primary care found no difference between the patients who received the intervention leaflet and controls on various consultation events and outcome calculations. It could be because it was a pilot study conducted by a single physician who distributed the leaflets with no explanation or interaction with the patients.^[19] In a randomized trial to investigate the impact of a specially designed program on the participation of elderly patients, participants in the cases group were given a leaflet to prepare them for their consultation, while those in the control group were given traditional care. The study showed that there were no significant

differences in terms of satisfaction between the two groups. This could have been due to the variability of the medical conditions of elderly patients. Elderly patients may require extended personal support to adjust their attitude to consultation.^[20]

In our study, we observed a negative correlation between age and consultation satisfaction domains in both groups, meaning that the younger the subjects the more satisfied they were. However, this negative correlation was not significant, which could be because of the need for special care and management by the elderly population.

This is in contrast to a study done by Tabekhan *et al.*,^[21] who found that younger participants had lower satisfaction scores. That difference could be due to the relatively younger age of the participants in that study, in which 33.5% of their participants (33.50%) were aged 25–34 years, while 25.5% were aged 35–44 years.^[21] Furthermore, in that study, the length of a consultation varied according to the patient's education level, those with higher levels of education reported lower levels of satisfaction. This difference from our study could be due to the higher proportion of university and postgraduate participants in that study compared to our study (52.2% vs. 20%, respectively). In comparison, in our study, most participants were illiterate (52%) compared to their study (7.5%).^[21]

We found that both gender and education level did not affect patient satisfaction. Many studies came with the same results.^[18-21] Patient satisfaction is a universal need regardless of gender or social strata.

Physician perception of the communication process was highly statistically significantly related to patient satisfaction levels ($P < 0.001$). A study from the UK on 636 also reached the same conclusion,^[22] and the results were

also in agreement with Frederikson and Bull who found significant variations between the experimental group and controls regarding the quality of communication in their consultations.^[23]

Unfortunately, as a developing country health education in our country is mostly neglected, surprisingly, none of our patients had been previously educated on diabetes and its complications or had ever been offered a health promotion or education on the subject; hence, all the information we provided them about diabetes was novel.

The study has some limitations as we did not assess the retained knowledge and general satisfaction in follow-up visits. More prolonged longitudinal studies with multiple follow-up visits are needed. Furthermore, we did not register the trial protocol in a registry before commencing the trial.

The confounders were unified to the possible extent, the physicians were of the same seniority, the setting was the same, the duration of sessions was equal, and the material used was the same. We did our best with the available resources to control most confounders.

Conclusion

The patient empowerment model of health education is linked to patient satisfaction. Physician perception of the communication process during the consultation is strongly linked to patient empowerment and patient satisfaction.

Using the patient empowerment model in the management of T2DM patients is beneficial for better clinical outcomes. However, further studies for the assessment of this model in decreasing the number of healthcare visits and future complications are highly recommended. Similar studies on the effect of the implication of this model on other noncommunicable diseases are highly advisable. Further studies are recommended to assess the intervention of patient empowerment using laboratory tests for the control of diabetes (e.g., hemoglobin A1c).

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Conflicts of interest

There are no conflicts of interest.

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