BMC Primary Care

RESEARCH

Open Access

The association between diabetes management self-efficacy and quality of life among Palestinian patients with type 2 diabetes

Romans Eshtaya[1], Ahmad Ayed[2*], Malakeh. Z. Malak[3*] and Anas Shehadeh[4]

Abstract

Background Self-efficacy emerges as a crucial element that impacts engagement in self-care behaviors among patients with type 2 diabetes. There is a lack of studies examining management self-efficacy and quality of life among patients with type 2 diabetes in Palestine. Thus, this study examined these variables among this cohort.

Methods A cross-sectional study and a convenience sample of 397 patients with type 2 diabetes who attended diabetic clinics in the North West Bank, Palestine, were recruited. Data were collected using a paper self-reported questionnaire composed of the RVDQOL-13 scale to assess the quality of life and the diabetes management self-efficacy scale. The participants received the questionnaire in person during their scheduled clinic visits and completed it independently. The researchers were responsible for distributing the questionnaires to participants and collecting them on the same day during the period from June to September 2023.

Results The participants reported a high diabetes management self-efficacy, with a mean score of 73.6 (± 14.5), while their quality of life was generally poor, with a mean score of 47.6 (± 13.1). Quality of life showed significant positive associations with employment (p.b.$r = 0.143$, $p < 0.01$), monthly income (p.b.$r = 0.137$, $p < 0.01$), educational level (p.b.$r = 0.137$, $p < 0.01$), male gender (p.b.$r = 0.120$, $p < 0.05$), diabetes management self-efficacy ($r = 0.545$, $p < 0.01$), and duration of diabetes ($r = 0.157$, $p < 0.01$). In contrast, quality of life was negatively associated with body mass index (BMI) (p.b.$r = -0.100$, $p < 0.05$) and HbA1c levels ($r = -0.265$, $p < 0.01$). Multiple regression analysis identified diabetes management self-efficacy (b = 0.474, $p < 0.001$) and longer duration of diabetes (b = 0.204, $p < 0.015$) as significant positive predictors of quality of life. Conversely, higher HbA1c levels were found to be a significant negative predictor of quality of life (b= -1.278, $p < 0.001$).

Conclusions This study emphasizes the need for multi-dimensional, person-centered care for patients with type 2 diabetes. Effective diabetes interventions should address the social, psychological, and educational needs that shape quality of life.

*Correspondence:
Ahmad Ayed
ahmad.juma@aaup.edu
Malakeh. Z. Malak
malakehmalak@yahoo.com; malakeh.m@zuj.edu.jo

Full list of author information is available at the end of the article

Keywords Diabetes management self-efficacy, Quality of life, RVDQOL-13, Self-efficacy diabetes management scale, Type 2 diabetes

Background

Type 2 diabetes is a chronic metabolic disorder characterized by an inability to sufficiently produce insulin or effectively use it to regulate blood glucose levels [1]. Currently, approximately 463 million people worldwide are diagnosed with diabetes, and this number is projected to reach 700 million by 2045 [1]. The prevalence of diabetes among adults living in developing countries (i.e., middle- and low-income countries) is high, with an estimated rate of roughly 8% [2, 3]. Diabetes leads to numerous complications such as hypertension, stroke, amputation, kidney damage, and blindness [4]. Therefore, diabetes management poses an important health issue, especially in developing countries.

The main objectives for successfully managing diabetes include preventing complications, lowering the fatality rate and treatment costs by slowing the progression of the disease, and improving quality of life (QOL) [1]. Effective self-management, or self-care, involves a group of health behaviors that are necessary to achieve acceptable glucose control [4]. Self-efficacy plays a pivotal role in the successful self-management of chronic conditions such as diabetes [5]. Self-efficacy is the belief in one's capacity to successfully carry out needed behaviors in the face of obstacles [5]. According to Bandura's Social Cognitive Theory, self-efficacy is influenced by the interplay between behavioral, personal, and environmental elements [6]. The perception of one's self-efficacy played a significant role in developing patient education initiatives aimed at enhancing diabetes self-management practices and improving QOL [7, 8].

Existing research underscores the effectiveness of a multifaceted approach involving both medication and sustained engagement in long-term self-management behaviors [1, 9]. These behaviors include adhering to recommended dietary guidelines, incorporating regular exercise routines, monitoring blood sugar levels, attending to foot care, and embracing smoking cessation efforts [1]. A wide range of factors collectively shape the extent of adherence to self-management behaviors, encompassing self-care competencies, diabetes-related knowledge, psychological well-being, self-efficacy, social support networks, communication with healthcare providers, stress management, and environmental circumstances [10]. The devastating physiological, psychological, and socioeconomic complications of diabetes require ongoing medical care along with high management self-efficacy to maintain the health and improve the QOL of patients [11].

There is a significant correlation between QOL and age, duration of diabetes, HbA1c, and number of complications, emphasizing the importance of proper management and strict glycemic control to preserve and improve the QOL among people with diabetes [12]. Moreover, patients who are male, married, highly educated, have a normal Body Mass Index, and have fewer random blood sugar monitoring tend to have higher QOL compared to their counterparts [13–29]. On the other hand, poor income [14–16, 19, 30, 31] and unemployment correlate with low QOL [32]. Some studies demonstrated that patients who live in cities reported lower QOL [15, 33]. Conversely, another study found that patients who live in cities had higher QOL [21]. Patients who experience complications are found to have lower QOL [14–18, 20, 21, 27, 28, 30–32, 34]. Furthermore, longer duration of diabetes is associated with a poor QOL [15, 17, 21, 30, 35, 36]. Additionally, physical inactivity is associated with a poor QOL [16, 21, 23, 27, 37].

In Palestine, the prevalence of diabetes type 1 and 2 in 2021 was 9.2% among adults aged 20–79 years [38]. The healthcare situation in Palestine faces numerous challenges stemming from ongoing armed conflicts, occupation, and socioeconomic hardships. These circumstances lead to significant problems, including restricted access to healthcare facilities and shortages in medicines and supplies [39]. Unfortunately, there is a lack of studies regarding the effect of management self-efficacy on QOL among patients with diabetes in Palestine. By addressing this gap, this study could encourage policymakers and healthcare providers to create approaches aimed at encouraging patients to adopt healthy behaviors and build their confidence about effectively controlling their blood glucose levels. The findings of this study might pave the way for developing psychological support programs to help improve patients' QOL by changing their attitudes toward diabetes and supporting self-efficacy management. Therefore, this study's purpose was to assess the association between diabetes management self-efficacy and QOL among patients with type 2 diabetes attending primary health care clinics in Palestine. More specifically, the following questions guided the study:

- What are the levels of management self-efficacy and QOL among patients with type 2 diabetes attending primary health care clinics in Palestine?
- Is there an association between diabetes management self-efficacy and QOL among participants?
- What are the predictors of the QOL of participants?

Methods

Design, setting, population, and sample

A cross-sectional design was used to conduct this study from June to September, 2023. Patients with type 2 diabetes attending primary health care clinics in the northern areas of Palestine—specifically in the districts of Tulkarem, Nablus, Jenin, Salfit, and Qalqilya were invited to participate. One main primary clinic from each district was purposively selected because specialized diabetes care services are only provided in these main clinics. The clinics serve as referral points and offer the necessary follow-up, education, and treatment for diabetes patients in their respective areas. Participants were recruited using a convenience sampling approach during their routine visits. The number of participants from each clinic was proportionate to the clinic's patient load, ensuring a balanced representation across the selected districts.

A total of 28,464 patients with type 2 diabetes attended the selected clinics. A required minimum sample size of 380 was calculated using the Raosoft program, based on a 95% confidence level, a moderate effect size, and a 50% response rate. A convenience sample of 420 was recruited to account for potential incomplete data. The inclusion criteria included adult patients aged 40 years or above who were diagnosed with type 2 diabetes and could read and write Arabic. Patients who had other chronic diseases were excluded.

Study instruments

A paper self-reported questionnaire was used to collect data. It included the RVDQOL-13 scale [40] and the Diabetes Management Self-Efficacy Scale (DMSES) [41], in addition to demographic characteristics (age, gender, marital status, level of education, employment, residence area, and monthly income) and health-related variables including smoking, duration of diabetes, physical activity, number of diabetes complications, HbAc1, and body mass index (BMI).

The RVDQOL-13 is a self-administered questionnaire developed by Bujang et al. [40] and comprises 13 items grouped into three domains measuring diabetic patients' QOL (DQOL) [40]. The three domains include satisfaction, impact, and worry. Response choices for satisfaction are rated on a five-point Likert scale ranging from very satisfied (1) to very dissatisfied (5), with scores from 6 to 30. The 'worry' domain is rated on a five-point Likert scale ranging from never (1) to always (5) with scores from 3 to 15. The impact domain is rated on a five-point Likert scale ranging from never (1) to always (5) with scores from 4 to 20. The total score for RVDQOL-13 ranges from 13 to 65, where higher scores indicate poor QOL. The RVDQOL-13 has good composite reliability for each domain; the satisfaction domain showed the highest composite reliability of 0.922, followed by the worry domain (0.794) and the impact domain (0.781) [40].

The Diabetes Management Self-Efficacy Scale (DMSES) is a self-administered scale developed by Bijl et al. [41] to detect the perceptions of diabetic patients about their ability to undertake self-care activities. The scale is composed of 20 items rated on a five-point Likert scale ranging from absolutely never (1) to absolutely yes (5). The total score ranges from 20 to 100. The scale consists of four subscales, including nutrition and weight, physical exercise, blood glucose, overall nutrition, and medical treatment control. Scores below the mean score of 60 for all subscales indicated low self-efficacy, while scores above the mean reflected high self-efficacy." [40]. The original scale is valid and reliable with a Cronbach's alpha of 0.89 [42].

According to the translation protocol of the World Health Organization (WHO), the questionnaire was translated into Arabic to overcome any language difficulties and preserve the validity of its content, then it was back-translated by three linguists. After that, the questionnaire was sent to five experts experienced in public health to determine the content validity index. They were asked to estimate and revise the items in the questionnaire in terms of adequacy, accuracy, and relevance. Then, the researchers implemented the necessary modifications based on the experts' feedback.

A pilot study was performed to identify problems in the clarity and understandability of the items and the required time for filling out the questionnaire. The pilot study was conducted on 30 patients with type 2 diabetes who were excluded from the study. The results indicated that the average time required to complete the questionnaire was approximately 15–20 min. Based on the feedback, no significant modifications were made as the items were found to be clear and understandable. The reliability of the final version of the questionnaire was assessed using internal reliability, where Cronbach's alpha of RVDQOL-13 was 0.86 and 0.94 for DMSES, which are highly reliable. The reliability was also evaluated on all study participants, and the Cronbach's alpha was 0.88 for RVDQOL-13 and 0.92 for DMSES.

Ethical considerations

Ethical approval and permission were obtained from the IRB committee of the Arab American University with reference number 2023/A/150/N. The researchers explained to participants the purpose of the study and that participation was voluntary. Also, informed consent was signed by the participants. Data were collected and stored on a password-protected computer.

Table 1 Demographic characteristics of the participants (*N* = 397)

Characteristics	Categories	*N* %
Age (years) M = 55.2, SD = 12.8		
Gender	Male	150(37.8)
	Female	247(62.2)
Level of education	Primary	117(29.5)
	Secondary	177(44.6)
	Bachelor	95(23.9)
	Higher than bachelor	8(2.0)
Residence area	Town	76(19.1)
	Village	196(49.4)
	City	125(31.5)
Marital status	Single	47(11.8)
	Married	327(82.4)
	Other	23(5.8)
Employment	Employed	155(39.0)
	Not employed	242(61.0)
Monthly income	Less than 750 $	210(52.9)
	750 –1500 $	135(34.0)
	More than 1500 $	52(13.1)

N Number, % Percentage, *M* Mean, *SD* Standard Deviation

Table 2 Medical–related factors of the participants (*N* = 397)

Variable		*N*(%)	M(SD)
HbA1c			8.1(1.6)
Duration of diabetes (years)			9.3(6.9)
Smoking	Yes	83(23.4)	
	No	304(76.6)	
Physical activity	Yes	118(29.7)	
	No	279(70.3)	
Number of diabetes complications	No complications	72(18.1)	
	One and more	325 (81.9)	
Body mass index (BMI)	18.5 to < 25 (healthy weight)	72 (18.1)	
	25.0 to < 30 (overweight)	148 (37.3)	
	30.0 or higher (obesity)	177 (44.6)	

N Number, % Percentage, *M Mean, SD* Standard Deviation

Data collection procedure

After obtaining permission, the researchers visited the selected clinics and met the head nurses who provided lists of registered patients with type 2 diabetes. Then, the researchers contacted the patients and explained to them the purpose of the study. Participants received the questionnaire in person during their scheduled clinic visits and completed it independently. The researchers were responsible for distributing the questionnaires to individuals who consented to participate. Upon completion, participants were asked to place the questionnaires in the provided reply-paid envelopes, which were then collected by the researchers on the same day.

Data analysis

The data were analyzed using the Statistical Package for Social Science (SPSS, version 25) software. The data were screened for outliers and missing information. Normality was checked using Kolmogorov-Smirnov which indicated normal distribution. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Correlation tests, including Pearson correlation and point-biserial, were used to examine the relationship between study variables. Additionally, multiple linear regression was used to determine the main predictors of QOL. The variables that showed significant correlations with QOL were included in the regression model. The enter method was used, where all selected independent variables were entered into the model simultaneously to assess their contribution to the outcome variable while controlling for the influence of others. Assumptions of linearity, normality, homoscedasticity, and absence of multicollinearity were checked before analysis. The strength and direction of associations were evaluated using unstandardized regression coefficients (B). A p-value of ≤ 0.05 was considered statistically significant.

Results

A total of 420 questionnaires were distributed, of which 397 were returned with a response rate of 94%. The average age of the participants was 55.2 ± 12.8 years. The majority (62.2%) were females, and 44.6% had completed secondary education. Approximately half of the participants (49.4%) lived in villages, and 61.0% were unemployed. Furthermore, 52.9% of the participants had a monthly income of less than 750$, which is considered low (Table 1).

Table 2 shows that the average HbA1c was 8.1 ± 1.6 and the average duration of diabetes was 9.3 ± 6.9 years. Most of the participants (76.6%) were non-smokers. Furthermore, 70.3% of the participants did not regularly practice physical activity. The BMI scores revealed that 44.6% of the participants were obese.

Participants' overall mean of diabetes management self-efficacy was 73.6 (SD ± 14.5), indicating strong self-efficacy. The mean score of QOL was 47.6 (SD ± 13.1), reflecting poor QOL. The 'satisfaction' subscale had the lowest score (M = 43.2, SD ± 16.1), while the 'worry' subscale had the highest score (M = 54.8, SD ± 16.7) (Table 3).

Table 4 shows a positive relationship between QOL and employment (p.b.r = 0.143, p < 0.01), monthly income (p.b.r = 0.137, p < 0.01), level of education (p.b.r = 0.137, p < 0.01), gender (p.b.r = 0.120, p < 0.05), diabetes management self-efficacy (r = 0.545, p < 0.01), and duration of diabetes (r = 0.157, p < 0.01). Furthermore, there

Table 3 Levels of diabetes management self-efficacy scale among the patients

Variables	M	SD
Diabetes Management Self-efficacy scale	73.6	14.5
Quality of life total scale	47.6	13.1
Satisfaction subscale	43.2	16.1
Impact subscale	48.7	14.4
Worry subscale	54.8	16.7

M Mean, *SD* Standard Deviation

Table 4 Correlating factors of the quality of life

Variables	Quality of life	
	p*.b.*r	***p*. value**
Marital status	0.031	0.544
Occupation	0.143	0.004**
Monthly income	0.137	0.006**
Level of education	0.137	0.006**
Gender	0.120	0.017*
Residence area	0.053	0.292
Smoking	0.044	0.386
Physical activity	0.086	0.086
BMI	−0.100	0.047*
	***r**	***p. value**
Age	0.074	0.142
HbA1c	−0.265	< 0.001**
Duration of diabetes mellitus	0.157	0.002**
Self -efficacy	0.545	< 0.001**

p.b.r point biserial correlation, *r Pearson correlation*

*Significant at $p < 0.05$

** Significant at $p < 0.01$

Table 5 Predictors of quality of life: multiple linear regression

Predictor	b	t-test	*p*. value	95.0% CI Unstandardized beta	
				Lower	Upper
Marital status	−0.160	−0.113	0.910	−2.945	2.624
Employment	−0.138	−0.100	0.920	−2.848	2.573
Monthly income	−1.455	−1.582	0.115	−3.264	0.354
Level of education	−0.880	−1.006	0.315	−2.601	0.841
Gender	0.265	0.210	0.834	−2.217	2.748
Residence area	−0.969	−1.227	0.221	−2.522	0.584
Smoking	−0.840	−0.696	0.487	−3.213	1.533
Physical activity	1.004	0.812	0.417	−1.428	3.437
Body mass index	0.250	0.329	0.742	−1.243	1.744
Age	0.011	0.218	0.827	−0.087	0.109
HbA1c	−1.278	−3.744	< 0.001	−0.607	1.949
Duration of diabetes	0.204	2.434	< 0.015	0.039	0.369
Diabetes management self-efficacy	0.474	12.559	< 0.001	0.400	0.548

CI Confidence Interval, *B* Unstandardized Beta

* Significant at $p < 0.05$

** Significant at $p < 0.01$

was a negative relationship between QOL and BMI (p.b.$r = -0.100$, $p < 0.05$), and HbA1c ($r = -0.265$, $p < 0.01$).

As shown in Table 5, all variables were entered into the predictor model of QOL, including marital status, employment, monthly income, level of education, gender, residence, smoking, physical activity, body mass index, age, HbA1c, duration of diabetes, and diabetes management self-efficacy. The overall model was statistically significant ($p \leq 0.001$, $R = 0.611$, $R^2 = 0.373$, adjusted $R^2 = 0.352$). The findings showed that diabetes management self-efficacy was a positive predictor of QOL (b = 0.474, $p < 0.001$). A one-point increment in self-efficacy was associated with a 0.472 increase in QOL. The findings showed that HbA1c was a detrimental predictor of QOL (b= −1.278, $p < 0.001$). A one-point increment in HbA1c was associated with a 1.278 decrease in QOL. The duration of diabetes was another positive predictor of QOL (b = 0.204, $p < 0.015$). A one-point increment in the duration of diabetes was associated with a 0.204 increase in QOL.

Discussion

The results of this study indicated that the diabetes management self-efficacy among the participants was high, which is consistent with previous studies [43, 44]. In contrast, Calli and Kartal [45] found that self-efficacy levels were moderate. While Taha et al. [46] found that self-efficacy levels were low before their intervention. Patients need to have high levels of self-efficacy to maintain the recommended behaviors for diabetes treatment [44]. According to Pender [47], patients with poor self-efficacy are less likely to adopt new health habits or modify their current ones. According to Morrison and Weston's study on diabetic patients, those with high levels of self-efficacy showed improvements in their blood glucose levels, general health, and psychological well-being; however, those with low levels of self-efficacy showed higher levels of stress. As a result, self-efficacy levels should be kept high to successfully manage diabetes [48]. In the Palestinian society, collectivist values and strong family involvement heavily influence health-related decisions. While supportive families can bolster diabetes self-efficacy, overdependence or limited autonomy, especially among women, may reduce self-efficacy [49]. Gender-related barriers, such as restricted mobility and limited access to health information, can further hinder women's self-efficacy. Religious beliefs often foster emotional resilience, but fatalistic views (e.g., illness as divine will) may discourage active self-care [49].

The result of the current study indicated that participants' QOL was poor. This finding is consistent with other studies conducted in Iran [24], Peru [50], Indonesia [51], and Egypt [52]. However, this finding is inconsistent with studies conducted in Iran [53], Malawi [54], and

Saudi Arabia [14], which found that the QOL was moderate. This study's findings could be related to participants' characteristics, where the majority of them completed secondary education, lived in villages, had low income, did not engage in regular physical activity, had one or more complications, were obese, and had uncontrolled blood glucose levels. Therefore, patients with type 2 diabetes should have a positive sense of general health and the ability to take care of themselves to effectively control their diabetes. In the Palestinian society, family support generally enhances emotional well-being and helps patients manage chronic illness, while traditional family roles, particularly for women, can impose added stress, reducing perceived QOL. Women often bear the dual burden of diabetes management and domestic responsibilities, while men may struggle with stress from being unable to fulfill their role as financial providers [55]. Additionally, limited understanding of diabetes, financial hardship, and inconsistent access to care contribute to poor disease management and increased complications. These challenges, compounded by chronic stress and uncertainty, significantly undermine mental health and overall QOL among patients with diabetes [56].

This study revealed that employed participants had higher QOL. Unemployment is found to significantly reduce QOL [32]. This result could be interpreted as unemployed participants suffering from socioeconomic and psychological problems along with social withdrawal, which might impair their QOL [57]. Also, this study demonstrated that higher income correlated with higher QOL. This finding is consistent with earlier studies [14–16, 19, 30, 31]. Diabetes puts a large burden on patients by allocating a large amount of their income to treatment, which leads to neglecting other aspects that influence their QOL [58].

This study showed that higher education was associated with higher QOL. This result is congruent with the previous studies [13, 15, 16, 18, 19, 21, 26–29]. Highly educated patients are more aware of healthcare interventions, such as dietary and treatment plans, which is reflected in their QOL [29]. Higher-educated patients may have better treatment compliance and a more positive viewpoint of their health status, better understanding of their illness and treatment plans [30, 59].

Our study revealed that females had lower QOL. This result is congruent with earlier studies [13–24, 60]. Females experience more distressing emotional reactions, which may negatively influence their QOL [21]. Moreover, females are often identified as family caregivers who don't accept support from their families, which makes it difficult to manage the disease and adhere to therapeutic regimens, such as diet and exercise programs [61].

Our results suggested that diabetes management self-efficacy was correlated and a predictor of QOL. This result is consistent with Calli and Kartal [45], who found that self-efficacy was the strongest predictor of well-being in patients with type 2 diabetes. Furthermore, Sari et al. [28] found that self-efficacy was a predictor of QOL among patients with type 2 diabetes. This means that the overall patients' well-being improved as their self-efficacy increased. However, this result is inconsistent with a study in Peru that found no significant association between self-efficacy and the QOL among patients with type 2 diabetes [48]. The Social Cognitive Theory emphasizes that behaviors are shaped by cognitive processes and facilitated by acquiring knowledge, often gained through social interactions [7]. This perspective underscores the importance of social learning in diabetes self-management. Patients'self-efficacy beliefs serve as powerful determinants of their behaviors. When patients have high confidence in managing their diabetes effectively, they are more likely to engage in proactive self-care activities. This includes adhering to prescribed medication regimens, monitoring blood glucose levels, adopting healthy dietary practices, and incorporating regular physical activity [62]. Ultimately, bolstering self-efficacy can significantly improve the overall QOL for patients with diabetes [63].

Our study showed that HbA1c was negatively correlated and a detrimental predictor of QOL, which is consistent with previous studies [19, 30, 64]. These findings emphasize the importance of strict glycemic control to preserve and improve the QOL among patients with diabetes [12, 65]. Patients with poor glycemic control suffer from psychological reactions including depression, stress, and anxiety, which negatively influence their QOL [66]. Moreover, multiple long-term complications were associated with poor glycemic control which minimized patients' QOL [67, 68].

Our study showed that patients with a longer duration of diabetes had a higher QOL. This finding is inconsistent with previous studies demonstrating that the longer the duration, the worse QOL [15, 17, 21, 30, 33, 35, 36]. Our study could be interpreted as those patients having more controllable glucose control and response to the treatment regimen.

Limitations of the study

Despite the significant findings, this study has several limitations. The cross-sectional design limits the ability to draw causal conclusions about the relationships between the variables. Additionally, the use of a convenience sample may not provide a fully representative sample of the broader population of patients with type 2 diabetes. The reliance on self-reported data is another

potential limitation, as it may introduce biases such as social desirability or recall bias.

Future research could address these limitations by employing a longitudinal design to better assess causal relationships over time. Using random sampling techniques would help ensure a more representative sample, improving the generalizability of the findings. Moreover, incorporating objective clinical data, such as HbA1c levels, could enhance the validity of the results and provide a more comprehensive understanding of the factors influencing quality of life in patients with type 2 diabetes.

Implications for practice

The findings of this study could help policymakers and healthcare professionals develop tailored protocols for enhancing diabetes management self-efficacy in health clinics. These protocols should include specific interventions such as peer support groups, digital health tools (e.g., mobile apps for tracking glucose levels), and nurse-led education programs. In the Palestinian context, where access to healthcare resources may be limited, utilizing low-cost interventions like digital platforms or community-based support groups could be particularly effective.

Furthermore, continuous follow-up through home visits can be a valuable strategy to reinforce diabetes management behaviors and improve self-efficacy. A patient-centered approach, which emphasizes not only glycemic control and prevention of complications but also the improvement of QOL, is essential from the patient's perspective. To achieve this, individualized and group training programs should be implemented, focusing on self-care activities and empowering patients to actively manage their diabetes.

Conclusion

The results of the current study indicated that the diabetes management self-efficacy was high among our participants. Conversely, the QOL was low. Furthermore, the results indicated that diabetes management self-efficacy, duration of diabetes, and HbA1c were predictors of QOL. Given the practical implications of these results, it is crucial for healthcare providers and policymakers to implement patient-centered interventions that focus not only on glycemic control but also on enhancing self-efficacy through education, support programs, and consistent follow-up. Future studies should explore the impact of these interventions in primary healthcare settings to further inform evidence-based practices aimed at improving both the physical and psychological well-being of patients with diabetes.

Abbreviations

QOL Quality of Life

Acknowledgements

Not applicable.

Authors' contributions

"R.E. and A.A. designed the study and provided the data. M.M. conducted data analyses, and prepared tables. All authors wrote the main manuscript text. A.A. supervised the study. M.M. and A.A. provided valuable comments during the drafting of the manuscript. M.M. A.A. and A.S. edited the manuscript and provided valuable comments. All authors reviewed and approved the manuscript."

Funding

The study was not funded.

Data availability

The data are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

Approval was obtained in accordance with the Declaration of Helsinki from the Helsinki Committee in Palestine, and the Institutional Review Board (IRB) at the Arab American University with reference number 2023/A/150/N. Participants provided informed written consent. Confidentiality of the data was maintained throughout data collection and analysis.

Consent for publication

Not Applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Thabet Thabet Hospital, Tulkarm, Palestine
[2]Faculty of Nursing, Arab American University of Palestine, Jenin, Palestine
[3]Faculty of Nursing, Al- Zaytoonah University of Jordan, Amman, Jordan
[4]American University of the Middle East, Egaila 54200, Kuwait

Received: 16 June 2025 / Accepted: 4 August 2025
Published online: 30 August 2025

References

1. CARE PC, Comorbidities. Standards of medical care in Diabetes—2022. Diabetes Care. 2022;45:1.
2. Saeedi P, Petersohn I, Salpea P, Malanda B, Karuranga S, Unwin N, Colagiuri S, Guariguata L, Motala AA, Ogurtsova K, Shaw JE. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: results from the International Diabetes Federation Diabetes Atlas. Diabetes Res Clin Pract. 2019;157:107843.
3. World Health Organization. WHOQOL: measuring quality of life. 2021. Available from: https://www.who.int/tools/whoqol. Accessed July 10, 2023.
4. Oluma A, Abadiga M, Mosisa G, Fekadu G, Turi E. Perceived self-efficacy and associated factors among adult patients with type 2 diabetes mellitus at public hospitals of Western ethiopia, 2020. Patient Prefer Adherence. 2020. https://doi.org/10.2147/PPA.S275887.
5. Bandura A. Social foundations of thought and action. Englewood Cliffs NJ. 1986;1986:23–8.
6. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. Psychol Rev. 1977;84(2):191–215.
7. Chindankutty NV, Devineni D. Self-Efficacy and adherence to Self-Care among patients with type 2 diabetes: A systematic review. J Popul Social Stud 2023;31:249-70. https://doi.org/10.25133/JPSSv312023.015.
8. Kong SY, Cho MK. Factors related to self-care in patients with type 2 diabetes. Open Nurs J. 2020. https://doi.org/10.2174/1874434602014010064.
9. Bonger Z, Shiferaw S, Tariku EZ. Adherence to diabetic self-care practices and its associated factors among patients with type 2 diabetes in Addis Ababa, Ethiopia. Patient Prefer Adherence. 2018. https://doi.org/10.2147/PPA.S156043.

10. Gurmu Y, Gela D, Aga F. Factors associated with self-care practice among adult diabetes patients in West Shoa zone, oromia regional state, Ethiopia. BMC Health Serv Res. 2018;18:1–8.
11. Randväli M, Toomsoo T, Šteinmiller J. The main risk factors in type 2 diabetes for cognitive dysfunction, depression, and psychosocial problems. Syst Rev Diabetol. 2024;5(1):40–59.
12. Prajapati VB, Blake R, Acharya LD, Seshadri S. Assessment of quality of life in type II diabetic patients using the modified diabetes quality of life (MDQoL)-17 questionnaire. Brazilian J Pharm Sci. 2018;53(4):e17144. https://doi.org/10.1590/s2175-97902017000417144.
13. Alsayed Hassan D, Helaluddin F, Chahestani OH, Mohamed O, Islam N. Diabetes self-management and health-related quality of life among primary care patients with diabetes in Qatar: a cross-sectional study. Healthcare. 2022;10(11): 2124.
14. Alshayban D, Joseph R. Health-related quality of life among patients with type 2 diabetes mellitus in Eastern province, Saudi arabia: A cross-sectional study. PLoS ONE. 2020;15(1):e0227573.
15. Barua L, Faruque M, Chowdhury HA, Banik PC, Ali L. Health-related quality of life and its predictors among the type 2 diabetes population of Bangladesh: a nation-wide cross-sectional study. J Diabetes Investig. 2021;12(2):277–85.
16. Chantzaras A, Yfantopoulos J. Association between medication adherence and health-related quality of life of patients with diabetes. Hormones. 2022;21(4):691–705.
17. Gebremedhin T, Workicho A, Angaw DA. Health-related quality of life and its associated factors among adult patients with type II diabetes attending Mizan Tepi university teaching hospital, Southwest Ethiopia. BMJ Open Diabetes Res Care. 2019;7(1): e000577. https://doi.org/10.1136/bmjdrc-2018-000577.
18. Homady A, Albasheer O, Bajawi A, Hamdi S, Awaf A, Madkhali T, Sabai A, Zaino MR, Somaili M. Health-related quality of life among type 2 diabetes patients in Southern Province of Saudi Arabia using WHOQOL-BREF: A cross-section study. Curr Diabetes Rev. 2023;19(7):55–64. https://doi.org/10.2174/1573399819666221221160136.
19. Natarajan J, Mokoboto-Zwane S. Health-related quality of life and domain-specific associated factors among patients with type2 diabetes mellitus in South India. Rev Diabet Stud. 2022;18(1):34–41. https://doi.org/10.1900/RDS.2022.18.34.
20. Nguyen HT, Moir MP, Nguyen TX, Vu AP, Luong LH, Nguyen TN, Nguyen LH, Tran BX, Tran TT, Latkin CA, Zhang MW. Health-related quality of life in elderly diabetic outpatients in Vietnam. Patient Prefer Adherence. 2018. https://doi.org/10.2147/PPA.S162892.
21. Tran Kien N, Phuong Hoa N, Minh Duc D, Wens J. Health-related quality of life and associated factors among patients with type II diabetes mellitus: A study in the family medicine center (FMC) of agricultural general hospital in hanoi, Vietnam. Health Psychol Open. 2021;8(1):20205102921996172. https://doi.org/10.1177/2055102921996172.
22. Wan EY, Fung CS, Choi EP, Wong CK, Chan AK, Chan KH, Lam CL. Main predictors in health-related quality of life in Chinese patients with type 2 diabetes mellitus. Qual Life Res. 2016;25:2957–65. https://doi.org/10.1007/s11136-016-1324-4.
23. Wonde TE, Ayene TR, Moges NA, Bazezew Y. Health-related quality of life and associated factors among type 2 diabetic adult patients in Debre Markos referral hospital, Northwest Ethiopia. Heliyon. 2022. https://doi.org/10.1016/j.heliyon.2022.e10182.
24. Zare F, Ameri H, Madadizadeh F, Reza Aghaei M. Health-related quality of life and its associated factors in patients with type 2 diabetes mellitus. SAGE Open Med. 2020;8: 2050312120965314. https://doi.org/10.1177/2050312120965314.
25. Manjunath K, Christopher P, Gopichandran V, Rakesh PS, George K, Prasad JH. Quality of life of a patient with type 2 diabetes: a cross-sectional study in rural South India. J Family Med Prim Care. 2014;3(4):396–9.
26. Arifin B, Idrus LR, van Asselt AD, Purba FD, Perwitasari DA, Thobari JA, Cao Q, Krabbe PF, Postma MJ. Health-related quality of life in Indonesian type 2 diabetes mellitus outpatients measured with the Bahasa version of EQ-5D. Qual Life Res. 2019;28:1179–90.
27. Kang N, Liu X, Liao W, Tu R, Sang S, Zhai Z, Hou J, Wang C, Wang X, Li Y. Health-related quality of life among rural adults with type 2 diabetes mellitus: a cross-sectional study. Eur J Public Health. 2021;31(3):547–53.
28. Sari Y, Isworo A, Upoyo AS, Taufik A, Setiyani R, Swasti KG, Haryanto H, Yusuf S, Nasruddin N, Kamaluddin R. The differences in health-related quality of life between younger and older adults and its associated factors in patients with type 2 diabetes mellitus in Indonesia. Health Qual Life Outcomes. 2021;19:1–0. https://doi.org/10.1186/s12955-021-01756-2.
29. Thomas Z, Mathew A, Jowil G, Sriram MK, Ranjan M, Dhinagar MJ, Abraham VJ. Quality of life among those with diabetes mellitus type II attending a secondary outpatient facility in South India. J Fam Med Prim Care. 2022;11(11):7204–11.
30. Gebremariam GT, Biratu S, Alemayehu M, Welie AG, Beyene K, Sander B, Gebretekle GB. Health-related quality of life of patients with type 2 diabetes mellitus at a tertiary care hospital in Ethiopia. PLoS ONE. 2022;17(2):e0264199.
31. Kalayou Haftu H, Hailemariam D, Tassew B, Hagos Gufue Z, Aberhe W. Health-Related quality of life using EQ-5D-3L utility score among type 2 diabetes patients: experiences from Tigray region, Northern Ethiopia. Patient Prefer Adherence. 2022;1:3143–55. https://doi.org/10.2147/ppa.s324586.
32. Zyoud SH, Al-Jabi SW, Sweileh WM, Arandi DA, Dabeek SA, Esawi HH, Atyeh RH, Abu-Ali HA, Sleet YI, Abd-Alfatah BM, Awang R. Relationship of treatment satisfaction to health-related quality of life among Palestinian patients with type 2 diabetes mellitus: findings from a cross-sectional study. J Clin Transl Endocrinol. 2015;2(2):66–71. https://doi.org/10.1016/j.jcte.2015.03.002.
33. Mishra SR, Sharma A, Bhandari PM, Bhochhibhoya S, Thapa K. Depression and health-related quality of life among patients with type 2 diabetes mellitus: a cross-sectional study in Nepal. PLoS ONE. 2015;10(11):e0141385. https://doi.org/10.1371/journal.pone.0141385.
34. Khunkaew S, Fernandez R, Sim J. Demographic and clinical predictors of health-related quality of life among people with type 2 diabetes mellitus living in Northern thailand: A cross-sectional study. Health Qual Life Outcomes. 2019;17(1):177. https://doi.org/10.1186/s12955-019-1246-2.
35. Al Hayek AA, Robert AA, Al Saeed A, Alzaid AA, Al Sabaan FS. Factors associated with health-related quality of life among Saudi patients with type 2 diabetes mellitus: a cross-sectional survey. Diabetes Metab J. 2014;38(3): 220. https://doi.org/10.4093/dmj.2014.38.3.220.
36. Carter N, Li J, Xu M, Li L, Fan X, Zhu S, Chahal P, Chattopadhyay K. Health-related quality of life of people with type 2 diabetes and its associated factors at a tertiary care clinic in Ningbo, China: a cross-sectional study. Endocrinology, Diabetes & Metabolism. 2022;5(5): e353.
37. Eckert K. Impact of physical activity and bodyweight on health-related quality of life in people with type 2 diabetes. Diabetes Metabolic Syndrome Obesity: Targets Therapy. 2012:303–11. https://doi.org/10.2147/dmso.s34835.
38. International Diabetes Federation (IDF). Key findings 2014, diabetes in the regions. Retrieved from http://www.diabetesatlas.org/key-messages.html. Accessed 10 July 2023.
39. United Nations. The Questionn of Palestine. Right to health barriers to health and attacks on health care in the OPT, 2019 to 2021 – WHO report 2023; United Nations. https://www.un.org/unispal/document/right-to-health-barriers-to-health-and-attacks-on-health-care-in-the-opt-2019-to-2021-who-report/.
40. Bujang MA, Adnan TH, Mohd Hatta NK, Ismail M, Lim CJ. A revised version of diabetes quality of life instrument maintaining domains for satisfaction, impact, and worry. J Diabetes Res. 2018;2018(1):5804687.
41. Bijl JV, Poelgeest-Eeltink AV, Shortridge-Baggett L. The psychometric properties of the diabetes management self-efficacy scale for patients with type 2 diabetes mellitus. J Adv Nurs. 1999;30(2):352–9.
42. Kara M, Van Der Bijl JJ, Shortridge-Baggett LM, Astı T, Erguney S. Cross-cultural adaptation of the diabetes management self-efficacy scale for patients with type 2 diabetes mellitus: scale development. Int J Nurs Stud. 2006;43(5):611–21.
43. Gedik S, Kocoglu D. Self-efficacy level among patients with type 2 diabetes living in rural areas. Rural Remote Health. 2018;18(1):1–1.
44. Wahyuni A, Ramayani D. The relationship between self-eficacy and self-care in type 2 diabetes mellitus patients. Malaysian J Nurs (MJN). 2020;11(3):68–75.
45. Calli D, Kartal A. The relationship between self-efficacy of diabetes management and well-being in patients with type 2 diabetes. Niger J Clin Pract. 2021;24(3):393–9.
46. Taha NM, Zaton HK, Abd Elaziz NA. Impact of a health educational guidelines on the knowledge, self-management practice and self-efficacy of patients with type-2 diabetes. J Nurs Educ Pract. 2016;6(9):46–55.
47. Pender NJ. Health Promotion in nursing practice. 3rd Edition, Appleton and Lange. 1996.
48. Morrison G, Weston P. Self-efficacy: A tool for people with diabetes managed by continuous subcutaneous insulin infusion. J Diabetes Nurs. 2013;17(1):32-37.

49. Sadder F, Nemer M. Assessment of Health-Related quality of life among Palestinian adolescents with type 1 diabetes: A Cross-Sectional investigation. Pediatr Diabetes. 2025;2025:3568243. https://doi.org/10.1155/pedi/3568243.
50. Huayanay-Espinoza IE, Guerra-Castañon F, Reyes-Diaz M, Lazo-Porras M, de la Cruz-Luque C, Herrera DA, Málaga G. Calidad de Vida y autoeficacia En Pacientes Con diabetes mellitus Tipo 2 En Un hospital público Peruano. Medwave. 2021;21(2). https://doi.org/10.5867/medwave.2021.02.8132.
51. Puspasari S, Farera DR. Quality of life among patients with type 2 diabetic mellitus in outpatient department, general public hospital, West Java. KnE Life Sci. 2021;15:897–906. https://doi.org/10.18502/kls.v6i1.8767.
52. Latif AE, Abd El Wahid FI, Mohamed HA, Farg AA. Physical and psychological health domains of quality of life in type 2 diabetic patients in relation to clinical factors of diabetes mellitus in Egypt. Int Res J Med Med Sci. 2016;4(1):7–16.
53. Mohammadi S, Karim NA, Talib RA, Amani R. Evaluation of quality of life among type 2 diabetes patients. IJCMPH. 2016;3:51.
54. Chisalunda A, Ng'ambi WF, Tarimo NS, Banda NP, Muula AS, Kumwenda J, Nyondo-Mipando AL. Quality of life among type 2 diabetes mellitus patients at Kamuzu central hospital in Lilongwe, Malawi: a mixed-methods study. PLOS Glob Public Health. 2023;3(10): e0002367.
55. Bates K, Leone T, Ghandour R, Mitwalli S, Nasr S, Coast E, Giacaman R. Women's health in the occupied Palestinian territories: contextual influences on subjective and objective health measures. PLoS ONE. 2017;12(10):e0186610. https://doi.org/10.1371/journal.pone.0186610.
56. Dreidi MM, Asmar IT, Jaghama MK, Tawil K. Health-related quality of life among Palestinians with diabetes. J Diabetes Nurs. 2021;25(1):1–6.
57. Morrish N, Medina-Lara A. Does unemployment lead to greater levels of loneliness? A systematic review. Soc Sci Med. 2021;287: 114339. https://doi.org/10.1016/j.socscimed.2021.114339.
58. Kyrou I, Tsigos C, Mavrogianni C, Cardon G, Van Stappen V, Latomme J, Kivelä J, Wikström K, Tsochev K, Nanasi A, Semanova C. Sociodemographic and lifestyle-related risk factors for identifying vulnerable groups for type 2 diabetes: a narrative review with emphasis on data from Europe. BMC Endocr Disorders. 2020;20:1–3. https://doi.org/10.1186/s12902-019-0463-3.
59. Abedini MR, Bijari B, Miri Z, Shakhs Emampour F, Abbasi A. The quality of life of the patients with diabetes type 2 using EQ-5D-5 L in Birjand. Health Qual Life Outcomes. 2020;18:1–9.
60. Shamshirgaran SM, Ataei J, Alamdari MI, Safaeian A, Aminisani N. Predictors of health-related quality of life among people with type II diabetes mellitus in ardabil, Northwest of iran, 2014. Prim Care Diabetes. 2016;10(4):244–50. https://doi.org/10.1016/j.pcd.2015.11.004.
61. Moeineslam M, Amiri P, Karimi M, Jalali-Farahani S, Shiva N, Azizi F. Diabetes in women and health-related quality of life in the whole family: a structural equation modeling. Health Qual Life Outcomes. 2019;17:1–9. https://doi.org/10.1186/s12955-019-1252-4.
62. Smith Y, Garcia-Torres R, Coughlin SS, Ling J, Marin T, Su S, Young L. Effectiveness of social cognitive theory–based interventions for glycemic control in adults with type 2 diabetes mellitus: protocol for a systematic review and meta-analysis. JMIR Res Protoc. 2020;9(9): e17148.
63. Camargo-Plazas P, Robertson M, Alvarado B, Paré GC, Costa IG, Duhn L. Diabetes self-management education (DSME) for older persons in Western countries: A scoping review. PLoS ONE. 2023;18(8):e0288797.
64. Dehesh T, Dehesh P, Gozashti MH. Metabolic factors that affect health-related quality of life in type 2 diabetes patients: a multivariate regression analysis. Diabetes Metabolic Syndrome Obesity: Targets Therapy. 2019;19:1181–8.
65. Al-Qerem W, Jarab AS, Badinjki M, Hammad A, Ling J, Alasmari F. Factors associated with glycemic control among patients with type 2 diabetes: a cross-sectional study. Eur Rev Med Pharmacol Sci. 2022;26(7):2415–21. https://doi.org/10.26355/eurrev_202204_28475.
66. Cannon A, Handelsman Y, Heile M, Shannon M. Burden of illness in type 2 diabetes mellitus. J Managed Care Specialty Pharm. 2018;24(9–a Suppl):S5–13. https://doi.org/10.18553/jmcp.2018.24.9-a.s5.
67. Cheng L, Sit JW, Choi KC, Chair SY, Li X, Wu Y, Long J, Yang H. The effects of an empowerment-based self-management intervention on empowerment level, psychological distress, and quality of life in patients with poorly controlled type 2 diabetes: a randomized controlled trial. Int J Nurs Stud. 2021;116: 103407. https://doi.org/10.1016/j.ijnurstu.2019.103407.
68. Kuo HJ, Huang YC, García AA. Fatigue, pain, sleep difficulties, and depressive symptoms in Mexican Americans and Chinese Americans with type 2 diabetes. J Immigr Minor Health. 2020;22:895–902. https://doi.org/10.1007/s10903-020-01001-w.

Publisher's Note