

Effectiveness of Conversation Maps Based Education on Self Management stratgy among Diabetic Patients

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Abstract

Back ground. conversation map-based education is an effective, patient-centered approach for promoting the adoption of optimal diabetes self-care activities ultimately supporting better health as diabetic patients could engage win group discussions, share informations and experiences, and provide feedback. **Aim:** To evaluate how conversation maps-based education could affect self management stratgy among diabetic patients. **Design:** quasi-experimental research approach (pre/post test) was utilized. The study conducted at endocrine outpatient clinic, affiliated to Benha University Hospital, Qalyubia, Egypt. **A conveience sample** of 220 diabetic patients type II were involved in the study. **Tools:** Two tools were used: (I) structured interview questionnaire involving patients' socio-demographic characteristics, medical history, lab investigations, and patients' level of knowledge regarding diabetes and self care activities. (II) Diabetes Self-Management Questionnaire. **Results:** post implementation educational program using conversation maps, there was asignificant improvement patients' knowledge and self management activities than before as only 24 % of the studied patients had good total knowledge level pre conversation map-based education, which had been improved to 77% immediately post conversation map-based education. In addition, 71 % of them had poor total self management level pre conversation map-based education, which had been declined to 22% immediately post conversation map-based education. **Conclusion:** conversation maps was effective in improving knowledge and self-management activities among diabetic patients. **Recommendations:** Further researches should be conducted on a large sample of diabetic patients that enables to generalize results and adoption of conversation maps as intiative educational tool to enhance better outcomes.

Key words: Diabetes, Conversation map, Self- management

Introduction

Diabetes mellitus as a chronic progressive metabolic disease may be caused by an interaction between genetic, immunological and environmental factors and characterized by hyperglycemia and

metabolic dysfunction due to either insulin resistance, deficiency, or both (Alasfory, El-Mowafy and Mohamed, 2024). It can be considered as amajor cause of morbidity and mortality worldwide so that, patients should to be living with illness through lifestyle

modification and adaptation to disease **(Bekele et al., 2024)**.

Certain self-care activities should to be applied contiously by diabetic patients for the progression of the disease control, complications prevention, and quality of life improvement. It can be done through adherence to healthy diet, physical excercises, glycemic monitoring and control, medications, stress coping stratigies and risk-reduction behaviors **(Ansari et al., 2022)**. Education about diabetes self-management (DSM) considered as baseline to lower heath care costs during hospitalizations and decline diabetes-related complications like retinopathy, nephropathy and neuropathy **(Adamu et al., 2025)**.

Diabetes self-management considered as person's ability to determine and manage symptoms, treatment, physical and psychosocial consequences and lifestyle changes as exercise and diet inherent in living with a chronic condition. Self-management plays a role in improving glycosylated hemoglobin levels for persons with diabetes and systolic blood pressure for those with hypertension **(Yimer et al., 2025)**.

Diabetes self-management education is aprocess of facilitating the knowledge, skill and ability necessary for diabetes self-care incorporating the needs, goals and life experiences of the diabetic patients and is guided by evidence-based standards **(Bagriacik and Bayrakta, 2022)**. Its general objectives include decision-making support, self-care behaviors, problem-

solving skills, collaboration actively with health care team, lifestyle modification, and self-management practices to improve clinical outcomes as well as health status and quality of life **(Weitgasser et al., 2023)**.

Self- management strategies are generally done by the health care team and aimed for making diabetic people more aware of their chronic health conditions in order to better manage them **(Puzhakkal et al., 2025)**. Nurses are one of the health team who achieve good results as a facilitator of these educational activities for self-care management. Among the educational strategies that target DM patients, the diabetes conversation maps are highlighted, which consist of playful and interactive illustrations and daily situations the people with this disease experience **(Dailah, 2024)**.

The health team should enhance the development of diabetes self-management skills in order to make diabetic patients accountable for their treatment by changing or maintaining healthy habits and strengthening self-confidence to improve outcomes **(Ernawati, Wihastuti and Utami, 2022)**. Although they have begun to recognize the necessity for new diabetes self-management education methods which include one-on-one interactions between patients and healthcare providers (patient education classes), web-based information, provision of audio, video and printed materials **(Davis et al., 2022)**.

Diabetes conversation map is a tool that involves patients in the learning

process to use the information in a concrete manner in daily decision of diabetes self-management, encouraging diabetic patients to participate in the viable glycemic control strategies and interact with the health professionals (Saldana, 2023). The conversation map must be used in group to allow the exchange of knowledge and experiences with other people in the same situation and acquire information from each other, therefore facilitating learning and strengthening patients' self-care ability through interactive discussion (Amin et al., 2025).

Conversation map-based education consists of six diabetes-related topics as follow; living with diabetes, how diabetes works (e.g., the role of insulin and glucose), healthy eating and being active, starting insulin treatment, foot care, and understanding factors involved in managing diabetes (Tahir et al., 2023). These topics are moderated mainly by certified nurses who provide the opportunity to formulate strategies for behavior change using map as visual map, pictures, activity or dialogue cards, conversation questions, guidelines and action plans (Hamza & Abdel Hakeim, 2024).

Significance of the study:

Ove all the world, diabetes ranked as the fifth most common cause of death that accounted 6.7 million deaths in 2021. Studies showed that, its prevalence considered to be increased every year, there were 537 million people with diabetes in 2021. This number is expected to grow to 783 million by 2045 (Song et al., 2023 &

Ahmad and Joshi, 2023). Egypt ranked the ninth level in the prevalence of DM worldwide, and the number of diabetic patients was about 8,850,400 in 2020 and this number is expected to rise to 13 million by 2030 and to 20 million by 2045 (Alasfory, El-Mowafy and Mohamed, 2024). Whilst the number of diabetic patients at Benha University Hospital in the year (2023) was about (1200) patients (Benha University Hospital Statistical Office, 2023).

To prevent complications and comorbidities of diabetes among these patients, effective diabetes self-management is necessary as it is one of the most important factors impacting the progression of diabetes for patients, considerably improve their health outcome (Huber et al., 2022). Conversation map plays a role in controlling and delaying the onset of diabetes and its complications compared to other types of education and recently considered as the first choice in diabetes health education (Omar, Hamza and Ramadan, 2024).

Aim of the study: to evaluate effectiveness of conversation maps-based education on self management strategy among diabetic patients' patients through:

1. Assessing level of knowledge and self-management activities among diabetic patients.
2. Planning and implementing educational program according to patients' needs using conversation maps
3. Evaluating the effect of conversation maps-based education on patients'

knowledge and self-management activities.

Research hypotheses:

H1: Patient's knowledge score would be higher after implementation of conversation maps-based education than before.

H2: Patient's self management activities score would be higher after implementation of conversation maps-based education than before.

Operational Definition: **conversation Maps** is educational initiative tool that allow diabetic patients to engage in group discussions. In addition, it provides visual cards to enable diabetic people improve their knowledge and self-management practices with regard to their condition.

Research Design: A quasi-experimental research design (pre&post test) was employed in this study. This approach was utilized to examine relationships, explain particular occurrences, or both. In clinical nursing research, participants are frequently chosen based on convenience rather than random selection, resulting in a greater prevalence of quasi-experimental studies (Sefidkar & Madadzadeh, 2022).

Setting:

This study was conducted at Endocrine Outpatient Clinic at Benha University Hospital, Qalyubia Governorate, Egypt which located in the first floor at medical building

which was one room with two beds for patient examination.

Subjects: convenience sample of 220 newly diabetic patients type II was recruited in the current study. **The sample size** was estimated using the **Epi info (7)** statistical program based on previous year census report of admission in the diabetic outpatient clinic from Benha **University Hospital Census, 2023** at 90% confidence level and acceptable margin of error 5%. The total sample size was 220.

Tools of data collection: two basic tools included to collect data pertinent to study as follows:

Tool (I): Structured interviewing questionnaire: The researchers constructed it after reviewing relevant literature (Qasim et al. 2020) & (De Moraes et al., 2020). It was filled in by the researchers consisting of four parts as follows:

- **Part One;** concerned with assessing patients' socio- demographic data as age, gender, marital status, level of education, work status, residence, and income monthly.
- **Part Two;** assessed patients' medical history as onset of diagnosis, how to control diabetes, body mass index, and having any other chronic diseases.
- **Part Three:** lab investigation results as: random and fasting blood glucose level, glycosylated hemoglobin, and urine analysis for presence of acetone or glucose.

- **Part Four** Diabetes Knowledge Questionnaire (DKQ-24): it was adopted from (Hsieh et al., 2022); (Rokhman et al., 2024) consisting of 24 questions with response choices “Yes”, “No”, “I don’t know” to evaluate patients’ knowledge about: causes of diabetes (3 questions), risk factors (3 questions), signs and symptoms (3 questions), types of diabetes (1 question), insulin production (1 question), treatment (2 questions), complications (5 questions), and diet and life style (6 questions).

Scoring system:

Each correct response scored as one point while incorrect or ‘I don’t know’ response scored as zero point. The total score of knowledge was 24 points equal (100%). Total score of knowledge summed up and distributed as follows (Sharma, 2020):

- **Poor knowledge level;** < 50% that less than 12 points
- **Average knowledge level;** from 50% to 75% that from 12 to 18 points
- **Good knowledge level;** > 75% that more than 18 points

Tool II: Diabetes Self-Management Questionnaire: It was adapted from (Schmitt et al. 2022) to assess to what extent patients could practice self-management activities pre and post conversation maps-based education. It contained 27 items that categorized into 7 subscales as follows;

- Medication Adherence (3 items)
- Glycemia Monitoring (4 items).
- Dietary Adherence (5 items)
- Physical Activity (4 items)
- Foot Care (3 items)
- Sick Day Management (3 items),
- Risk Reduction and Health Care Use (5 items)

Scoring system: Each item was rated on a 5-point Likert scale (Never 0, Rarely 1, Sometimes 2, Often 3, Always 4), with a total score ranged from 0- 108 points. higher values were indicator of better self- management as follows (Zwane et al., 2023):

- **Poor self- management** < 50% that less than 54 points
- **Average self- management** from 50% to 75% that from 54 to 81 points
- **Good self- management** > 75% that more than 81 points

Educational program booklet: It developed by researchers based on the resources available through a survey of updated pertinent literature and scientific resources (Farag et al., 2021; Hasan & Ramadan, 2022; Eldesouky et al., 2024 and others). For the purpose of enhancing the patients’ capacity for learning according to their needs. The booklet handout was prepared in Arabic language with colored illustrations of six conversation map including; What is diabetes, how to live with diabetes; Healthy diet and exercise, insulin therapy, diabetic foot, and understanding complications of diabetes. It also includes practical part to educate patients how to measure blood glucose level, how to inject

insulin in subcutaneous tissues, and how to apply foot care.

Ethical and administrative considerations

After receiving initial approval from the Ethics Committee of the Faculty of Nursing Code REC/MSNP 31 before beginning of data collection and after being informed of its purpose, the medical director and head managers of outpatient clinics at Benha University Hospital granted official permission for data collection. Afterward, fully describing the study's goals, advantages, and data collection method to patients. The patients were notified that their involvement was entirely voluntary. They might revoke it at any moment without incurring any fees. Then, each patient enrolled in the research gave their verbal and written consent. All information gathered, according to the researchers, would be kept totally confidential and used solely for the research.

Tools' validity: Face and content validity was ascertained by a panel of five experts 3 professors and 2 assistant professors of medical surgical nursing from Faculty of Nursing, Benha University. The expertise reviewed the tools for clarity, relevance, comprehensiveness, simplicity, and applicability. The final forms of tools were done according to experts' opinions.

Tools' reliability: it was tested using Chronbach's Alpha coefficients indicating values of 0.85 for diabetes knowledge questionnaire and 0.97 for diabetes self-Management questionnaire

that reflected good reliability of tools used in this study.

Pilot study: - it was carried out on ten percent (22 patients) of sample size to test the applicability, clarity and efficiency of the tools. Depending on the results of the pilot study, no modifications or refinements were done and the patients werenot excluded later from actual study sample. It carried out two weeks prior to collecting data.

Field work: - Once the permission was obtained, data collection took a period of 9 months started from the beginning of October 2024 to the end of June 2025 included 3 phases as the following:

Phase I: Assessment phase: - The data was collected by the researchers throughout assessing patients' socio-demographic data, medical history, lab investigation results, and knowledge (tool I) and patients' self-management activities (tool II) as a baseline data assessment pre implementation of conversation maps based educationa program.

Phase II: Planning and implementation phase (Intervention): Once the initial assessment finished, the researchers planned the sessions of individualized patients for start explanation of diabetes conversation maps and the reserchers visited pre mentioned setting 2 days/week (sunday and wensday). Patients distributed into small groups (8-10 patients/session) and gathered them in waiting room of endocrine clinic. The total number of

sessions was 6/week for each group and each session took about 45-60 minutes. each group perceived the same content using the same teaching strategies and handout. **During educational sessions**, each map was printed as a large chart with colorful images and simplified Arabic text:

- **First session: Map 1: What is diabetes;** which included definition, causes, risk factors, symptoms, and diagnosis of each type of diabetes.
- **Second session: Map 2; Walk with diabetes;** which was used to teach ways to treat diabetes and how to live with it, aim and sites of measuring of blood sugar level, as well as demonstration and re-demonstration for self-measuring of blood sugar level.
- **Third session: Map 3; Healthy diet and exercise;** which included advantages (importance) of healthy diet and exercise, suggestions for healthy diet, suggestions for exercise routine.
- **Fourth session: Map 4; Be with insulin;** included how insulin can work, benefits, indications, types and storage of insulin therapy, as well as places, complications and instructions of insulin injection, rotation rules (guidelines) to decrease pain of injection, preparation of insulin dose, demonstration and re-demonstration for insulin injection route
- **Fifth session: Map 5; Diabetic foot;** included definition, causes, risk factors, symptoms and ways to prevent diabetic foot, as well as demonstration and re-demonstration for foot care steps.
- **Sixth session: Map 6; understanding complications of diabetes** including how poor glycemic control can lead to

complications such as neuropathy, nephropathy, retinopathy, cardiovascular diseases, and foot problems. In addition to, early recognition of warning signs for early management.

- During each session the researchers clarified the topic of the map using simple and clear words in addition to asking open questions about idea of the map that would be discussed. Different teaching media were also utilized as powerpoint presentation and laptop videos. Further more, the researchers allowed patients to apply interactive discussions within group, share experience, express feelings and fears, and put goal to achieve later. by each session end, a brief summary introduced by the researchers, including key points of topic illustrated. Before starting of each session, patients were in the previous session to ensure that they remembered previously given instructions to reinforce their knowledge and self care practices. Missed or unclear points were re-emphasized. Printed maps and booklet were introduced for each patient to grasp their attention, motivate, help for reviewing at home.

Phase III: Evaluation phase: it was done immediately through reassessment of diabetic patients' knowledge and self-management activities using the same tools of pre test to evaluate effectiveness of diabetes conversation maps-based education.

Statistical Design:

Data were analyzed using the Statistical Package for Social Sciences (SPSS), version 25. Quantitative data were described using the mean, standard deviation (SD), and range, while qualitative data were reported as frequencies and percentages.

Associations between categorical variables were evaluated using the Chi-square test. Differences in mean scores between groups were assessed using the independent t-test. Pearson's correlation coefficient was employed to examine relationships between continuous variables. Furthermore, linear regression analysis was conducted to identify predictors of clinical risk, with the clinical risk score treated as the dependent variable. A p-value of ≤ 0.05 was considered statistically significant.

Results: -

Table (1) reveals that, age of 50% of the studied patients ranged from 41- 40 years, with mean age of 41.595 ± 7.454 and 56.4% of them were male. Concerning marital status 85% of studied patients were married. As regard level of education and work status, 47,7% ,55% of studied patients had secondary level of education and working respectively. As regards residence, 67.7 % of studied patients were from rural areas, and 65.5% of them had sufficient monthly income.

Table (2) represents medical history of studied patients. In relation to onset of diagnosis 65.5 % of studied patients diagnosed with the disease from $1 < 5$ years. Also, 48.2 % of studied patients used oral medication only for diabetic control. Regarding body mass index 45.5% of studied patients suffered from obesity. Regarding chronic disease 83.6% were not suffering from any chronic disease.

Table (3): shows that there was highly statistically significant difference between patients Fasting blood sugar

level, Random blood glucose level, Glycosylated hemoglobin level and presence of glucose in urine pre and post implementation of conversation maps-based education ($P \leq 0.001$).

Table (4) Demonstrates Frequency and percentage distribution of the studied patients 'knowledge score about Diabetes pre and post conversation maps based education and shows that 38.2%, 39.1%, 50.5% , 39.1% and 48.6% of studied patients had correct answer regarding questions about Diabetes can cause blindness, Diabetes can cause dehydration , Insulin is used to treat only Type 1 diabetes, Regular exercise is important to help control diabetes and Diabetes can be cured if treated early Pre conversation maps based education respectively, which improved to 89.1%, 74.1%, 705% , 74.9% and 88.6% post conversation maps based education respectively .

Table (5) shows that there was highly statistically significant difference between studied patients total knowledge score about diabetes pre and post conversation maps-based education with ($P \leq 0.001$).

Figure (1) clarified that, only 24 % of the studied patients had good total knowledge level pre conversationmap based education, which had been improved to 77% immediately post conversation map-based education.

Table (6): reflects that the mean score of studied patients regarding medication administration were 7.94 ± 2.75 pre implementation of diabetic conversation maps, which

improved to 9.98 ± 2.36 post implementation of diabetic conversation maps. As regard blood glucose monitoring the studied patients mean score pre implementation of diabetic conversation maps were 9.01 ± 3.55 which improved to 12.28 ± 3.12 post implementation of diabetic conversation maps. Additionally, there was marked improvement with a highly statistically significant difference between the results of pre and immediately post implementation of diabetic conversation maps with ($P \leq 0.001$).

Table (7): shows that the mean score of studied patients regarding nutrition were 11.74 ± 5.74 pre implementation of diabetic conversation maps, which improved to 15.58 ± 4.38 post implementation of diabetic conversation maps. As regard physical activity the studied patients mean score pre implementation of diabetic conversation maps were 8.27 ± 4.97 which improved to 12.56 ± 3.87 post implementation of diabetic conversation maps. Additionally, there was marked improvement with a highly statistically significant difference between the results of pre and immediately post implementation of diabetic conversation maps with ($P \leq 0.001$).

Table (8): demonstrates that the mean score of studied patients regarding foot care were 7.14 ± 2.32 pre implementation of diabetic conversation maps, which improved to 9.54 ± 2.34 post implementation of diabetic conversation maps. As regard Problem-Solving & Sick-Day

Management the studied patients mean score pre implementation of diabetic conversation maps were 7.17 ± 2.78 which improved to 9.59 ± 2.41 post implementation of diabetic conversation maps. Additionally, there was marked improvement with a highly statistically significant difference between the results of pre and immediately post implementation of diabetic conversation maps with ($P \leq 0.001$).

Table (9): clarifies that the mean score of studied patients regarding Risk Reduction & Healthcare Use were 11.75 ± 4.86 pre implementation of diabetic conversation maps, which improved to 16.01 ± 4.11 post implementation of diabetic conversation maps. with a highly statistically significant difference between the results of pre and immediately post implementation of diabetic conversation maps with ($P \leq 0.001$).

Figure 2: shows that 71 % of the studied patients had poor total self management level pre conversation map-based education, which had been declined to 22% immediately post conversation map-based education.

Table (10) demonstrates that, there was a positive statistically significant correlation between total knowledge with self management scores among the studied patients pre diabetic conversation map implementation ($P \leq 0.01$). Also, there was positive highly statistically significant correlation between total knowledge and self management

scores among the studied patients post diabetic conversation map implementation ($P \leq 0.00$). the variance of patients' self management.

Table (11); presents that patients' self-management post diabetic conversation map was best predicted by education level, diabetic control, Glycosylated hemoglobin as well as their Total knowledge with p-value = 0.000**,0.026*, 0.38*, and 0.000**, respectively), accounting for 48.9% of

Table (1): Frequency and percentage distribution of the studied patients related to their socio-demographic characteristics (No=220).

Socio demographic characteristics	Items	Studied patients (n=220)	
		N	%
Age	20-30	17	7.7
	31- 40	67	30.5
	41-50	111	50.5
	51-60	25	11.4
X ± SD 41.595 ± 7.454			
Gender	–Male	124	56.4
	–Female	96	43.6
Marital status	–Single	11	5.0
	–Married	187	85.0
	-Widow	14	6.4
	-Divorced	8	3.6
Level of education	-Not Read or write	15	6.8
	Read and write	49	22.3
	–Secondary	105	47.7
	–University	51	23.2
Work status	–Not work	99	45.0
	–Work	121	55.0
Residence	–Rural	149	67.7
	–Urban	71	32.3
Monthly income	-Sufficient	144	65.5
	Insufficient	76	34.5

Table (2): Frequency and percentage distribution of the studied patients according to their medical data (No=220).

Medical history	Items	Studied patients (n=220)	
		N	%
Onset of diagnosis	<1 years	36	16.4
	1<5years	144	65.5
	5-10 years	30	13.6
	>10years	10	4.5
Diabetic control	- Insulin only	56	25.4
	Oral medication only	106	48.2
	Both insulin and oral medication	58	26.4
Body mass index (BMI)	18.5-<25 (normal)	34	15.4
	25-30 (over weight)	86	39.1
	> 30 (obese)	100	45.5
Suffering from Chronic diseases	Yes	36	16.4
	No	184	83.6
If yes (no= 36)	-Renal	16	44.4
	neurological	9	25.0
	Cardiac	11	30.6

Table (3): Frequency and percentage distribution and mean scores of the studied patients according to their laboratory investigation. (No=220)

Lab investigation		Studied patients (n=220)					
		Pre		Post		χ^2/t	P
		No	%	No	%		
-Fasting blood sugar	-Normal	60	27.3	156	70.9	11.61	0.02*
	-Low	17	7.7	22	10.0		
	-High	143	65.0	42	19.1		
	X ± SD	125.96±	27.24	99.35±	18.95	t=6.847	0.000**
-Random blood glucose	Normal	72	32.7	156	70.9	7.807	0.03*
	-Low	7	3.2	26	11.8		
	-High	141	64.1	38	17.3		
	X ± SD	150.61±	37.53	125.45±	32.37	t=6.452	0.000**
Glycosylated hemoglobin	Normal	100	45.5	152	69.1	4.317	0.04*
	-High	120	54.5	68	30.9		
	X ± SD	8.87±	1.94	6.66±	1.188	t=6.713	0.000**
Urine analysis	-Normal	86	39.1	140	63.6	7.433	0.01*
	-Presence of glucose	104	47.3	59	26.8		
	-Presence of acetone	30	13.6	21	9.5		

(**) Highly statistically significant at ≤ 0.001 (*) statistically significant at ≤ 0.05

t= paired t test

 χ^2 = chi square test

Table (4) Frequency and percentage distribution of the studied patients 'knowledge score about Diabetes pre and post conversation maps-based education (No =220)

Diabetes Knowledge Questionnaire (DKQ-24)		Pre		post		χ^2	P
		No	%	No	%		
The usual cause of diabetes is lack of effective insulin in the body.	-Correct -incorrect	53 167	24.1 75.9	155 65	70.5 29.5	29.28	<0.001**
Diabetes is caused by failure of the kidneys to keep sugar out of the urine.	-Correct -incorrect	49 171	22.3 77.7	159 61	27.3 27.7	7.54	0.006*
Kidneys produce insulin.	-Correct -incorrect	69 151	31.4 68.6	163 57	74.0 26.0	15.51	<0.001**
In untreated diabetes, the amount of sugar in the blood usually increases.	-Correct -incorrect	50 170	22.7 77.3	155 65	70.5 29.5	27.13	<0.001**
If I am diabetic, my children have a higher chance of being diabetic.	-Correct -incorrect	69 151	31.4 68.6	159 61	27.3 27.7	27.42	<0.001**
There are two main types of diabetes: Type 1 and Type 2.	- Correct -incorrect	73 147	33.2 66.8	161 59	73.2 26.8	22.19	<0.001**
Diabetes can damage my kidneys	Correct -incorrect	70 150	31.8 68.2	178 42	80.9 19.1	14.56	<0.001**
Shaking and sweating are signs of high blood sugar.	Correct -incorrect	83 137	37.7 62.3	149 71	67.7 32.3	5.36	0.021*
Eating foods high in sugar causes diabetes.	-Correct -incorrect	74 146	33.6 66.4	156 64	70.9 29.1	26.96	<0.001**
Becoming overweight can cause diabetes	Correct -incorrect	59 161	26.8 73.2	206 14	93.6 6.4	4.09	0.043*
Diabetes can cause blindness.	Correct -incorrect	84 130	38.2 61.8	196 24	89.1 10.9	4.65	0.031*
Diabetes can cause dehydration	Correct -incorrect	86 134	39.1 60.9	163 57	74.1 25.9	6.821	0.009*
Oral medications, such as pills, are often used to treat diabetes	Correct -incorrect	75 145	34.1 65.9	169 51	76.8 23.2	23.51	<0.001**
Insulin is used to treat only Type 1 diabetes.	Correct -incorrect	111 109	50.5 49.5	155 65	70.5 29.5	16.624	<0.001**
People with diabetes can eat sweets and desserts if they adjust their insulin or medicine.	Correct -incorrect	74 146	33.6 66.4	156 84	70.9 29.1	29.96	<0.001**
Diabetes can cause loss of feeling in the feet.	Correct -incorrect	59 161	26.8 73.2	158 62	71.8 28.2	18.24	<0.001**
Controlling blood sugar can prevent problems caused by diabetes	Correct -incorrect	66 154	30 70	167 53	75.9 24.1	19.69	<0.001**
Regular exercise is important to help control diabetes.	Correct -incorrect	86 134	39.1 60.9	163 57	74.9 25.1	6.821	0.009*

People with diabetes should avoid drinking alcohol.	Correct -incorrect	71 149	32.3 67.7	165 55	75.0 25	8.492	0.004*
Diabetes can be cured if treated early.	Correct -incorrect	107 113	48.6 51.4	195 25	88.6 11.4	6.853	0.008*
Sudden weight loss can be a symptom of diabetes.	Correct -incorrect	66 154	30.0 70.0	172 48	78.2 21.8	3.700	0.050*
People with diabetes need to check their blood sugar regularly	Correct -incorrect	134 86	60.9 39.1	186 34	84.5 5.5	6.577	0.010*
Stress can increase blood sugar levels.	Correct -incorrect	53 161	24.1 75.9	158 62	71.8 28.2	27.39	<0.001**
Diabetes affects blood sugar, but it does not affect blood pressure	Correct -incorrect	49 171	22.3 77.7	154 60	70.0 30.0	14.315	<0.001**

(*) statistically significant at ≤ 0.05 (**) Highly statistically significant at ≤ 0.001 χ^2 = chi square test

Table (5) mean score of the studied patients 'knowledge score about Diabetes pre and post conversation maps-based education (No =220)

Items	Pre		Post	T (P)
	Max score	X $\pm$ SD	X $\pm$ SD	
Cause of diabetes	3	0.800 $\pm$ 1.00	2.136 $\pm$ 1.166	T: -17.01 P=<0.001**
Risk factors of diabetes	3	0.822 $\pm$ 1.285	2.37 $\pm$ 0.88	T: -17.97 P=<0.001**
Signs and symptoms	3	1.481 $\pm$ 0.913	2.163 $\pm$ 1.07	T: -9.11 P=<0.001**
Types of diabetes	1	0.331 $\pm$ 0.47	0.731 $\pm$ 0.44	T: -11.07 P=<0.001**
insulin production	1	0.313 $\pm$ 0.45	0.740 $\pm$ 0.43	T: -11.55 P=<0.001**
Medication	2	0.845 $\pm$ 0.872	1.472 $\pm$ 0.748	T: -20.44 P=0.000**
Complication	5	1.581 $\pm$ 1.751	3.859 $\pm$ 1.325	T: -15.10 P=<0.001**
Diet and life style	6	2.445 $\pm$ 2.169	4.690 $\pm$ 1.597	T: -11.115 P=<0.001**
Total knowledge	24	8.622 $\pm$ 7.913	18.168 $\pm$ 6.705	T-18.338 P=0.000**

(*) statistically significant at ≤ 0.05 (**) Highly statistically significant at ≤ 0.001
 χ^2 = chi square test t= paired t test

Figure 1: Percentage distribution of patients' total knowledge level pre and post conversation map-based education (No=220)

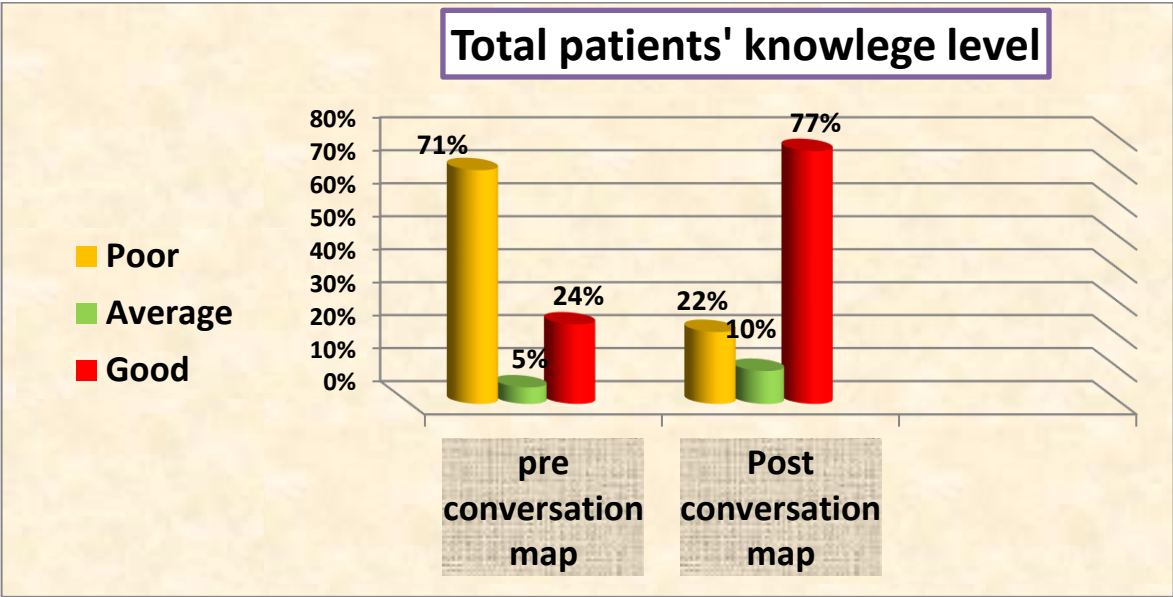


Table (6): Comparison of self-management dimensions (Medication Management & Blood Glucose Monitoring among the studied patients pre and post implementation of diabetic conversation map (n=220).

Diabetic Self -management dimension		Pre		Post		χ^2	P
		No	%	No	%		
Medication Management							
Take your diabetes medications (pills and/or insulin) exactly as prescribed by your doctor	-Never	0	0.0	0	0.0	146.64	<0.001**
	-Rarely	0	0.0	0	0.0		
	-Sometimes	47	21.4	23	10.5		
	-Often	118	53.6	69	31.4		
	-Always	55	25.0	128	58.2		
Adjust your insulin dose without consulting your doctor, based on your blood sugar readings or carbohydrate intake	- Never	21	9.5	20	9.1	273.09	<0.001**
	-Rarely	33	15.0	0	0.0		
	-Sometimes	56	25.5	10	4.5		
	-Often	68	30.9	74	33.6		
	-Always	42	19.1	116	52.7		
Check your medication supply to ensure you don't run out	- Never	19	8.6	0	0.0	152.725	<0.001**
	-Rarely	21	9.5	0	0.0		
	-Sometimes	49	22.3	47	21.4		
	-Often	80	36.4	60	27.3		
	-Always	51	23.2	113	51.5		
Medication Management	Mean $\pm$ SD	7.94 $\pm$ 2.75		9.98 $\pm$ 2.36		t=-13.86	0.000**
Blood Glucose Monitoring							
Check your blood sugar as recommended by your healthcare team	-Never	0	0.0	0	0.0	77.87	<0.001**
	-Rarely	17	7.7	0	0.0		
	-Sometimes	101	45.9	36	6.4		
	-Often	46	20.9	80	36.4		
	-Always	56	25.5	104	47.3		
Check your blood sugar, how often do you record the results in a logbook or app to track patterns	-Never	41	18.6	11	5.0	162.62	<0.001**
	-Rarely	57	25.9	8	3.6		
	-Sometimes	85	38.6	56	25.5		
	-Often	17	7.7	57	25.9		
	-Always	20	9.1	88	40.0		
Review your blood sugar records to understand the effects of food, activity, and stress	-Never	7	3.2	0	0.0	92.14	<0.001**
	-Rarely	24	10.9	0	0.0		
	-Sometimes	100	48.2	27	12.3		
	-Often	73	33.2	90	40.9		
	-Always	10	4.5	103	46.8		
Ensure your blood glucose meter is clean and calibrated, and that your test strips are not expired	-Never	17	7.7	11	5.0	179.07	<0.001**
	-Rarely	27	12.3	25	11.4		
	-Sometimes	55	25.0	49	22.3		
	-Often	71	32.3	67	30.5		
	-Always	50	22.7	68	30.9		
Blood Glucose Monitoring	Mean $\pm$ SD	9.01 $\pm$ 3.55		12.28 $\pm$ 3.12		t=-19.70	0.000**

(*) statistically significant at ≤ 0.05

(**) Highly statistically significant at ≤ 0.001

χ^2 = chi square test

t= paired t test

Table (7): Comparison of self-management dimensions (Nutrition & physical activity among the studied patients pre and post implementation of diabetic conversation map (n=220).

Diabetic Self -management dimension		Pre		post		χ^2	P
		No	%	No	%		
Nutrition							
follow a healthy eating plan (e.g., counting carbs, portion control) as discussed with your doctor or dietitian	-Never	21	9.5	8	3.6	219.15	<0.001**
	-Rarely	28	12.6	11	5.0		
	-Sometimes	25	11.3	28	12.7		
	-Often	91	41.0	73	33.2		
	-Always	55	24.8	100	45.5		
space your carbohydrates evenly throughout the day?	-Never	22	10.0	6	2.7	219.47	<0.001**
	-Rarely	33	15.0	5	2.3		
	-Sometimes	55	25.0	19	8.6		
	-Often	68	30.9	74	33.6		
	-Always	42	19.1	116	52.7		
choose whole grains, fruits, and vegetables over refined carbohydrates and sugary foods	-Never	37	16.8	9	4.1	157.54	<0.001**
	-Rarely	41	18.6	3	1.4		
	-Sometimes	46	20.9	46	20.9		
	-Often	45	20.5	50	22.7		
	-Always	51	23.2	112	50.9		
read food labels to check carbohydrate and sugar content	Never	17	7.7	8	3.6	160.06	<0.001**
	-Rarely	27	12.3	28	12.7		
	-Sometimes	61	27.3	44	20.0		
	-Often	65	29.5	59	26.8		
	-Always	50	22.7	81	36.8		
plan your meals ahead of time to make healthier choices	-Never	34	15.5	4	1.8	117.131	<0.001**
	-Rarely	38	17.3	8	3.6		
	-Sometimes	52	23.6	37	16.8		
	-Often	45	20.5	63	28.6		
	-Always	51	23.2	108	49.1		
Nutrition	Mean $\pm$ SD	11.74 $\pm$ 5.74		15.58 $\pm$ 4.38		t=-15.38	0.000**
physical activity							
engage in at least 150 minutes of moderate-intensity exercise (like brisk walking) per week	-Never	37	16.8	6	2.7	148.70	<0.001**
	-Rarely	41	18.6	4	1.8		
	-Sometimes	46	20.9	42	19.1		
	-Often	52	23.6	64	29.1		
	-Always	44	20.0	104	47.3		
include strength training exercises (e.g., weight lifting, resistance bands) at least 2 times per week	Never	46	20.9	12	5.5	127.50	<0.001**
	-Rarely	32	14.5	2	0.9		
	-Sometimes	66	30.0	51	23.2		
	-Often	25	11.4	50	22.7		
	-Always	51	23.2	105	47.7		
check your blood sugar before and after exercise to understand	-Never	20	9.1	4	1.8	170.16	<0.001**
	-Rarely	56	25.5	10	4.5		

its effects	-Sometimes	70	31.8	44	20		
	-Often	32	14.5	51	23.2		
	-Always	42	19	111	50.5		
take necessary precautions to prevent low blood sugar during or after exercise (e.g., having a snack handy)	-Never	14	6.4	4	1.8	81.14	<0.001**
	-Rarely	61	27.7	2	0.9		
	-Sometimes	77	35	45	20.5		
	-Often	35	15.9	68	30.9		
	-Always	33	15.0	101	45.9		
physical activity	Mean ± SD	8.27±4.97	12.56±3.87	t=-15.03	0.000*		

(*) statistically significant at ≤ 0.05 χ^2 = chi square test(**) Highly statistically significant at ≤ 0.001

t= paired t test

Table (8): Comparison of self-management dimensions (foot care & Problem-Solving & Sick-Day Management among the studied patients pre and post implementation of diabetic conversation map (n=220).

Diabetic Self -management dimensions		Pre		post		χ^2	P
		No	%	No	%		
Foot care							
inspect your feet daily for cuts, blisters, redness, or swelling	Never	10	4.5	0	0.0	35.17	<0.001**
	-Rarely	42	19.1	0	0.0		
	-Sometimes	62	28.2	23	10.5		
	-Often	79	35.9	74	33.6		
	-Always	27	12.3	123	55.9		
wear well-fitting, protective shoes and avoid walking barefoot	Never	21	9.5	20	9.1	77.62	<0.001**
	-Rarely	33	15.0	0	0.0		
	-Sometimes	60	27.3	10	4.5		
	-Often	64	29.1	72	32.7		
	-Always	42	19.1	118	53.6		
moisturize your feet to prevent cracking (avoiding between the toes)	Never	5	2.3	1	0.5	137.62	<0.001**
	-Rarely	39	17.7	24	10.9		
	-Sometimes	61	27.7	55	25		
	-Often	73	33.2	63	28.6		
	-Always	42	19.1	77	35.0		
Foot care	Mean ± SD	7.14±2.32		9.54±2.34		t=-17.96	0.000*
Problem-Solving & Sick-Day Management							
have a plan for managing your diabetes when you are sick (e.g., checking ketones, staying hydrated)	Never	19	8.6	4	1.8	92.51	<0.001**
	-Rarely	33	15.0	5	2.3		
	-Sometimes	51	23.2	23	11.8		
	-Often	85	38.6	70	31.8		
	-Always	32	14.5	115	52.3		
carry a fast-acting source of glucose (e.g., glucose tablets, juice) to treat low blood sugar	Never	16	7.3	10	4.5	63.755	<0.001**
	-Rarely	39	17.7	10	4.5		
	-Sometimes	69	31.4	10	4.5		
	-Often	54	24.5	66	30.0		
	-Always	42	19.1	124	56.5		
wear a medical ID alerting others that you have diabetes	Never	12	5.5	0	0.0	117.43	<0.001**
	-Rarely	23	10.5	17	7.7		
	-Sometimes	70	31.8	49	22.3		
	-Often	70	31.8	72	32.7		
	-Always	45	20.5	82	37.3		
Problem-Solving & Sick-Day Management	Mean ± SD	7.17±2.78		9.59±2.41		t=-17.67	0.000**

(*) statistically significant at ≤ 0.05 (**) Highly statistically significant at ≤ 0.001

Table (9): Comparison of self-management dimensions (Risk Reduction & Healthcare Use among the studied patients pre and post implementation of conversation map (n=220).

Diabetic Self -management dimension		Pre		post		χ^2	P
		No	%	No	%		
Risk Reduction & Healthcare Use							
keep your scheduled appointments with your doctor, diabetes educator, or dietitian	Never	0	0.0	0	0.0	50.12	<0.001**
	-Rarely	40	18.2	8	3.6		
	-Sometimes	65	29.5	16	7.3		
	-Often	88	40.0	81	36.8		
	-Always	27	12.3	115	52.3		
get an A1C test at least twice a year as recommended	Never	21	9.5	20	9.1	78.05	<0.001**
	-Rarely	33	15.0	0	0.0		
	-Sometimes	60	27.3	10	4.5		
	-Often	64	29.1	73	33.2		
	-Always	42	19.1	117	53.2		
have your blood pressure and cholesterol levels checked)	Never	5	2.3	1	5	123.68	<0.001**
	-Rarely	39	17.7	17	7.7		
	-Sometimes	61	27.7	55	25.0		
	-Often	73	33.2	71	32.3		
	-Always	42	19.1	76	34.5		
get an annual comprehensive dilated eye exam?	Never	37	16.7	6	2.7	73.51	<0.001**
	-Rarely	41	18.5	4	1.8		
	-Sometimes	46	20.7	42	19.1		
	-Often	52	23.4	64	29.1		
	-Always	44	19.8	104	47.3		
get an annual foot exam from a doctor	Never	15	6.8	9	4.1	56.68	<0.001**
	-Rarely	39	17.7	0	0.0		
	-Sometimes	60	27.3	21	9.5		
	-Often	64	29.1	69	31.4		
	-Always	42	9.1	121	55.0		
Risk Reduction & Healthcare Use	Mean ± SD	11.75±4.86		16.01±4.11		t=-17.88	0.000*

Figure 2: Percentage distribution of patients' total self management level pre and post conversation map-based education (n=220).

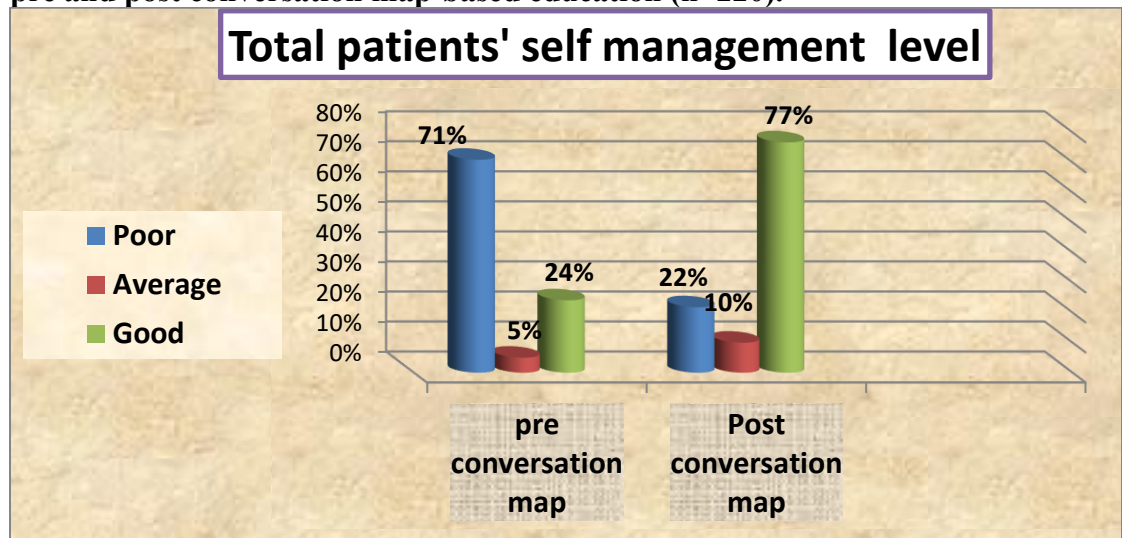


Table (10) Coefficient correlation between patients' knowledge, and self management pre and post diabetic conversation map implementation (n=220)

Correlation	r	P –value
Knowledge with self management		
pre implementation	0.592	0.001*
post implementation	0.662	0.000**

(*) statistically significant at ≤ 0.05

(**) Highly statistically significant at ≤ 0.001

Table (11): Multiple Linear Regression Analyses for Predictor Variables of patients' self-management post diabetic conversation map (N=220)

Patients 'Self Management	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	42.385	10.403		4.074	.000
Age	1.176	1.415	.042	.831	.407
Education	-5.645	1.338	-.220	-4.220	.000**
Monthly Income	.497	2.261	.011	.220	.826
Onset Of Disease	1.210	1.700	.039	.712	.477
Diabetes Control	3.416	1.525	.114	2.240	.026*
Bmi	.618	1.524	.021	.405	.686
Glycosylated Hemoglobin(Hba1c)	1.973	.945	.108	2.087	.038*
Total Knowledge	2.100	.163	.650	12.876	.000**
Adjusted R ² = 0.489		P = 0.000**			

(B) Beta Co-Efficient

(Std) Standard Error

(*) statistically significant at ≤ 0.05

(**) Highly statistically significant at ≤ 0.001

Discussion

Conversation maps are innovative tools that have been developed to help patients better understand their condition and develop an action plan to improve their health outcomes (**Rahayuer al., 2023**). Conversation maps integrate several educational theories to be an internationally effective diabetes education strategy for self-care management through engaging patients in discussion, sharing beliefs and experiences about their lives with diabetes and encouraging health behavioral changes for obtaining the desired level of controlling diabetes (**Mohamed and Ramadan, 2022**).

Regarding demographic features of studied patients. the current study revealed that, more than half of studied patients their age ranged from 41- 50 years. this is in line with (**Hamza & Abdel Hakeim, 2024**), who study about " Effect of Interactive Conversation Map on Self-management, Self-efficacy and Distress for Patients with Type 2 Diabetes " and stated that more than half of studied patients their age ranged between 40-50 years. This finding is also similar with **Hassan&Ramadan (2023)**, who study about " Instructional Guidelines Using Conversation Maps to Improve Self-Management for Diabetic Patients "and reported that near than two third of studied patients thir age more than 40 years.

This finding was also in accordance with **Qasim et al. (2022)**, who conduct their study in Iran about " Diabetes conversation map - a novel tool for

diabetes management self-efficacy among type 2 diabetes patients: a randomized controlled trial"and mentioned that two thirds of the studied sample were in the same age group from 45 to 60 years

As regard to gender, more than half of studied patients were males. This finding agreed with **Mohamed & Ramadan (2022)**, who reported that more than half of studied patients were males. On contrast, **Zakaria, etal. (2023)** reported in their study about "Effectiveness of Diabetes Conversation Map among Insulin Refusal Type 2 Diabetes Mellitus Patients" and revealed that more than half of patients were females.

Concerning to marital status and level of education, the present study finding revealed that the majority of studied patients were married and nearly half of them had secondary level of education. This finding goes in the same line with **Qasim et al. (2022)**, who reported that more than two third of the studied patients were married. While, **Torres, et al., (2020)** disagreed with this result as in their study about 'Evaluation of the effects of a diabetes educational program: a randomized clinical trial' found that, the majority of the studied sample were illiterate. In addition, this finding was incongruent with (**Hamza & Abdel Hakeim, 2024**), found that half of studied patients had a university degree. From researchers' prespective This could be due to that most of the studied patients are live in rural area with less attention to education and decrease the level of health awareness.

As regard to working status, more than half of studied patients were working. This finding was agreeable with study by **Mohamed & Ramadan (2022)**, who reported that, more than two thirds of the study and control groups of diabetic patients were working. While, this result was disagreeable with **Zakaria et al., (2023)**, who declared that more than three quarter of their study' sample weren't working. This might be due to that near half of studied patients had secondary degree education that qualified them for many jobs to work as they lived in rural community.

As regards residence, more than two third of studied patients were from rural areas, and had sufficient monthly income. This result was in the line with **Mahzari, et al., (2022)**; who studied "Knowledge, attitude, and practice regarding diabetes mellitus among type 2 diabetic patients" and found that the majority of subjects had average individual income monthly and lived in rural areas. From the researcher' prespective, it may be due to that more two thirds of the studied patients were working so that they had sufficient income monthly.

Concerning patients' medical history; study' results displayed that, more than two third of studied patients diagnosed with diabetes from one to less than five years. At the same line **Mohamed & Ramadan (2022)** clarified in their study that, more half of patients were diabetic in the past five years. On contrast, **Farag et al., (2021)** in their study at family medicine clinic, Menoufia governorate, and clarified

that the most of patients had duration of disease from 5-10years.

Concerning glycemic level control, near fifty of studied patients used oral medications only for diabetes control. This result in the same line with **Hamza & Abdel Hakeim, (2024)**.who reported that more than half of patients depended on oral drugs only. Mean while, **Omar, Hamza and Ramadan, (2024)**. were disagreeable with this result in their study about " Effect of Diabetes Conversation Maps on Knowledge and Self-Management of Patients with Type 2 Diabetes " and stated that there were near half of studied patients depended on both insulin and oral medication.

Regarding body mass index, near fifty of studied patients suffered from obesity. This finding is consistent with **Huang & Hung (2023)** in their study about" effects of a brief, scalable diabetes conversation map psychosocial intervention on health beliefs and health behaviors ", and found more than one third of patients had a BMI of more than 30 indicating over obesity. So that, those patients needed education about diet management to help them to manage their as well as blood glucose levels

In relation to laboratory investigations, it was showed that, there were highly statistically significant difference between patients Fasting blood sugar level, Random blood glucose level, Glycosylated hemoglobin level and presence of glucose in urine pre and post implementation of conversation maps-based education. This result was

consistent with **Abouzid, et al., (2022)** who reported that there was highly statistically significant difference between patient's lab investigation as fasting and random blood glucose level pre and post educational program implementation. On the other hand, this result not in the same line with **Hamza & Abdel Hakeim, (2024)** demonstrated that HbA1c slightly improved in post phases of program.

Regarding to patients' knowledge, the current study displayed that, pre conversation maps based education, less than half of studied patients had a correct answer regarding questions about diabetes can cause blindness, diabetes can cause dehydration, insulin used to treat only Type 1 of diabetes, regular exercise is important to help control diabetes and diabetes can be cured if treated early which improved among more than two thirds of them post conversation maps based education.

This result barreled with **Alsous, Odeh, & Abdel Jalil, (2020)**, in their recent study titled "Effect of an educational intervention on public knowledge, attitudes, and intended practices towards diabetes mellitus" mentioned that the improvement of patient satisfactory level of knowledge post program intervention. Also, **Omar, Hamza and Ramadan, (2024)** supported this result who found in their study that, there was a statistically significant improvement in patients' all knowledge dimensions regarding to diabetes mellitus post implementation of diabetes conversation map comparing to pre

implementation. In addition, **Pliszka et al., (2023)** in their study found that, there was high statistically significant improvement in all dimensions of knowledge regarding diabetes mellitus post program.

Concerning studied patients' total knowledge score, less than one quarter of the studied patients had good total knowledge level pre conversation map-based education, which had been improved to more than two third immediately post conversation map-based education. This result barreled with **Nguyen, et al., (2022)** in their study about "Diabetes self-management and its associated factors among patients with diabetes in central Vietnam" and reported that minority of the studied patients had satisfactory total knowledge regarding diabetes mellitus during pre-implementation, and improved post implementation of diabetes conversation map to become majority. Also, this result in the same line with **Alsous, Odeh, & Abdel Jalil, (2020)**, there was an elevation of total mean score level of knowledge of studied patient at post program phases than before. From the researcher's perspective, this might be due to the positive effect of conversation map in improving patients' knowledge that supported hypothesis one of this study.

In relation to self-management dimensions, the total mean score of studied patients regarding medication administration, blood glucose monitoring, nutrition, physical activity, foot care, problem-solving, sick-day management, risk reduction and healthcare use improved post

implementation of diabetic conversation maps than before. additionally, there was marked improvement with a highly statistically significant difference between self-management strategy pre and immediately post implementation of diabetic conversation maps.

This considered agreeable with the results of **Hamza & Abdel Hakeim, (2024)** who revealed in their study that, there was a highly statistically significant improvement in all elements of diabetes self-management (dietary, physical activity, healthcare, and glucose management scale) pre and post implementation of interactive conversation map. In addition, **Hasan, & Ramadan, (2023)**, who mentioned that the dietary domain of the diabetic self-care evaluation showed a statistically significant improvement, and also showed statistically significant improvements in physical activity scale items after program implementation. Also, there were statistically significant improvements among diabetes study group regarding all items of health care, and blood glucose management scale post implementation.

Also, **Omar, Hamza and Ramadan, (2024)** stated that about one quarter of the studied patients had good self management practices level regarding dietary, physical activity, health care and blood glucose management practices pre diabetic conversation map implementation, in comparison to more than three quarters of them post implementation. there was a statistically significant improvement in patients' all self-management

practices dimensions post implementation of diabetes conversation map and comparing to pre-implementation,

Regarding total self management score, the current study showed that pre conversation map-based education, less than one quarter of the studied patients had good level which had been higher among more than two thirds of them at immediate post phase. This result supported by **Eldesouky, et al., (2024)**. who conducted a study entitled "practices regarding self-administration of insulin injection" and reported that there was statistically significant improvement among intervention group regarding total score for adequate diabetes self-management post intervention. Also , this result in the same line with **Nguyen, et al ., (2022)** who found that minority of the studied patients had good total self-management practices pre-implementation and improved to become more than three quarters of them post implementation of diabetes conversation map, from the researcher point of view, this might be due to that, the current study provide the patients' the best practices for improving their self-management .

From the researcher' prespective, this might be due to the positive effect of conversation map-based education in improving patients' self management activities that supported hypothesis two of this study.

Regarding correlation between patients' knowledge, and self management pre and post diabetic

conversation map implementation; the present study demonstrated that, there was a positive statistically significant correlation between total knowledge with self management scores among the studied patients pre diabetic conversation map implementation. Also, there was positive highly statistically significant correlation between total knowledge and self management scores among the studied patients post diabetic conversation map implementation.

this result is agreement with **Eldesouky et al., (2024)** who found that there was positive correlation between total knowledge and total practices during pre and post test. Similarly, **Shawahna et al., (2021)** in their study about " Knowledge, attitude, and practice of patients with type 2 diabetes mellitus with regard to their disease" and revealed that there was strong positive correlation between total knowledge and total practices.

Conclusion: there was a statistically significant improvement in patients' knowledge and self-management activities post implementation of conversation map-based education compared to pre implementation which reflected positive effect of conversation maps as initiative educational tool.

Recommendations:

- Continuous education for diabetic patients is required to optimize both clinical outcomes and life quality.
- Endocrine nurses should adopt conversation maps as educational tool for diabetes self management.
- Nurses should receive periodic in-service training programs about conversation maps to update their knowledge and help them to provide optimal care for diabetic patients.
- A simplified illustrated Arabic brochure or posters of conversation maps should be available at health care settings to enhance better outcome for diabetic patients
- Further researches should be conducted on a large sample of diabetic patients that enables to generalize results

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