

## Impacts of A Healthier Life Style Self Coaching Strategy On; Awareness, Management Practice And Glycemic Control of Diabetic Patients.

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**Abstract:** Living with diabetic constitutes significant challenges to all diabetic patients which impacts their abilities to adopt with diabetes and maintain long life glycemic control. This study aimed to assess impacts of a healthier life style self coaching strategy on ; diabetic patients knowledge , awareness , management practice , satisfaction level toward their management and their glycemic control . A cross-sectional study of all diabetic patients admitted to medical and pediatric departments of El - Menofya University hospital in Shibeen El Kom, at July - August 2018 and accepted to participate in the study were included their number were 65 patients. It is an intervention study use quazi experimental research design. 46% from studied subjects were type 1 and 54% were type 2 diabetic patients and 69% of them suffer from diabetes from <10 years and 60% of them managed with insulin. Subjects' knowledge about diabetes and their awareness level were improved significantly post self-coaching strategy and also their disease management practice were improved significantly post the intervention. More than two thirds of subjects were completely satisfied about their disease management practice and had normal level of glycated hemoglobin 3 months post self coaching strategy compared only with 24% from them pre the strategy. Conclusion; Self coaching strategy improve patients' knowledge, disease awareness, management practice and prognosis which improve their ability to control diabetes and maintain high level of satisfaction about their intervention to control diabetes mellitus. Recommendation: Raising diabetic patients' awareness should be done at time of diagnosis which will improve patients' compliance, maintain healthy life style which led to manage correctly and healthy coping with disease consequences.

**Keywords;** A healthier life style self coaching strategy, awareness, management and glycemic control of diabetes.

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### I. Introduction

Diabetes consequences can be avoided with diet, physical activity, medication and regular screening and treatment for complications. Millions of people around the world live with diabetes or know someone living with diabetes. In 2016, an estimated 1.6 million deaths were directly caused by diabetes. Another 2.2 million deaths were attributable to high blood glucose in 2012 (1 , 2). In 2013 there were 382 million people with diabetes worldwide. This number is expected to reach 592 million by 2035(3). World Health Organization predicts that diabetes will be the seventh leading cause of mortality worldwide in 2030 (4).

In 2011, the total child population of the world (0-14 years) was estimated to be 1.9 billion. About 77 800 new cases of type 1 diabetes are diagnosed each year and approximately 490100 children in the world have type 1 diabetes (3). Type 1diabetes is a chronic disease which considered a serious global health problem, in which one in every 300 - 400 adolescents has type 1 diabetes (5). Type 2 diabetes mellitus accounts for 90% to 95% of cases and can be attributed to the effects of population aging combined with an unhealthy lifestyle as poor eating habits and sedentary lifestyle (6). The aim of diabetes management is to maintain optimum metabolic control from the diagnosis time. HbA1c is the golden standard for the long-term follow up of glycemic control (7). Type 1 treatment requires several daily actions as application of multiple daily doses of insulin, blood glucose monitoring, and regular physical activity. Despite many treatment advances, more than 70% of Type 1 diabetic children maintain glycated hemoglobin (HbA1c) levels above 7% (8).

Diabetes self-management is complex and challenging process due to chronicity and complexity of the disease which requiring life-long behavior modification to optimize glycemic control and reduce complications (9, 10, 11). Diabetes mellitus requires constant motivation from patient to comply with their management practice. Non-compliance is the most common cause of treatment failure which leads to lack of metabolic

control. Non-adherence is taking less than 80% of the prescribed treatment (12). Controlling anthropometric measurements and metabolic complications; as body weight, blood pressure, blood glucose, and glycosylated Hemoglobin levels, and lipid profile plays an important role in controlling diabetes (5).

Diabetics patients' constantly struggling with management and fear from complications (13). Patients worries about ineffective self-management practice during the period when taking over the responsibilities in their life (14,15). Poor glycemic control contributes to the risk of developing serious diabetes long-term complications; the improvement of self-management behaviors is an important key to improved diabetes prognosis and reduced risks of long-term complications (16). It is very crucial to maintain a healthy lifestyle and prevent disease comorbidities. According to national standards diabetic patient should receive; diabetes self-management education, education on nutrition, physical activity, weight management, foot care and a recommended community resource program at time of diagnosis (17).

Patient's knowledge about their disease condition and rights creates a benchmark for effective doctor-patient communication (18). Self-management education is ongoing process of facilitating knowledge, skill and ability necessary for diabetes self-care (19). Patients must adhere to treatment recommendations and healthy lifestyle behaviors. Health coaching can be highly effective if it focuses on developing self-efficacy and skills (20). Rates of treatment non adherence for patients with diabetes often exceed 50%, emphasizing a need for interventions focused on behavioral change. With lifelong medical monitoring being necessary to avoid morbidity and mortality at a younger age, therefore, adequate lifestyle changes are advised for a more enduring life. Diabetes education is a vital component in the patient's empowerment to be successful in the treatment and management of their diabetes (21).

Health coaching suggests that individuals achieve better health outcomes with health coaching than with traditional education (22). Engaging patients in making informed decisions is associated with improved adherence in type 2 and type 1 diabetic patient (23). Two important strategies for managing chronic disease are adherence to treatment and health-related lifestyle changes (24). Self coaching, which focuses on increasing the patients' skills and confidences to manage their condition and to set achievable goals, was found to be significantly more effective than health education alone (25). Coaching is a way the patients can identify and enhance their knowledge and confidence using the right tools and skills to reach their diabetes health goals and prevent certain diabetic health complications (26). Coaching is a method that has proven useful in enhancing personal insight, and has received special attention as a method to improve healthy lifestyle behaviors (22).

Implementing coaching as a main focus to help patients reach goals and make changes is a holistic method that may lead to change and improvement of their long term condition (27). Health coaches support patients by increasing their motivation & enhancing self-efficacy, reducing perceived or real barriers to taking action, promoting problem solving skills, allowing individuals to choose an area on which to concentrate efforts for change, and providing tailored feedback or customized recommendations to individuals who are at risk. Lifestyle changes that are designed to achieve a healthy diet, weight reduction, and increased physical activity are the cornerstone of the treatment of obese patients with T2DM (28).

Diabetes is predicted to be one the leading causes of kidney failure worldwide. Other common effects of diabetes include: neuropathy in the feet and hands, ulceration of the feet, and retinopathy sometimes leading to blindness. Living with diabetes declines patients self confidence (29). Many diabetic individuals have difficult achieving recommended standards for diabetes management. Long-term insulin use, medication use and lifestyle change are necessary for the successful management (30). To prevent serious morbidity and mortality, diabetes treatment requires dedication to demanding self-care behaviors including food choices, physical activity, medications, glucose monitoring, and symptoms management (31).

**Significant of the study:** Diabetes mellitus is a lifelong disease which affects all aspects of patients' life and constitutes a major challenge for patients to adopt with aspects of management and life daily routine.

**Subjects & methods:**

**Aim of the study:** To assess impacts of a healthier life style self coaching strategy on; diabetic patients knowledge, awareness, management practice, satisfaction level toward their management practice and glycemic control among diabetic patient contact with Shibeen El Kom hospital.

**Research questions:**

- Is the intervention will improve diabetic patients' knowledge, awareness and self management practice?
- Is a healthier life style self coaching strategy achieve better glycemic control among diabetic patients Shibeen El Kom hospital?

**Type of the study:** It is an intervention study.

**Design:** Quazi experimental research design was used.

**Sample:** Convenient sample of all diabetic patients (type1 & type2) admitted to pediatric and medical department of Menofia University Hospital from July -August - 2018 whom ; accepted to participate in the study, able to provide self care and free from complications were included their number were 65 patients.

**Setting:** Shibeen El Kom hospital, El - Menofya University, Menofya, Egypt.

**Study tools:**

1. Questionnaire sheet has two parts; 1<sup>st</sup> part used to assess studied subjects' characteristics and 2<sup>nd</sup> part assess subjects' disease knowledge about disease. Subjects' knowledge considered poor knowledge level if answer < 50% of the correct answer, satisfactory knowledge if answered 50%-70% of the correct answers and good knowledge if subject answer more than 70% of correct answer pre - post intervention where done.
2. Awareness questionnaire: Designed by Katz, et. al., 2014 (32) and its validity and reliability were tested by two nursing professors. It used to assess subjects' awareness regarding disease, its' management and complications pre - post the coaching.
3. Self management questionnaire: Designed by Knip, et. al.,2010 (33) and its validity and reliability were tested by two professors of nursing it has two parts; 1st part assess subjects' disease management practice, Part two used to assess subjects satisfaction about their disease management practice pre and post self strategy.

**Ethical considerations:** Confidentiality of information was guaranteed for each study subject. Subjects written' agreement was a prerequisite for study inclusion.

**Administrative design:** An official permission from the heads of departments maintained before conducting the study.

**Pilot study was** conducted on 10 subjects 5 from each department to test the clarity and simplicity of the study tools. Necessary modifications were done. Subjects whom shared in pilot study were excluded later from the main study.

**Methods:** A review of local and international related references was carried out to get acquainted with the various aspects of the research problem and the study tools. Data were collected from July- August 2018. Subjects were met individually during their hospital admission at the above mentioned departments.

## **II. A healthier life style self coaching:**

- A. It is a written strategy illustrated by pictures Aimed to:
1. Support diabetics' patients to actively manage themselves, reducing health risks and improve chronic disease management.
  2. Motivate subjects to actively comply with management to reduce complications and risks through raising their awareness, sense of responsibility and self confidence.
  3. Improving subjects ' lifestyle and provide support in recommended life changes decision to adjust self coaching strategy in patients life style.
- B. Parts of a healthier life style self coaching strategy:
- 1) Part one given in 1<sup>st</sup> session concerned with disease; definition, causes, manifestations, management, diabetic complications and its management.
  - 2) Part two given in 2<sup>nd</sup> session concerned with training insulin dependant subject on insulin dose calculation, correctly insulin administration and how to adjust insulin doses to meal & activity levels and none insulin dependent subject was trained on correct use of hypoglycemic drugs and drugs precaution.
  - 3) Part three given in 3<sup>rd</sup> session; Subjects were trained to test their blood and urine glucose level and foot care to maintain it dry and clean to prevent complications (illustrated by pictures).
  - 4) Part four given in 4<sup>th</sup> session about nutrition education; nutritional list with examples, daily need of food illustrated with pictures, food calories content and chooses among food substitute. Also illustrated pictures of some example of dietary fibers, it's important and ideal way to accommodate fibers in patients' diet.
  - 5) Part five given in 5<sup>th</sup> session aimed to achieve body weight reduction through daily physical activity, example of different sports with picture were toughed to each subject according to his/her diagnosis and physical health statues. Most suitable exercises for most of them were walking for 30-60 minutes regularly, playing football, yoga, breathing exercises and house activity. Each subject was provided with a copy from his/her plan include; food choices, food calories contents and permitted amount of each meal, and required daily exercises. Ending of the intervention was done before patient hospital discharge. Each Patient was

followed up in outpatient every two weeks according to his/her schedule to assess and motivate compliance with the strategy. Patient post test were done after 3 months from discharge for each patient.

**Statistical analysis:** The collected data were organized, tabulated and statistically analyzed using SPSS (Statistical Package for the Social Sciences version 22). Descriptive statistics, including frequencies, percentages, measures of central tendency and means were calculated for each item. Paired T-test was used to compare between subjects' knowledge, awareness and disease management practice pre and post using self coaching strategy.

### III. Results:

**Table 1: Studied subjects' characteristics variables.**

| Items                                     | No(65) | %  |
|-------------------------------------------|--------|----|
| 1. Age in years:                          |        |    |
| • 10- 21                                  | 30     | 46 |
| • > 21                                    | 35     | 54 |
| 2. Sex :                                  |        |    |
| • Male.                                   | 35     | 54 |
| • Female.                                 | 30     | 46 |
| 3. Education:                             |        |    |
| • Preparatory.                            | 10     | 15 |
| • Secondary.                              | 23     | 35 |
| • University.                             | 25     | 39 |
| • Not educated                            | 7      | 11 |
| 4. Diagnosis:                             |        |    |
| • Type 1.                                 | 30     | 46 |
| • Type 2.                                 | 35     | 54 |
| 5. Period of diabetes suffering in years: |        |    |
| • <10.                                    | 45     | 69 |
| • >10                                     | 21     | 31 |
| 6. Diabetes management :                  |        |    |
| • Insulin.                                | 39     | 60 |
| • Hypoglycemic drug.                      | 26     | 40 |

Regarding subjects' characteristics 54% of them aged more than 21 year , male subjects (54%) and suffer from type 2 diabetic mellitus (54%) also 69% of them suffer from diabetes from less than 10 years and the majority depend on insulin in their management (60%).

**Table 2: Subjects' knowledge pre and post self coaching strategy.**

| Knowledge items               | Pre (n=65) | Post(n = 65) | T test  | P value |
|-------------------------------|------------|--------------|---------|---------|
|                               | Mean ± SD  | Mean ± SD    |         |         |
| Definition of disease         | 1.42±.50   | 2.58±.77     | -8.70-  | .00     |
| Causes of disease             | 2.15±1.05  | 3.69±.92     | -7.56-  | .001    |
| Disease manifestation         | 1.42±0.50  | 2.58±.77     | -2.72-  | .00     |
| Disease management            | 1.60±0.52  | 1.85±.97     | 3.33    | .00     |
| Disease complications.        | 2.38±0.74  | 1.82±.94     | 2.26    | .00     |
| Diet modification .           | 2.22±0.76  | 1.78±.83     | 3.18    | .00     |
| Life style modification       | 2.22±0.76  | 1.66±.83     | -7.56-  | .001    |
| Recommended Physical activity | 1.54±0.51. | 2.54±.52     | 26.42   | .00     |
| Body weight control measures  | 1.57±.50   | 2.82±.39     | -15.00- | .00     |

\*\*\* Significant p<0.001.

From table 2; Subjects' knowledge were improved significantly post the self-coaching strategy with regarding disease 'definition, causes, manifestation, management , complications , diet modification and life style modifications, recommended daily activity and body weight control measures.

**Table 3: Studied subjects ' disease awareness pre and post self coaching strategy.**

| Awareness items                 | Pre (n=65) | Post(n = 65) | T test | P value |
|---------------------------------|------------|--------------|--------|---------|
|                                 | Mean ± SD  | Mean ± SD    |        |         |
| 1. Insulin & hypoglycemic agent | 2.00±.02   | 1.00±.04     | 0.00   | .000    |
| 2. Hyoglycemia & hyperglycemia. | 1.00±.01   | 1.68±.48     | 18.68  | .000    |
| 3. Life style modification.     | 2.00±.01   | 2.32±.48     | 8.22   | .000    |
| 4. HBA1C test .                 | 1.00±.50   | 1.67±.54     | 0.48   | .000    |
| 5. Urine analysis.              | 1.57±.39   | 2.82±.50     | 0.21   | .000    |
| 6. Body mass index              | 1.00±.20   | 2.00±.48     | 7.55   | .000    |
| 7. Blood cholesterol level      | 1.00±.10   | 1.71±.46     | 19.72  | .000    |

|     |                            |          |          |      |      |
|-----|----------------------------|----------|----------|------|------|
| 8.  | Blood pressure             | 1.29±.19 | 2.00±.46 | 8.22 | .000 |
| 9.  | Diet & Food substitutive . | 1.00±.02 | 1.71±.46 | 0.46 | .000 |
| 10. | Complications.             | 1.00±.03 | 2.00±.48 | 8.15 | .000 |

\*\*\* Significant p<0.001.

From table 3, Studied subjects ' awareness regarding all disease items was improved post self-coaching strategy with significance differences were found regarding all the above items.

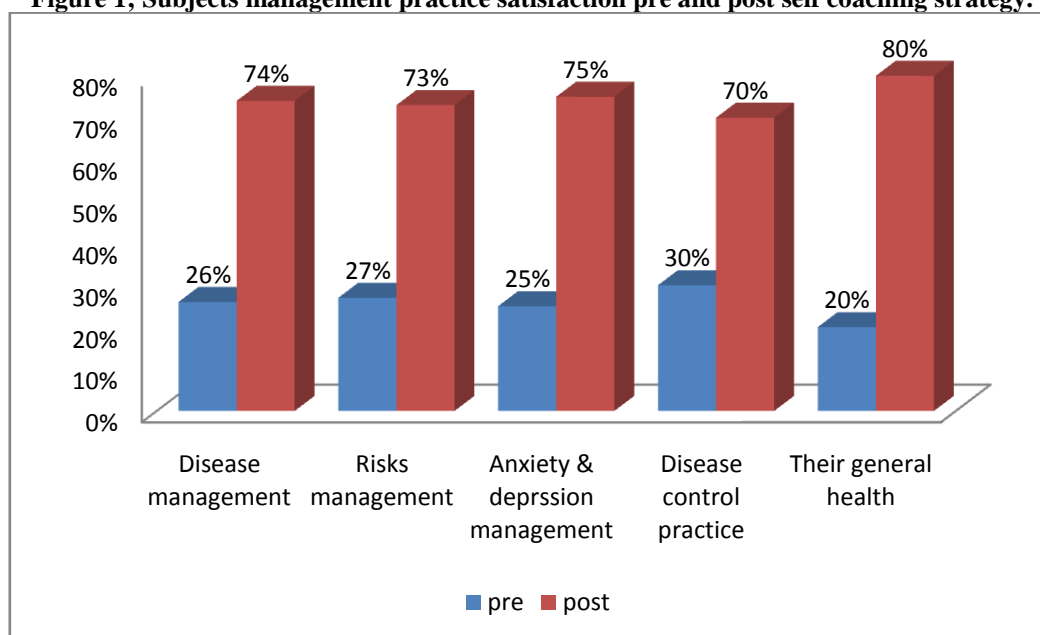
**Table (4): Subjects' disease management practice pre and post self coaching strategy.**

| Management practice.                        | Pre       | post      | T test | P value |
|---------------------------------------------|-----------|-----------|--------|---------|
|                                             | Mean ± SD | Mean ± SD |        |         |
| 1. Comply with insulin &hypoglycemic drugs. | 1.29±.01  | 2.00±.46  | 8.22   | .000    |
| 2. Comply with daily prescribed diet        | 1.86±.36  | 2.00±.41  | 2. 87  | .003    |
| 3. Life style modification practice.        | 1.00 ±.01 | 2.00±.32  | 3.87   | .001    |
| 4. Daily Weight measurements                | 1.00±.02  | 1.36±.49  | 3.89   | .001    |
| 5. Daily exercise compliance.               | 1.29±.03  | 2.00±.46  | 8.22   | .000    |
| 6. Foot care compliance.                    | 1.29±.01  | 2.00±.48  | 8.12   | .000    |
| 7. Blood glucose checking                   | 1.54±.51  | 2.54±.53  | 6.42   | .000    |
| 8. Urine glucose checking.                  | 1.61±.50  | 2.54±.51  | 6.11   | .000    |

\*\*\* Significant p<0.001.

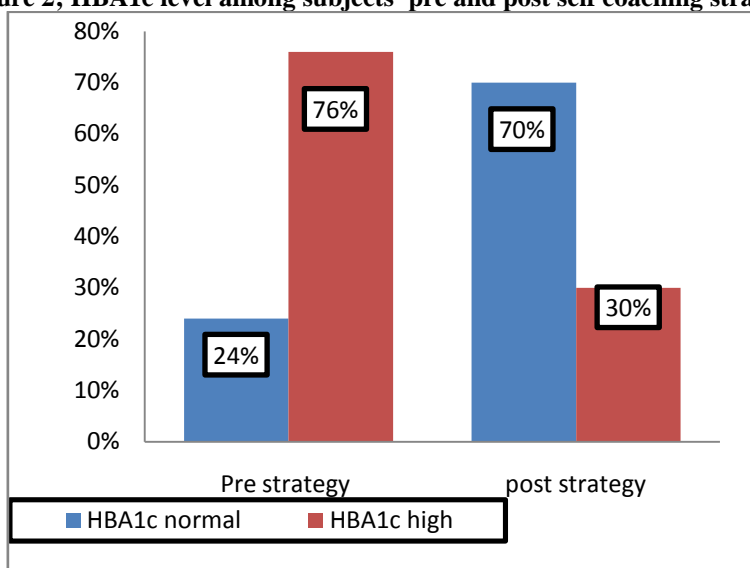
Regarding table 4; Subjects' management practice were improved significantly post coaching strategy regarding ; compliance with ;insulin &hypoglycemic drugs , daily prescribed diet, life style modification practice , weight measurements , exercise, foot care and glucose monitoring (blood & urine) .

**Figure 1; Subjects management practice satisfaction pre and post self coaching strategy.**



More than two thirds of subject satisfied about their disease managemet practice post self coaching strategy; regarding the disease management, risks management, their anxiety& depression management, their ability to control the disease, and finally their general health as clear from figure 1.

**Figure 2; HBA1c level among subjects' pre and post self coaching strategy.**



As clear from figure two; 70 % of subjects had normal level of HBA1c three months post self coaching strategy compared only with 24% from them pre the intervention which reflect positive impact of a healthier life style self coaching strategy on glycemic control of the studied subjects.

#### IV. Discussion

Diabetes coaching is an intervention that requires further explication to understand where, when, and how it can support individuals living with diabetes in an already complex health system. Studied subjects' knowledge regarding disease aspects were improved significantly post the self-coaching strategy (table 2) also subjects' awareness regarding disease management practice improved post self-coaching strategy with significance differences were found regarding (table 3). This results agree with Mohammadi , et. al, in 2018 (34) whom found post intervention, the knowledge scores of the intervention group were significantly higher than the control group. Results showed a significant increase in the mean score of knowledge among subjects who were educated on diabetes also Kanjesic in 2013 (27) mentioned at end of the six week time period there was consistent increased in diabetic patient self-awareness and knowledge which improved due to the intervention.

The study results reflect significant difference in subjects' disease management practice post the intervention due to impacts of self coaching strategy in their practice were changed significantly post coaching strategy so the first research question was answered positively ( a healthier life style self-coaching strategy improved diabetic patients' knowledge, awareness and patients disease management practice). This finding agree with Mohammadi , et. al, in 2018,(34) whom found post intervention , subjects indicated lower consumption of red meats, and more vegetables , fruits, take diet with low carbohydrates, high fiber, more vegetables and fruits . Also Reisi, et. al., in 2018(35) supports the current results where they found patients who had received diabetes education had a better diabetes self-care. The current finding also agrees with McGibbon et. al., in 2018(36), whom discuss studied participants diabetes management behavior were changed significantly post intervention regarding ; more consistent blood glucose testing, healthier eating and food choices, increased physical activity, improved stress management, better sleep practices and positive change in attitude or outlook after coaching intervention and added 33% of the reviews, 37% of randomized trials and 84% of other studies suggested that health coaching may have a positive effect on people's health status, including improving blood pressure, blood sugar control, cholesterol and cardiovascular risk factors.

Regarding figure one more than two thirds of subject satisfied about; their disease management practice, risks management, their anxiety & depression management, their ability to control the disease, and their general health this finding agree with McGibbon et.al., in 2018(36) whom mentioned; the participants reported no longer feeling alone in their diagnosis and there is improve in adherence to treatment and the peer coaching was able to bring improvement in patients' depression and activation levels. Also Adelman & Graybill, in 2005 (37) found; supporting people to be active participants in their care has important impacts on their satisfaction about their disease. There is some evidence that health coaching can support people's motivation to self-manage or to change their behaviors, and their confidence in their ability to do so and decrease feelings of anxiety will lead to behavioral changes or improved clinical outcomes of diabetes mellitus. Sherifali, et al., in 2018(38) agree with the previous results where they reported self-management education and support resulting in improvements in knowledge, attitudes, self-efficacy, healthy behaviors and clinical

outcomes .Vyas, in 2015(39) study provide valuable evidence that the advice given on medication adherence, and foot care is effective in modifying self-care behaviour and thus has a great potential on the outcomes of the treatment and higher compliance was reported post intervention. More than two thirds of subjects had normal level of glycated hemoglobin post 3months from the healthier life style self coaching strategy so the second research question was accepted.

This finding also agree with Heydari et al. in 2012 (40) whom found empowerment-based training model on HbA1c levels in adolescents with type 1 diabetes in Zanjan, showing increased knowledge, self-efficacy, and self-esteem scores, and decreased HbA1c levels after a 2.5- month intervention and Ghafourifard & Ebrahimi in 2015(41) found self-care training reduced blood glucose and HbA1c levels in patients with type 1 diabetes. Sadeghi et.al; in 2016 (42)agree with the previous results also MacLean in 2012 support the current study finding where he mentioned; the coaching group A1C levels were decreased by 1.3 % for patients participating in a coaching group compared to only 0.5% for patients participating in a control group. Also MacLean in 2012(43) mentioned the study resulted in significant improvement in patients' dietary plan, physical exercise, self-monitoring of blood glucose , HbA1C, adherence to medication due to the impact of the intervention. Regarding Azizi et. al., in 2017(44); reported that the implementation of five, 90-minute sessions controlled the complications and HbA1c levels in the experimental group. The current results agree with Mohammadi , et. al, in 2018 whom mentioned, there were significant differences regarding glycemic control of the two groups which were significantly reduced in the intervention group compared with the control group  $p < 0.001$  difference between HbA1c level before and after intervention in the intervention group comparison with the control group. Kanjesic study in 2013(27); support the current study where he found found A1C levels were decreased by 1.3 % for patients participating in a coaching group compared to only 0.5% for patients participating in a control group.

## V. Conclusion

Diabetes mellitus poses many challenges to patients due to long life complications and high costs of diabetic care which need patient active participation to manage the disease problems and satisfy life needs.

**Study limitation:** The limitations of the present study related to the small number of samples.

## VI. Recommendations

All able diabetic patients should be taught how to depend on their selves to manage diabetes, accept their life with diabetes and adopt their preferable life style to control their diabetes and maintain satisfied life.

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